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Contents

		Page
	Editorial Note	**7**
	Articles	
1	EXAMINING THE EXISTENCE OF CO2 EMISSION PER CAPITA CONVERGENCE IN EAST ASIA, *Kenichi SHIMAMOTO*	**11**
2	USING ARDL APPROACH TO COINTEHRATION FOR INVESTIGATING THE RELATIONSHIP BETWEEN PAYMENT TECHNOLOGIES AND MONEY DEMAND ON A WORLD SCALE, *Payam MOHAMMAD ALIHA, Tamat SARMIDI , Abu Hassan SHAAR, Fathin FAIZAH SAID*	**29**
3	A NOTE ON OPTIMAL INCOME REDISTRIBUTION IN A CREATIVE REGION, *Amitrajeet A. BATABYAL*	**39**
4	AGGLOMERATION ECONOMICS IN REGIONS: THE CASE IN THE RUSSIAN INDUSTRY, *Svetlana RASTVORTSEVA*	**45**
5	BOOSTING THE AUTONOMY OF REGIONAL BANKING SYSTEMS AS A DRIVER OF ECONOMIC DEVELOPMENT: THE CASE OF RUSSIA, *Dinara Khamitovna GALLYAMOVA, Aidar Il'darovich MIFTAKHOV*	**55**
6	A MECHANISM TO UNDERPIN STATE PATRONAGE OF NOVEL PUBLIC GOODS: REVISITING THE THEORY OF EFFECTIVE MANIPULATION, *Tatyana MELNIKOVA, Nataliya MITYAEVA, Anton PETROV, Arina BOBKOVA*	**69**
7	MEASUREMENT OF THE ADMINISTRATIVE BURDEN FOR THE ESTABLISHMENT OF SHIPPING COMPANIES IN GREECE, *Nikos ALABANOS, Sotiris THEODOROPOULOS*	**85**
8	PRODUCTIVE EFFICIENCY OF PORTUGUESE VINEYARD REGIONS, *Ana MARTA-COSTA, Vítor MARTINHO, Micael SANTOS*	**97**
9	THE EMPLOYABILITY AND WELFARE OF FEMALE LABOR MIGRANTS IN INDONESIAN CITIES, *Devanto SHASTA PRATOMO*	**109**
10	PROJECT-BASED APPROACH TO FORMATION OF INNOVATIVE REGION RECEPTIVITY, *Galina Yakovlevna BELYAKOVA, Gennadiy Pavlovich BELYAKOV, Ekaterina Vladimirovna SUMINA, Artem Alexandrovich BADYUKOV*	**119**
11	HOW TO DEVELOP AN EQUITABLE DISTRIBUTION OF URBAN GDP BY SMART CITY DEVELOPMENT IN INDIA, *Sabyasachi TRIPATHI*	**131**
12	ESTIMATION OF FACTORS FOR SOCIAL AND ECONOMIC INEQUALITY OF RUSSIA'S TOWNS, *Inna MANAEVA, Alexandra KANISHTEVA*	**147**
13	REGIONAL EMPLOYMENT IN PORTUGAL: DIFFERENCES AND CYCLICAL SYNCHRONISATION, *Leonida CORREIA, Marina ALVES*	**159**

14 PECULIARITIES OF SOCIAL PSYCHOLOGIKAL AND ECONOMIC ADAPTATION OF PUPILS FROM THE MIGRANTE FAMILIES IN THE CITY OF KRASNOYARSK IN SIBERIAN REGION, *Tatiana PETROVNA GRASS, Vladimir INNOKENTIEVICH PETRISHCHEV, Natalia OLEGOVNA LEFLER* **177**

15 STUDENS' ECLOGICAL AWARENESS DEVELOPMENT ON GEOGRAPHY LESSONS IN THE REPUBLIC OF KAZAKHSTAN, *Vyacheslav Alexeevich SITAROV, Larissa UREKESHOVA* **187**

16 DO PEOPLE WITH A DIFFERENT EMPLOYMENT BACKGROUND AGE DIFFERENTLY? EUROPEAN EVIDENCE FROM THE SHARE SURVEY, *Antigone LYBERAKI, Platon TINIOS, George PAPADOUDIS, Thomas GEORGIADIS* **197**

17 FINANCIAL INDICATORS AFFECTING STOCK PERFORMANCE THE CASE OF CAPITAL PRODUCT PARTNERS, *Antonis PANTAZIS, Theodoros PELAGIDIS* **211**

18 MODELING THE PROCESSES OF REGIONAL DEVELOPMENT BASED ON GEOSTATISTICS METHODOLOGY, *Tatyana V. YALYALIEVA, Dmitry L. NAPOLSKIKH* **223**

19 METHODS OF COMPETITIVENESS ASSESSMENT OF AGRICULTURAL ENTERPRISE IN EASTERN EUROPE, *O. V. DOVGAL, M. V. KRAVCHENKO, N. I. DEMCHUK, O. A. ODNOSHEVNAYA, O.Y. NOVIKOV, U. Y. ANDRUSIV, I. M. LESIK, I. R. POPADYNETS* **231**

20 CHALLENGES OF A SUSTAINED AND SUSTAINABLE DEVELOPMENT: A STUDY-CASE, *Zenólia ALMEIDA, Inguelore SCHEUNEMAN, Teresa SEQUEIRA, Francisco DINIZ* **243**

Announcements, Conferences, News **251**

Academic profiles **255**

Book reviews **259**

Author Instructions **263**

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Regional Science Inquiry, Vol. IX, (2), 2017– Editorial Note

Our team salute the second issue of the RSI Journal Volume IX and would like to thank all the authors who contributed in its issuance with their valuable academic research.

This edition focuses on a variety of crucial topics related to regional science and more specifically:

The first paper titled "Examining the existence of CO2 emission per capita convergence in East Asia" examines the impact of the convergence of economic development on the environment as well as the impact of global warming on East Asian countries with large coastal areas.

The second paper titled "Using ARDL approach to cointegration for investigating the relationship between payment technologies and money demand on a world scale" aims to investigate whether financial innovation and money demand are related and focuses on the impact of automated teller machines (ATMs).

Moreover, the third paper with title "A note on optimal income redistribution in a creative region" considers artists or engineers as members of the creative class and show how the creative capital is acquired by those two groups.

The following paper titled "Agglomeration economics in regions: The case in the Russian industry" examines the impact of 'first' (i.e. minerals, fertile land) and 'second nature' factors (i.e. agglomeration effects) on the economic activity of Russian regions and analyses the geographic concentration and regional specialization that could lead to a balanced economic policy.

The fifth paper of this edition titled "Boosting the autonomy of regional banking systems as a driver of economic development: the case of Russia" presents recommendations regarding the reform of fundamental instruments and mechanisms that influence the Russian banking sector, while the following paper with title "A mechanism to underpin state patronage of novel public goods: revisiting the theory of effective manipulation" deals with the topics of electronic government and electronic democracy in Russia concluding that the occurred manipulation is feasible only in the case that the process of shaping the human behavior has an all-encompassing nature.

Furthermore, the seventh paper titled "Measurement of the administrative burden for the establishment of shipping companies in Greece" underlines the necessity of reducing the administrative burden so that the national economies become more competitive, followed by the paper titled "Productive efficiency of Portuguese vineyard regions", whose aim is to analyze this topic over the years of 1989 - 2007 by implementing a deterministic and stochastic approach.

The ninth paper presented ("The employability and welfare of female labor migrants in Indonesian cities") has a dual purpose: a) to analyze the factors of employment status of female labor migrants and b) the welfare of those group taking into consideration their earnings to occupation and the poverty status in the cities, while the next paper ("Project-based approach to formation of innovative region receptivity") highlights the role of innovative entrepreneurship in a region's innovative responsiveness formation.

The following paper ("How to develop an equitable distribution of urban GDP by smart city development in India") examines the reasons of India's large agglomerations and the way they are related to economic growth and furthermore our 12th paper titled "Estimation of factors for social and economic inequality of Russia's towns" examines key factors, such as the size of engaged population, the population density and the density of hard-surface roads, by implementing a least-square method.

Moreover, the thirteenth paper titled "Regional employment in Portugal: Differences and cyclical synchronisation" underline a significant heterogeneity on the correlation between the sub-national cycles and the national cycle, while the following paper ("Peculiarities of social psycological and economic adaptation of pupils from the migrante families in the city of Krasnoyarsk in Siberian region") identifies the positive attitude of the aboriginal pupils as well s that this adaptation of migrant pupils on the new society consists a complex comprehensive process.

Additionally, the fifteenth paper of the presented edition ("Students' ecological awareness development on geography lessons in the Republic of Kazakhstan") aims to the justification of the pedagogical conditions of this topic by using complex theoretical analysis, categorical synthesis and simulation.

Our sixteenth paper investigates the topic of "Do people with a different employment background age differently? European evidence from the share survey" and more specifically it examines whether and to what extent inequalities persist in retirement.

The following paper titled "Financial indicators affecting stock performance - the case of Capital Product Partners" examines the significance of some financial indicators, while the eighteenth presented paper with title "Modeling the processes of regional development based on geostatistics methodology" aims to the implementation of deterministic methods of geostatistics on the spatial modeling of regional industrial clusters.

Finally, the nineteenth paper of the presented edition titled "Methods of competitiveness assessment of agricultural enterprise in Eastern Europe" aims to the development of practical recommendations for the formation of competitive advantages of agro-industrial enterprises based on the methods of factor analysis followed by the paper titled "Challenges of a sustained and sustainable development: a study-case" which deals with the sustainable development of Governador Valadares, by implementing a SWOT analysis and by analyzing the data sourced from two important researches.

On behalf of the Editorial Board,

Vilelmini G. Psarrianou
Chief Executive - RSI Journal

Articles

EXAMINING THE EXISTENCE OF CO_2 EMISSION PER CAPITA CONVERGENCE IN EAST ASIA

Kenichi SHIMAMOTO
Hirao School of Management, Konan University, Nishinomiya, Japan
Correspondence details: Dr. Kenichi Shimamoto Hirao School of Management, Konan University, 8-33 Takamatsu-cho, Nishinomiya, Hyogo, Japan 663-8204
kenichi@center.konan-u.ac.jp

Abstract

The 'flying geese' model of industrial upgrading depicts the income convergence or economic development convergence in East Asia. However, how does this convergence of economic development effect the environment? The surge in the consumption of fossil fuel is causing a large increase in emission of CO2. Global warming affected by CO2 emission poses as a serious threat to East Asian countries with large coastal areas exposed to the rise in sea level. This paper examines CO2 emission per capita to investigate the existence of environmental convergence in East Asian countries and predicts future distribution using deviations, interquartile range, kernel densities distribution, time series approach, β convergence analysis and the Markov chain approach. As a result, no meaningful evidence of convergence was found in the historical evaluation and a non-compressed ergodic distribution was found in the future prediction for CO2 emission.

Keywords: environmental convergence, East Asia, CO2
JEL classification: Q53, Q56, R10

1. Introduction

Question of convergence in pollutant emissions between countries have recently been investigated following the studies performed on economic convergence which suggests that poorer regions should "catch up" to relatively richer regions over time. As there have been numerous empirical analyses comparing different regions which support the economic convergence hypothesis (e.g. Barro, 1991; Carlino and Mills, 1993; Cole and Neumayer, 2003; Evans and Karras, 1996)[1], studies have been performed to see whether there would be a convergence during a period of time if countries with low emission per capita increased their emission per capita and in the opposite, high emission countries decreased their emissions per capita (List, 1999; Strazicich and List, 2003; Nguyen Van, 2005). This environmental convergence hypothesis is closely related to the economic convergence hypothesis and the existence of an Environmental Kuznets Curves (EKC) or an inverted U-shape curve for the relationship between pollutant emission and income (Strazicich and List, 2003; Nguyen Van, 2005). As we follow the theoretical and empirical arguments on the EKC where environmental quality first declines and then increases as per capita income rises (e.g. Lopez, 1994; Andreoni and Levinson, 2001; Stokey, 1998; Grossman and Kruger, 1995; Cole *et al*., 1997; Holtz-Eakin and Selden, 1995), it has been argued that environmental quality will converge across regions if per capita income converges. In other words, pollutant emissions increase with income in lower income countries but decrease with income in higher income countries and all countries will have the same income level following the economic convergence hypothesis. Therefore, if the EKC and economic convergence hypotheses are valid, we will expect an environmental convergence (Nguyen Van, 2005).

If we focus on the East Asian economy, there are numerous studies on its rapid economic growth and empirical studies on the income convergence or economic development

[1] There are also studies which do not find income convergence. Some examples are the study by Dobson and Ranlogans (2002) on Latin American countries over the period of 1970 to 1998 and the study by Su (2003) on 15 OECD countries.

convergence in East Asia (e.g. Zhang, 2001; Zhang, 2003; Yap, 2005; Hsiao and Hsiao, 2004; Jayanthakumaran and Lee, 2013). The 'flying geese' model of industrial upgrading depicts this "catching up" found amongst the East Asian economies (Akamatsu 1935, 1962; Kojima, 2000; Kojima and Ozawa, 1984, 1985). The logic of the 'flying geese' model of relocating production process to cheaper areas abroad as domestic costs rise (Pangestu and Gooptu, 2003) also supports the notion of countries with low emission per capita increasing their emission per capita with the increase in production and in the opposite, high emission countries decreasing their emissions per capita. However, what does it mean when poorer regions specialize in the production of pollution-intensive goods to experience large increases in per capita income in order to catch up to richer regions specializing in the production of clean goods and subsequently have a lower growth rate in per capita income? Does this mean that the regions are converging in monetary wealth but diverging in environmental quality (List, 1999)?

This is a serious question to East Asian economies which face environmental problems caused by increasing industrialization (Asian Development Bank, 2001, 2005). The surge in the consumption of fossil fuel is causing a large increase in emission of CO_2. Global warming effected by CO_2 emission impacts the coastal regions with the rise in sea level. With many of the East Asian countries exposed to large coastal areas, this poses as a serious threat. For example, the potential land loss resulting from sea-level rise and the number of people exposed for Indonesia is 60 cm and 1.1 million people. For Vietnam, there is the potential of 50 cm rise in sea-level, effecting 23 percent of the population (IPCC, 2001).

In this paper, we examine CO_2 emission per capita between 1960 and 2000 to examine the existence of environmental convergence in East Asian countries. There are not many empirical studies on environmental convergence and to the best of my knowledge, there is no environmental convergence study on East Asian countries. So this paper will be the first to attempt to examine whether the previous studies on income convergence among East Asian countries can be supported by a convergence of environmental quality. The other characteristic of this paper is that it applies an extensive range of methods to examine the convergence of environmental quality amongst East Asian countries. These methods are deviations, interquartile range, kernel densities distribution, time series approach and β convergence analysis. It also predicts future distribution using the Markov chain approach.

The remainder of this paper proceeds as follows: Section 2 provides a brief review of the environmental convergence literature, data description, and explains the empirical methods that were used. Section 3 presents the results from the empirical studies and Section 4 provides concluding comments and discusses policy implications.

2. Previous research, data and empirical methods

2.1. Previous research

There are several studies that have undertaken this question on convergence/divergence of environmental quality. Developing the Solow growth model (Solow, 1956) which applies technological progress in abatement and pollution, Brock and Taylor (2004, 2010) examine CO_2 convergence among OECD countries. They find convergence concerning CO_2, using a cross-sectional analysis. Alvarez *et al.* (2005) develop a neoclassical growth model augmented to incorporate the dynamics of a stock of pollutant and examine convergence concerning some air pollutants per capita (SO_2, NO_2, CO_2, CO and MVOC) among European countries between 1990 and 2000. The results showed environmental convergence for most of the air pollutants. Strazicich and List (2003) study the case of CO_2 among industrial countries, using both the cross-sectional and the time series approach and find that CO_2 emissions have converged. These studies all focus on cross–country environmental convergence. However, there are also some studies which focus on a specific country- i.e. US. Using both cross-sectional convergence analysis and stochastic convergence analysis, List (1999) examines SO_2 and NOx data for regions in the US between 1929 and 1994. He finds convergence of these emissions. Bulte *et al.* (2007) examine the role institutional context has on environmental convergence, focusing on SO_2 and NOx cases among US regions. Using the stochastic convergence analysis and the time-series tests for β convergence, they find that

regulations, especially federal ones, have impact on environmental convergence. Production CO_2 emission per capita and consumption CO_2 emission per capita for the US states are studied by Aldy (2007) who finds production CO_2 emission per capita to diverge, but consumption CO_2 emission per capita to converge. This was due to the effect of increasing interstates' electricity trade over time. There are also some previous studies which observe the world as well as developed countries. Stegman (2005) analyses CO_2 emission per capita convergence for the world and OECD countries. The results of considering intra-distribution dynamics show that CO_2 emission per capita does not converge over the period between 1950 and 1999. Nguyen Van (2005) also takes intra-distribution dynamics into account as well as the traditional average behaviour approach, and examines CO_2 emission per capita for both the world and industrial countries. The results showed divergence for the world and convergence for industrial countries. Empirical research by Aldy (2006) uses various methods including intra-distribution dynamics and the time series approach to examine if CO_2 emission per capita converges over time for both the world and OECD countries. Further examination is conducted using the Markov transition approach to predict future distribution. This study predicts environmental convergence among OECD countries while environmental divergence among the world.

2.2. Data description

To examine whether environmental quality have converged across the East Asian countries, this paper uses CO_2 as an indicator of environmental quality. The data for CO_2 is from the World Development Indicators (World Bank, 2005). The period from 1960 to 2000 is used. These emissions are divided by population which is sourced from the World Development Indicators (World Bank, 2005). East Asian countries sampled here for CO2 emission per capita are: Japan, Korea, China, Singapore, Thailand, Philippines, Cambodia, Hong Kong, Indonesia, Lao PDR, and Myanmar (11 countries).

2.3. Empirical methods

In order to assess the cross-sectional convergence of CO_2 emission per capita over time for East Asia, this paper conducts five types of analysis. First of all, it estimates a variety of deviations to measure the spread of CO_2 emission per capita.

The standard deviation (*SD*) of the data is represented as:

$$SD = \sqrt{\frac{\sum_{i=1}^{N}(X_i - \bar{X})^2}{N-1}}, \quad (1)$$

where i denotes country, and N is the number of countries. X_i is the natural logarithm of CO_2 emission per capita of country i. $\bar{X}$ represents the average natural logarithm of CO_2 emission per capita of East Asia observed. Standard deviation is an appropriate method with data that exhibits normal distribution, since it represents the spread of the data around the centre and in the tails of the distribution. However, if the data does not exhibit normal distribution, the average absolute deviation or the median absolute deviation may be more used (Stegman, 2005). We define the average absolute deviation (*AD*) as

$$AD = \frac{\sum_{i=1}^{N}(|X_i - \bar{X}|)}{N}, \quad (2)$$

where $|X|$ is the absolute value of X.

The median absolute deviation is less affected by outliers (i.e. extreme observations) in tails of the distribution of the data, compared to the *AD*.

The median absolute deviation (*MD*) is defined as

$$MD = median(|X_i - \overset{*}{X}|), \quad (3)$$

where $\overset{*}{X}$ represents the median of the data.

As the above measures consider the spread in the tails of distribution of the data set, we will next calculate the inter-quartile range (IQR) in order to measure the spread in the centre of the distribution of the data set. *IQR 75-25* is the value of the 75th percentile minus the value of 25th percentile. Since the IQR is sensitive to the percentile points, we also estimate *IQR80-20* which the value of the 80th percentile minus the value of 20th percentile.

To illustrate the CO_2 emission trend, we next present the estimated kernel densities of CO_2 emission per capita. Intra-distribution dynamics which may not be captured by the deviations and IQRs described above can be observed with this method. A country's per capita emissions are expressed as natural logarithm of its emissions per capita relative to the observed East Asian average (*z*). We have used the Espanechikov kernel and Silverman's (1986) bandwidth choice rule to estimate the densities. This produces a kernel density estimator function of

$$d(z) = \frac{1}{Nh}\sum_{i=1}^{N} K\left(\frac{z_i - z}{h}\right), \quad (4)$$

where $K = \dfrac{3(1-0.2z^2)}{4\sqrt{5}}$ if $|z| < \sqrt{5}$, and 0 otherwise,

$$h = \frac{0.9\left(\min\left(s, \dfrac{I}{1.349}\right)\right)}{\sqrt{5}}, \text{ and}$$

N reflects the number of countries, *I* is the *IQR 75-25* for the sample used, and *s* is standard deviation of the observed sample. The Espanechikov kernel is applied as it is the most efficient kernel function to minimize the mean integrated square error (Aldy, 2007) and the Silverman bandwidth choice rule is often employed in density estimation.

Next we will examine the convergence of CO_2 emission per capita using the parametric approach. We test for whether a unit root characterizes the time series of CO_2 emission per capita to assess stochastic convergence. If stochastic convergence is found for CO_2 emission per capita, then the shocks to CO_2 emission per capita are temporary and the data are stationary over time, suggesting that CO_2 emission per capita are converging. However, if a unit root can be confirmed in the time series of CO_2 emission per capita, then the shocks are permanent and CO_2 emission per capita are not stationary over time and not converging. As many studies have used unit root tests to evaluate income convergence (e.g. Carlino and Mills, 1993; Li and Papell, 1999; Loewy and Papell, 1996; Oxley and Greasley, 1995; Tsionas, 2000), unit root tests have been conducted for emissions convergence. List (1999) performed unit root tests and examined the US regions' convergence of NOx per capita and SO_2 per capita. Aldy (2006, 2007) examine CO_2 emission per capita for both the US regions and the world/OECD and Strazicich and List (2003) examine the industrial countries for CO_2 emission per capita with this test.

We have used the same panel-based unit root test as the one developed by Im *et al*. (2003) to examine the existence of stochastic convergence amongst countries' CO_2 emission per capita. This requires country-specific augmented Dickey-Fuller tests which is constructed by estimating the following specification on a county-by-country basis:

$$\Delta x_{it} = \varpi_i + \theta_i t + \pi_i x_{it-1} + \sum_{k=1}^{l} \eta_{ik} \Delta x_{it-k} + \nu_{it}, \quad (5)$$

where x_{it} represents the natural logarithm of CO_2 emission per capita relative to the East Asian average observed for each country for each year. ϖ_i represents the constant term specific to each country, and $\theta_i t$ indicates a linear time trend. π_i depicts the parameter to test the null of a unit root. l defines the maximum number of lagged terms Δx_{it-k}, and η_{ik} represents a parameter estimated for each first-differenced lagged term. ν_{it} represents the contemporaneous error term and is assumed to be independent and identically distributed (*i.i.d.*) with zero mean and finite variance. Perron's method (1989) was used for the lag selection[2].

After estimating equation (5) for each country, by averaging the country-specific augmented Dickey-Fuller statistic, the Im *et al*. (2003) test statistic is created:

$$\bar{t}_{NT} = \frac{1}{N}\sum_{i=1}^{N} t_{\pi}^{i} \text{ . (6)}$$

Im *et al*. (2003) shows that this test is more powerful in rejecting the null hypothesis that unit roots are confirmed for all the time series observed, compared to the individual augmented Dickey-Fuller tests. In their study, they also compute sample critical values via stochastic simulation which we use to evaluate the panel-based test statistic for relative CO_2 emissions per capita. This method by Im *et. al* (2003) is a useful method to confirm whether the panel data is stationary by performing the test of null hypothesis of unit root. However, unless there is strong evidence to the contrary, it is well known that the null hypothesis is accepted. In order to reconfirm whether the panel data on emissions per capita is stationary, we will undertake the Hadri (2000) test to complement the limitations of Im *et al*. (2003). In other words, we will perform the test of null hypothesis of stationarity with the error term being *i.i.d.*. We, furthermore, extend heterogeneous errors across country and apply serially correlated disturbance terms according to the work by Hadri (2000).

Following the work by Hadri (2000), we consider the following two models to examine whether CO_2 emission per capita is stationary around a level and whether it has trend stationary.

$$y_{it} = r_{it} + \varepsilon_{it} \text{ , (7)}$$

$$y_{it} = r_{it} + \phi_i t + \varepsilon_{it} \text{ . (8)}$$

Here r_{it} is a random walk:

$$r_{it} = r_{it-1} + u_{it} \text{ . (9)}$$

i is country and t denotes year. y is CO_2 emission per capita relative to the East Asian average observed here. ε_{it} and u_{it} are mutually *i.i.d.* across i and over t with $E[\varepsilon_{it}] = 0$, $E[\varepsilon_{it}^2] = \sigma_{\varepsilon}^2$, $E[u_{it}] = 0$ and $E[u_{it}^2] = \sigma_u^2$. Equation (7) represents the model to perform the test of the null hypothesis of stationarity around a level. By using back substitution, we obtain the following equation:

$$y_{it} = r_{i0} + \sum_{t=1}^{t} u_{it} + \varepsilon_{it} \text{ . (10)}$$

[2] See List and Strazichi (2003).

The initial values r_{i0} are treated as fixed unknowns and play the role of heterogeneous intercepts. On the other hand, Equation (8) represents the model to perform the test of the null hypothesis of trend stationarity. By also using back substitution, we derive the following equation:

$$y_{it} = r_{i0} + \phi_i t + \sum_{t=1}^{t} u_{it} + \varepsilon_{it} . \quad (11)$$

In order to perform the test of stationarity around a level, Hadri (2000) first regresses dependent variable *y* on an intercept for equation (7) and on an intercept plus a time trend for equation (8), and derives the residuals. By using the residuals, Hadri (2000) calculates the Lagrange multiplier (LM) statistic under the assumption that ε_{it} and u_{it} are mutually independent normals and *i.i.d* across *i* and over *t*. As used by Hadri (2000), the residual-based LM statistic is:

$$LM_{\mu} = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{\frac{1}{T^2}\sum_{t=1}^{T} S_{it}^2}{\hat{\sigma}_{\varepsilon}^2}\right) , \quad (12)$$

Where

$$S_{it} = \sum_{j=1}^{t} \hat{\varepsilon}_{ij}$$

$$\hat{\sigma}_{\varepsilon}^2 = \frac{1}{NT}\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{\varepsilon}_{ij}^2 .$$

To confirm whether all time series are stationary, he uses the fact that the limiting distribution of the test statistic, which is derived by subtracting the means from the LM statistic and dividing it by the standard deviation, weakly converges to normal distribution as follows:

$$Z_{\mu} = \frac{\sqrt{N}}{\zeta_u}(LM_u - \xi_u) \Rightarrow N(0,1) . \quad (13)$$

Next in order to take into account the heterogeneous errors across *i*, Hadri (2000) computes σ_{ε} for each *i*, and substitutes it for the above LM statistic and then derives the LM statistic under heterogeneous errors across *i* as follows:

$$LM_{\mu}^{h} = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{\frac{1}{T^2}\sum_{t=1}^{T} S_{it}^2}{\hat{\sigma}_{\varepsilon,i}^2}\right) . \quad (14)$$

Furthermore, when taking into consideration serially correlated disturbance terms[3], he

[3] To consider quiet general forms of temporal dependence over *t*, Hadri (2000) assumes either that ε_{it} satisfy the strong mixing regularity conditions of Phillips and Perron (1988) or the linear process conditions of Phillips and Solo (1992).

replaces σ_ε by the long-run variance σ and computes the LM statistic:

$$LM_\mu^s = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{\frac{1}{T^2}\sum_{t=1}^{T} S_{it}^2}{\hat{\sigma}^2}\right), \quad (15)$$

Where

$$\sigma^2 = \frac{1}{N}\sum \lim_{T\to\infty} T^{-1}(S_{iT}^2).$$

Concerning LM statistic and Z statistic to perform the test of the null hypothesis of trend stationarity, the procedure is similar to the above procedure to derive LM statistic and Z statistic to perform the test of the null hypothesis of being stationary around a level except for the usage of residuals which is computed by regressing dependent variable on an intercept and a time trend for equation (8).[4] In this paper, we employ the above residual-based LM statistic to perform the test of the null hypothesis of stationarity for panel data to examine whether relative CO_2 emission per capita converges in East Asian countries.

Next we will examine the convergence of CO_2 per capita using the parametric approach which is familiar in growth empirical literature. We use the technique called β-convergence that was developed by Baumol (1986).

$$Cg_i = \alpha + \beta C_{0i} + e_i, \quad (16)$$

where Cg_i denotes the average annual growth rate of the natural logarithm of CO_2 emission per capita for each country i over the sample period between 1960-2000. α is a constant term, and β is the parameter to test the null hypothesis of divergence. C_{0i} denotes the natural logarithm of the initial value of CO_2 emission per capita in country i. e_i is the contemporaneous error term which is assumed *i.i.d.* with zero mean and finite variance. $\beta < 0$ will represent a convergence in CO_2 emission per capita. $\beta = -(1-\exp^{-\lambda\tau})$ where τ denotes the length of the study period and λ represents the convergence speed[5].

The above methods were used to examine the historical convergence of CO_2 emission per capita. Next, we examine future CO_2 emission distribution. For the purpose of estimating future distribution, we perform a Markov chain transition matrix analysis, which is based on a nonparametric method employed in economic growth studies to evaluate income distribution. The transition matrix framework has been used by Quah (1993) to evaluate the distribution of per capita income. Following this study by Quah (1993), Aldy (2006, 2007) examines the CO_2 emission per capita for the US regions and the world/OECD. This paper will also use the transition framework to map this year's distribution (W_t) of per capita emissions relative to the East Asian average sampled here into next year's distribution (W_{t+1}):

$$W_{t+1} = M * W_t. \quad (17)$$

---

[4] More precisely speaking, the LM statistic and Z statistic to perform the test of the null hypothesis of stationarity around a level is different from the test of the null hypothesis of trend stationarity in the function of the Brownian motion and the characteristics function which is used for computation of mean and variance of the LM statistic.

[5] λ can be estimated and its variance calculated by using the delta method once the estimate of β is available.

The mapping operator M can be used to work with any process, but similar to Aldy (2006, 2007), Quah (1993) and Kremer *et al*. (2001), this paper assumes a first-order Markov process with time invariant transition probabilities. Repeating this expression T times produces

$$W_{t+T} = M^T * W_t . \quad (18)$$

The larger T becomes and if $W_{t+T} = W_{t+T-1}$, this can express the long-run steady state (ergodic) distribution of relative per capita emissions.

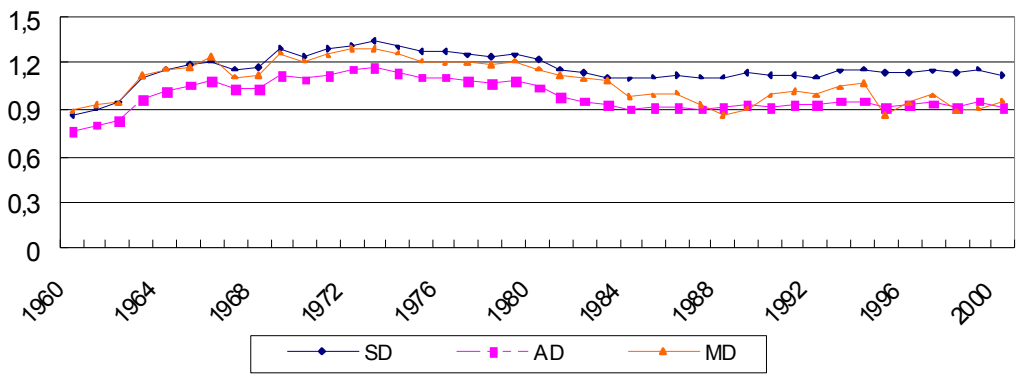
We first allocate the East Asian countries according to the five categories of relative per capita emissions relative to the East Asian countries' average as conducted by Aldy (2007) in his study on environmental convergence and Quah (1993) and Kremer *et al*. (2001) in their income convergence studies. The five categories are: relative per capita emission less than 50 percent of the East Asian average, between 50 percent and 75 percent of the East Asian average, between 75 percent and 100 percent of the East Asian average, between 100 percent and 200 percent of the East Asian average, and greater than 200 percent of the East Asian average. In order to produce the transition matrix, we next compute the one year transitions between categories. The mapping operator is then applied to the distribution in the last year of the data set to forecast the future distribution for the data set. The advantage of this analysis is that the changes to the data over time can be shown with limited constraint, since the analysis does not require much structure to the data. We only applied the five categories and the first-order Markov assumption. However, this analysis has several limitations. This approach can illustrate future distribution, but does not explain the reason why the emission in the 1960s may be different from those in the 1970s, 1980s or 1990s. Following Aldy (2006, 2007), we address this issue by comparing the ergodic distribution derived from transition probabilities based on various periods. The other limitations is that since this approach uses data from past distributions to forecast future distributions, changes that have occurred in the past such as in policies, institutions or technologies are not well expressed in this analysis.

3. Results

3.1. Historical results

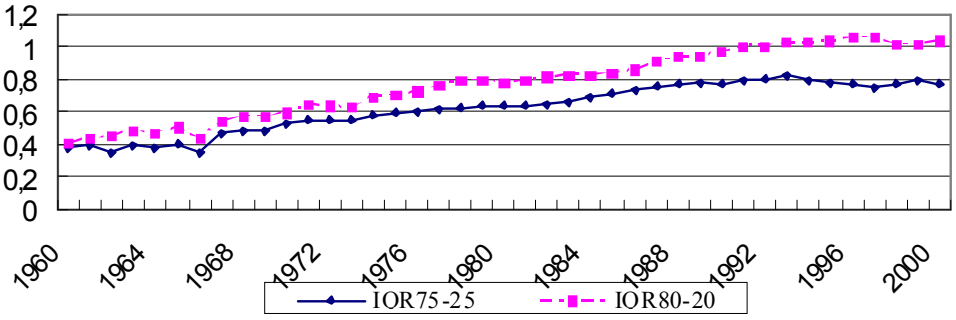
First of all, we analyse the results on historical evaluation of CO_2 emission per capita. Figure 1 illustrates estimates of each of the measures for deviations over the period between 1960 and 2000 for CO_2 emission per capita. The results of the CO_2 emission per capita in Figure 1 shows an increase till the early 1970s followed by a decrease to the early 1980s and then is stable. However, the end of the sample period is also higher than the start of the sample period which is evidence of divergence for CO_2 emission per capita.

Figure1. Deviations of CO_2 per capita



According to the IQR which focuses on the centre of distribution of the data, Figure 2 displays an increase of CO2 emission per capita and thus indicates a consistent divergence. The IQR80-20 which displays a stronger increase trend indicates that the further the observation is from the centre, there is a stronger sign of divergence. In other words, the difference in CO2 emission per capita between countries further from the centre is increasing.

Figure 2. IQRs of CO_2 per capita



The above results on deviations and the IQR analysis show that CO_2 emission per capita has some periods of convergence but overall support evidence of divergence. As described in Section 2, these measures do not characterize the cross-sectional distribution. They are shown in Figure 3 which illustrates the comparison between the kernel density distributions of relative CO_2 emission per capita for the start of the sampled period (1960) with the end of the sampled period (2000). The results find that the distribution of relative CO_2 emission per capita in 1960 is slightly more compressed than that in 2000. This means that relative CO_2 emission per capita does not converge. As illustrated in Figure 4, for relative CO_2 emission per capita, the kernel density distribution for 1960 to 1964 were thicker near the average and thinner in the tails when compared to the distribution from 1996 to 2000. This suggests a divergence of relative CO_2 emission per capita and supports the results of the deviations and IQRs. Furthermore, in Figure 5 when the kernel density distribution for the period of 1960 to 1969 is compared with the period of 1991 to 2000, the same results are achieved as the earlier period showing a more compact distribution indicating a divergence in relative CO_2 emission per capita.

Figure 3. Comparison of kernel density distribution of first year with last year

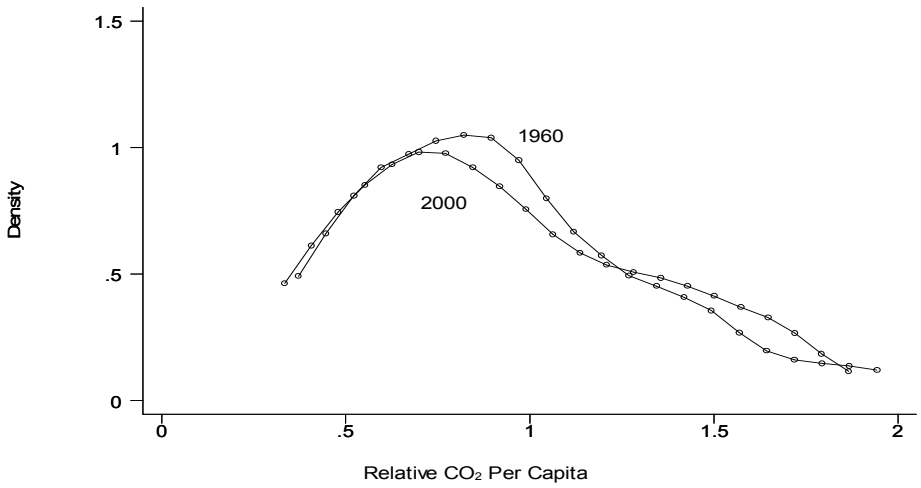


Figure 4. Comparison of kernel density distribution of first 5 years with last 5 years

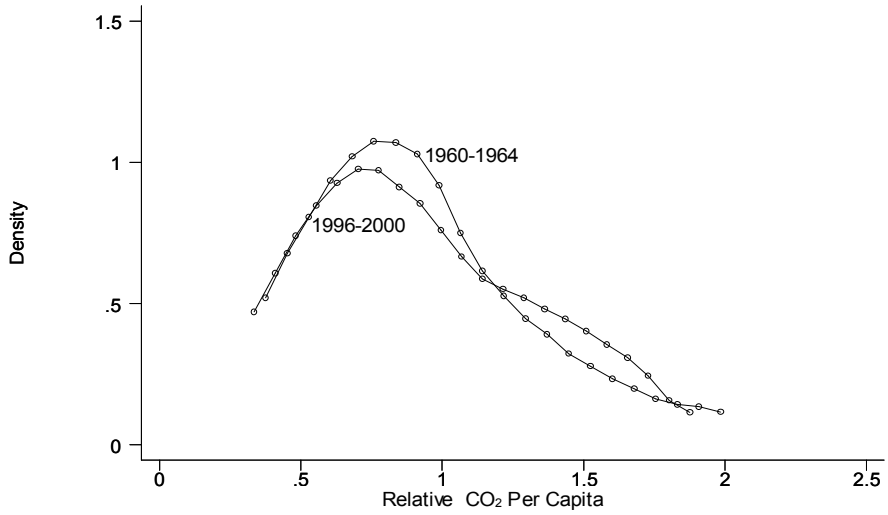
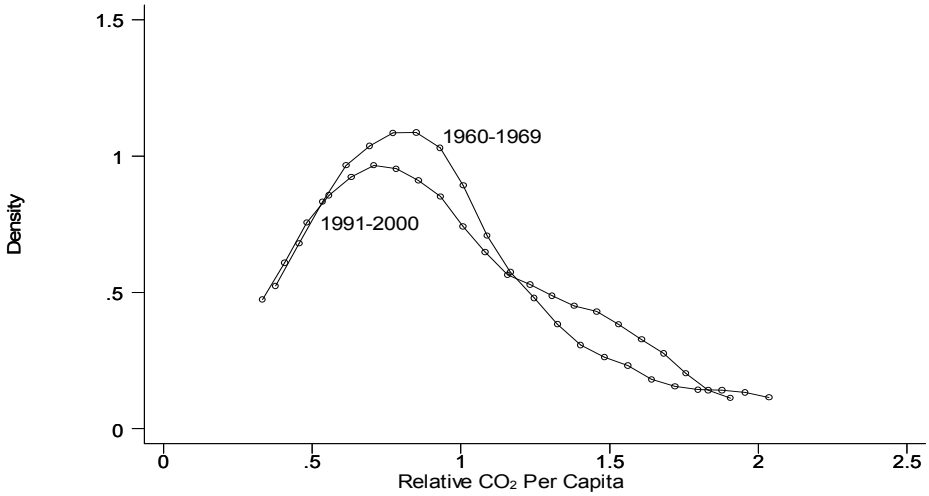


Figure 5. Comparison of kernel density distribution of first 10 years with last 10 years



The methods used above are related to nonparametric approaches. Next we will examine the convergence of CO_2 emission per capita through parametric approaches. First we will investigate the convergence of relative CO_2 emission per capita through time series analysis for the East Asian countries. According to Table 1, the Im *et al*. (2003) test statistic for relative CO_2 emission per capita is -2.14, which cannot justify rejecting the null hypothesis that the time series of the East Asian countries are characterized by a unit root. Shocks to relative CO_2 emission per capita is found to be persistent, and the East Asian countries are not converging in a stochastic sense. Table 2 shows Hadri (2000)'s test which performs the null hypothesis of stationarity with not only the error term being *i.i.d.* but also extending heterogeneous errors across country and applying serially correlated disturbance terms. The results indicate that under the error term being *i.i.d.* $Z\mu$ statistic for relative CO_2 emission per capita is 72.083, which can reject the null hypothesis that all time series in the panel are stationary process around a level. The results also shows that under the error term being *i.i.d.* $Z\tau$ statistic for relative CO_2 emission per capita is 45.498, which can justify rejecting the null hypothesis that all time series in the panel are trend stationary processes. These results show that when considering heteroskedastic distribution across units for relative CO_2 emission per capita we can also reject the null hypothesis which considers that all time series in the panel

are stationary processes around both a level and a trend. When considering serial dependence in errors, Table 2 shows that we can again reject the null hypothesis for relative CO_2 emission per capita. These results support the results from the Im *et al*. (2003)'s test, the deviations, IQRs and the kernel distribution.

Table 1. Im et al. (2003) Panel-based Unit Root Tests

IPS t-statistic	10%	5%	1%
-2.14	-2.44	-2.52	-2.65

i) Test statistic constructed from CO2 of 11 countries, 41-year time series augmented Dickey-Fuller tests (with trend).

ii) The above critical value use N=15 and T=50 as in Im *et al*. (2003).

iii) The lag selection was chosen on a country by country basis using the Perron method (1989).

Table 2. Hadri (2000) Panel Unit Root Test

	Zμ	P-value	Zτ	P-value
Homo	72.083	0	45.498	0
Hetero	54.691	0	26.363	0
SerDep	10.093	0	6.816	0

i) H0: all time series in the panel are stationary processes (11 time series for CO2)

ii) Homo: homoskedastic disturbances across units

iii) Hetero: heteroskedastic disturbances across units

iv) SerDep: controlling for serial dependence in errors (lag truncation = 7)

The above results are also confirmed by the β convergence analysis. As illustrated in Figure 6, the plots do not show any consistent relationship between the initial level of CO_2 emission per capita and the average growth rate of CO_2 emission per capita. If we examine this further in Table 3, the results of the cross-sectional econometric analysis show significant heteroskedascity performing the Breusch-Pagan / Cook-Weisberg test. Hence, we use the OLS with robust standard error which is based on the Huber/White/sandwich estimator of variance. As a result, we find no significant evidence of convergence[6]. Through these studies, we were able to examine the representative behaviour and intra-distribution dynamics of CO_2 emissions per capita which resulted in finding environmental divergence in the East Asian countries.

[6] By using the bootstrap and the jackknife method, we conduct the estimations of standard errors. The results regarding statistical significance of initial value of CO2 per capita are the same as those from robust standard error which is based on Huber/White/sandwich estimator of variance.

Figure 6. The relationship between initial level of CO2 per capita and the average growth rate of CO2 per capita

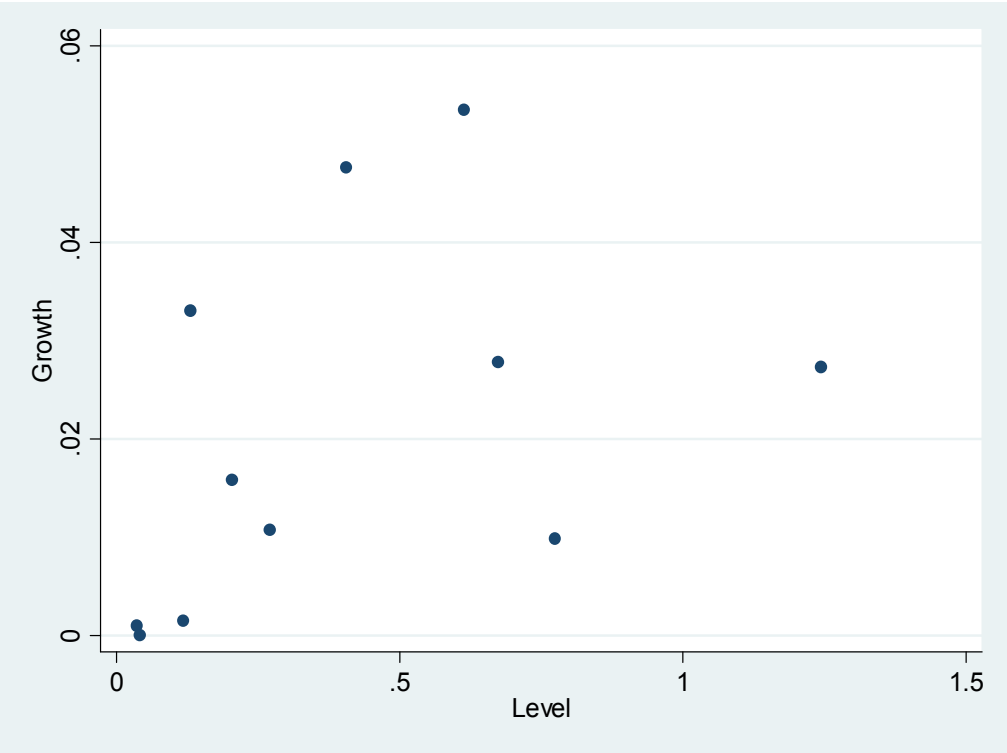


Table 3. β Convergence Analysis

	Coefficient	Robust Standard Error	P>t
β	0.205	0.119	0.119
α	0.123	0.068	0.103
λ	-0.005	0.003	0.116
Breusch-Pagan / Cook-Weisberg Test	0.06		
R-squared	0.17		
No. of Obs.	11		

Robust standard error is based on the Huber/White/sandwich estimator of variance.

Next, we observe relative CO_2 emission per capita for each country over time as illustrated in Figure 7. In the 1960s, Japan's relative CO_2 emission per capita was much higher than the average of East Asia. The less developed countries such as Cambodia and Lao PDR had a low relative CO_2 emission per capita. In the latter 1960s, Singapore had a sudden increase in relative CO_2 emission per capita and replaced Japan as the highest relative CO_2 emission per capita followed by Japan, Hong Kong and Korea. In the 1970s, countries with low relative CO_2 emission per capita continued to be the less developed countries. The results for the 1980s and the 1990s continued on a similar path with Singapore having the highest relative CO_2 emission per capita followed by Japan, Korea and Hong Kong and the less developed countries showing low relative CO_2 emission per capita. These observations of first Japan and then the newly industrialised countries having a higher than average relative CO_2 emission per capita and the less developed countries having low relative CO_2 emission per capita can be considered to have affected the relative CO_2 emission per capita divergence in East Asia.

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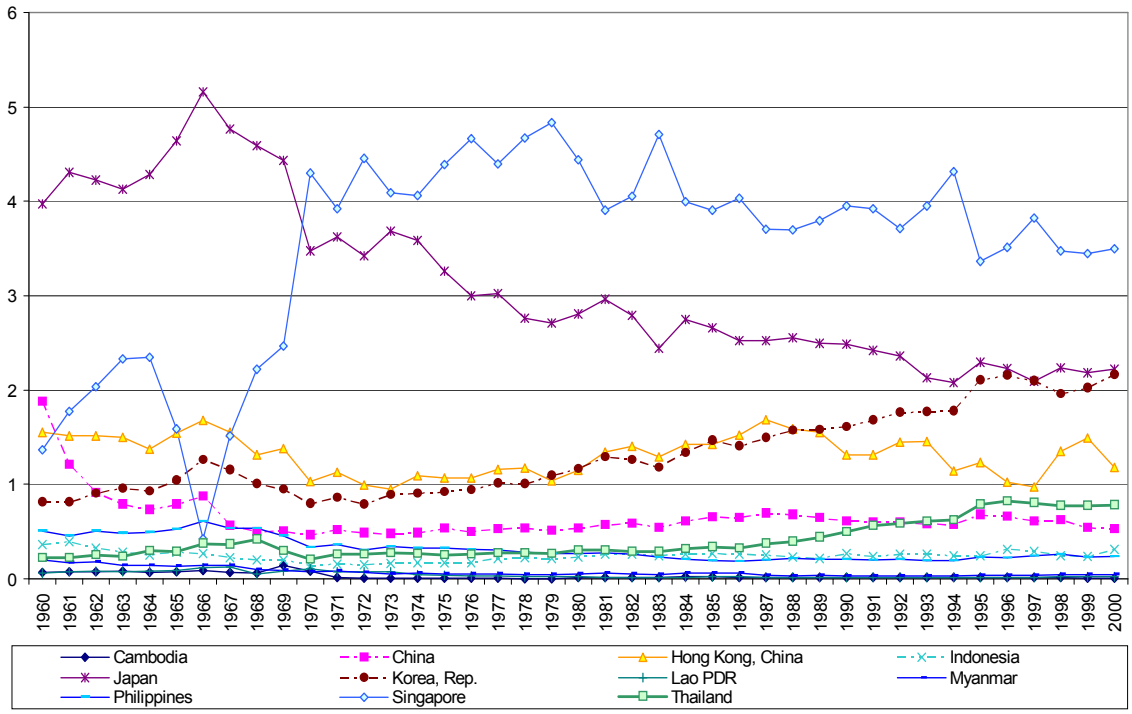
Figure 7. Relative CO2 per capita trend in East Asia



3.2. Forecasting future emission distribution

This paper will next review the results of future distribution for CO_2 emission per capita. Table 4 presents the transition matrix over 1960-2000 and the estimated ergodic distribution for relative CO_2 emission per capita. Like Aldy (2006, 2007)'s findings for the case of relative CO_2 emission per capita, the high probabilities along the diagonal suggests a high degree of persistence in countries' relative CO_2 emission per capita. The long-run steady state (ergodic) distribution of relative CO_2 emission per capita shows that around 70 percent of East Asian countries would be expected to be in the lowest or highest category of relative CO_2 emission per capita and only 21 percent of East Asian countries would have CO_2 emission per capita in two categories around the East Asia countries' average (i.e. between 0.75 and 2 of East Asian countries' average). This suggests that the distribution is not compressed around the East Asian countries' average.

Table 4. Estimates of Transition Matrix and Ergodic Distribution: Relative CO2 Per Capita – 1 Year Transitions -

			Upper Endpoint		
Upper Endpoint	0.5	0.75	1	2	∞
0.5	0.961	0.034	0.000	0.004	0.000
0.75	0.184	0.763	0.053	0.000	0.000
1	0.000	0.080	0.760	0.160	0.000
2	0.015	0.000	0.061	0.864	0.061
∞	0.000	0.000	0.000	0.025	0.975
Ergodic	0.52	0.09	0.06	0.15	0.18

The estimated ergodic distribution is likely to be effected by the sample periods to construct the transition matrix. The ergodic distribution for transition matrices for the periods between 1960 to 2000, 1970 to 2000, 1980 to 2000 and 1990 to 2000 for the East Asian sample is provided in Table 5. It also shows that the estimated ergodic distribution for transition matrices for these sample periods have a similar trend and suggests that the ergodic distributions of relative CO_2 emission per capita are not compressed around the sampled East Asian average. Furthermore, relative CO_2 emission per capita exhibits thinner bottom of the estimated ergodic distribution over shorter periods and thicker top of the estimated ergodic distribution over shorter periods.

Table 5. Estimates of Ergodic Distributions Based on Various Time Periods: Relative CO2 Per Capita – 1 Year Transitions –

			Upper Endpoint		
Time Period	0.5	0.75	1	2	∞
1960-2000	0.52	0.09	0.06	0.15	0.18
1970-2000	0.53	0.09	0.04	0.14	0.20
1980-2000	0.50	0.11	0.03	0.16	0.20
1990-2000	0.45	0.13	0.06	0.13	0.23

Further to the previous one year Markov transition matrix we also performed a five year Markov transition matrix based on the period from 1960 to 2000. As explained by Kremer *et al*. (2001), transitions periods longer than one year reduces the impact on the estimated transition matrix of high frequency fluctuation that happened to be close to the border between different groups at the beginning of the period and depicts more accurately the long-run dynamics than using annual data. According to Table 6, the relative CO_2 emission per capita results of the five year Markov transition matrix were similar to the one year Markov transition matrix and the lowest and highest category (per capita emission less than 0.5 and per capita emission more than 2 of the East Asian average) displayed high probabilities of remaining in the same category and the category around the average showed a low probability of remaining in the same category. The results also show that there was a slight increase in transition probabilities off the three diagonals that were not zero, implying that countries experiencing more than a doubling or less than halving of relative CO_2 emission per capita increases slightly over a five year period compared to a one year. It is reasonable to find this, since the allocated time for CO_2 emission per capita to change is longer in a five year period. The estimated ergodic distribution of the five year transitions were consistent to the results of the distribution of the one year transitions and displayed a non compressed distribution around the East Asian average.

Table 6. Estimates of Transition Matrix and Ergodic Distribution: Relative CO2 Per Capita - 5 Year Transitions -

			Upper Endpoint		
Upper Endpoint	0.5	0.75	1	2	∞
0.5	0.939	0.052	0.005	0.000	0.005
0.75	0.206	0.676	0.118	0.000	0.000
1	0.100	0.100	0.250	0.550	0.000
2	0.016	0.000	0.145	0.742	0.097
∞	0.000	0.000	0.000	0.015	0.985
Ergodic	0.53	0.09	0.05	0.14	0.19

Since the transition period can affect the results, in order to predict future distribution, we have based the estimated ergodic distribution for the five year transition matrices on the following periods to compare with the ergodic distribution from 1960 to 2000. The periods are from 1970 to 2000, from 1980 to 2000 and from 1990 to 2000. As displayed in Table 7, the results of the estimate ergodic distribution of the five year transitions for the relative CO_2 emission per capita were similar to the distribution of the one year transition. For all the periods, the lowest and highest categories had approximately 70 percent of the countries and the two categories in the centre had approximately 20 percent, displaying a non compressed distribution for relative CO_2 emission per capita for the East Asian countries and support the result of the distribution of the one year transition.

Table 7. Estimates of Ergodic Distributions Based on Various Time Periods: Relative CO2 Per Capita – 5 Year Transitions -

			Upper Endpoint		
Time Period	0.5	0.75	1	2	∞
1960-2000	0.53	0.09	0.05	0.14	0.19
1970-2000	0.52	0.10	0.03	0.15	0.20
1980-2000	0.46	0.10	0.04	0.16	0.24
1990-2000	0.45	0.09	0.11	0.09	0.26

4. Conclusions

The 'flying geese' model of industrial upgrading depicts the income convergence or economic development convergence in East Asia. However, how does this convergence of economic development effect the environment? This paper has looked at whether environmental convergence exists in East Asian countries focusing on CO_2 emission. The surge in the consumption of fossil fuel is causing a large increase in CO_2 emission, the main contributor to global warming, which is a serious threat to East Asian countries being exposed to the rise in sea level along the large coastal areas.

The paper conducted an examination of the existence of emission convergence for CO_2 emission per capita across 11 East Asian countries. The result of the deviations, IQRs, the time series analysis and β convergence analysis which tests the representative behaviour of CO_2 emission per capita, as well as the result of the kernel distribution function which examines the intra-distribution dynamics of the emission showed a divergence. Further observation of each country's CO_2 emission per capita showed that this divergence could be explained by the higher than average CO_2 emission per capita of the NIES and Japan and a low CO_2 emission per capita maintained by the less developed countries causing a gap between these two groups.

Concerning future prediction of the convergence of CO_2 emission per capita, the analysis using the Markov transition matrix suggests that the CO_2 emission per capita across the East Asian countries show a non compressed distribution. With East Asian countries continuing to

have a strong industrial growth and inter-regional foreign direct investment being a strong characteristic of the region, these results provide some insight to policy considerations. If we consider that the countries with higher than average emission per capita would adapt more stringent regulations, pollution intensive industries with heavy pollution abatement costs could decide to relocate to countries with less stringent regulations. In order to prevent the behaviour illustrated in the pollution haven hypothesis[7] such as this, policy makers would require careful monitoring and regulations. Furthermore, measures such as reducing fossil fuel related subsidies and introducing CO_2 emission tax such as polluters pay policy could help prevent 'free riding' of natural resources and environmental damage which causes environmental inequality amongst countries.

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[7] The pollution haven hypothesis are supported by empirical studies (e.g. Birdsall and Wheeler, 1993; Mani and Wheeler, 1998; Keller and Levinson, 2002; Cole and Elliott, 2005).

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USING ARDL APPROACH TO COINTEHRATION FOR INVESTIGATING THE RELATIONSHIP BETWEEN PAYMENT TECHNOLOGIES AND MONEY DEMAND ON A WORLD SCALE

Payam MOHAMMAD ALIHA
Ph.D candidate, National University of Malaysia (UKM), Malaysia
payammaliha@gmail.com

Tamat SARMIDI
Associate Professor Dr. at Faculty of Economics and Management, Universiti Kebangsaan Malaysia (UKM), Malaysia
tamat@ukm.edu.my

Abu Hassan SHAAR
Professor Dr. at Faculty of Economics and Management, Universiti Kebangsaan Malaysia (UKM), Malaysia
ahassan@ukm.edu.my

Fathin FAIZAH SAID
Dr. at Faculty of Economics and Management, Universiti Kebangsaan Malaysia (UKM), Malaysia
fatin@ukm.edu.my

Abstract

This paper estimates the relationship between financial innovation and money demand in world countries with a focus on the number of automated teller machines (ATMs) using the ARDL approach to cointegration. In this study, we estimated a conventional money demand model with currency in circulation (M2) as dependent variable and gross domestic product (GDP, constant 2005 US$), interest rate (IRATE), the number of automated teller machines per 100,000 adults (ATM) to take into account for the effects of financial innovation as dependent variables. It covers 215 countries and territories over the period 2004-2013. This paper adopts the bounds testing procedure developed by Pesaran et al. (2001) to test the stability of the long-run money demand and determine the short-run dynamics for all of the countries as a whole. The empirical evidence points to the existence of long-run and cointegrating relationships between variables meaning all of these variables move together in the long run. The speed of adjustment toward long run equilibrium is - 0.4345 which means that the whole system gets back to long run equilibrium at the speed of 43.45 percent. The results confirm that in the short-run, ATM does not impact money demand.

Keywords: Money demand, Financial innovations, Stability, ARDL, Cointegration.
JEL classification: R21, R32

1. Introduction

Over the years, numerous empirical studies have attempted to investigate the stability of money demand given its importance for the successful implementation of monetary policy (see Bahmani-Oskooee and Gelan (2009), Hoffman et al (1995), Bahmani-Oskooee (2001), Adam (1992) and Darrat (1985). Most of the earlier studies in advanced economies including Brunner and Meltzer (1963) found that the demand for money is stable meaning that the monetary authority can effectively control inflation through adjusting the money supply while instability of the money demand hinders the proper monitoring of prices (Hamori, 2008). These results can be extended to developing countries when it comes to a stable money demand function. For instance studies by Suliman and Dafaalla (2011) for Sudan, Bahmani-Oskooee and Gelan (2009), Hamori (2008) for Africa, and Mwenga (1990) and Adam (1992) for Kenya and Dong W. Cho and William Miles for South Korea all found that money demand is stable with exclusion of financial innovation.

However, in light of the recent growth in financial innovation spanning over the last few decades, there are mixed results with regards to the stability of money demand. Therefore, it has become increasingly important to study the stability of money demand as financial innovation can have potential impact on the demand for money through over estimation of the money demand. Prior to the mid-1970s (before introducing financial innovations) when most empirical results showed a stable money demand, a few variables such as the interest rate and output were sufficient to achieve a stable money demand (Goldfeld and Sichel, 1990). With the introduction of the financial innovation, several studies such as Arrau and De Gregorio (1993), Ireland (1995), Attanasio et al (2002), Alvarez and Lippi (2009), Nagayasu (2012), Arrau et al (1995), Mannah-Blankson and Belyne (2004), Hafer and Kutan (2003) and Hye (2009) have attempted to analyze money demand with inclusion of financial innovation.

It is often difficult to measure financial innovation and there are many definitions that capture this definition in the literature. Financial innovations have emerged over time as individuals moved away from holding cash to assets and the use of ATMS, Debit cards, Internet banking, mobile banking, ect. There is still a limited amount of studies that have analyzed the relationship between financial innovation and money demand. Examples of these few studies are those for M. Azali and Kent Mathhews (2001) who model the effect of financial innovation on demand in Malaysia using error correction model and Eu Chye Tan (1997) who conclude that liberalization and innovation in the Malaysian financial system that have not ruled out the existence of stable long run money demand relationships as attested to by the presence of cointegrating vectors, but they render short run relationships unstable.

While most research has yielded great insight to the money demand literature, a vital question that is worth investigating is if the demand for money is still stable given the recent financial innovation developments in Malaysia. Given the limited number of studies on money demand in Malaysia, this paper contributes to the relevant literature by estimating the Malaysian money demand including financial innovation proxies in three different systems: payment instrument (credit card, charge card, debit card, e-money), payment system (RENTAS, Interbank GIRO, FPX and Debit Card) and payment channel (ATM, Mobile Banking, Internet Banking). This study hopes to shed some light on the relationship between these new innovations and money demand one by one. Also, this study is likely to inform policy makers and guide their decision making particularly in terms of monetary policy. The rest of the paper is structured as follows. A review of the theoretical and empirical literature is given in section 2 followed by methodology including a brief overview of the conventional demand for money and econometric approach in Section 3. Section 4 presents the results of the estimation and it ends up with summary in section 5.

2. Literature review

Regarding econometric modelling of the stability of money demand, several cointegration methods have been used over time. The first was the Engel and Granger (1987) cointegration method which uses a two-step procedure to determine a stationary linear combination. It was followed by Adam (1992) and Augustina et al (2010) who apply this method to determine cointegration of money demand and its determinants for Kenya and Nigeria respectively. Although this method has been commonly used in earlier studies, there are some limitations with this two-step procedure. The errors can be transferred from the first step to the second step. In addition, because one variable has to be on the left hand side and others on the right hand side as regressors, the variable that is selected for normalization can affect the outcome and any change in the ordering of the equation could lead to different results (Enders, 2010).

The Johansen andadam Juselius (1990) rank test method for cointegration that is an attempt to improve some of the limitations of the Engel and Granger method by allowing for multiple cointegrating vectors (Enders, 2010). Hoffman et al (1995), Bahmani-Oskooee and Bohl (2000), Sichei and Kamau (2012), Hafer and Kutan (2003), Mannah-Blankson and Belyne (2004), and Suliman and Dafaalla (2011) are examples of the studies that used the Johansen and Juselius rank test. However, mandatory testing for stationarity prior to the cointegration test is its weakness that means one needs to know the order of integration, of which various studies have mainly focused on I(1) variables. The autoregressive distributed Lag (ARDL) model proposed by Pesaran et al (2001) has an advantage over the Johansen and Juselius rank test as it is more flexible in terms of the order of intergration. Also, it is not

necessary to test for stationarity for the ARDL method since both I(0) and I(1) variables can be used rather than using merely I(1) variables. In order to use ARDL method to cointegration to determine stability, we need to apply stability tests such as the (CUSUM)[1] and (CUSUMSQ)[2] tests after cointegration for determining stability of the coefficients (Bahmani-Oskooee and Gelan, 2009). This is because the estimated elasticities could remain unstable after co-integration of the variables. Studies by Bahmani-Oskooee and Gelan (2009), Kiptui (2014) and Ndirangu and Nyamongo (2015) have employed the ARDL approach to cointegration for Kenya However, they failed to account for financial innovation in the money demand specification except for Ndirangu and Nyamongo (2015) who use the currency outside banks/time deposit ratio as a proxy for financial development. The current study overcomes this limitation by incorporating financial innovation in the money demand specification using separate measures of payment instruments (credit card, charge card, debit card, e-money), payment channels (RENTAS, Interbank GIRO, FPX and direct debit) and payment channels (ATM, mobile banking, Internet banking) to capture the effect of financial innovations. Prior to the empirical analysis, it is useful to know the main features of the conventional demand for money function that is done in the next section.

The purpose of this paper can be summarized as follow. 1) To examine the empirical relationship between M2 real monetary aggregates, real income, real interest rate and financial innovation using ARDL cointegration model. 2) To determine the stability of M2 money demand function. 3) To examine the long-run stability of the real money demand function.

3. Methodology

3.1. Theoretical approach: conventional demand for money function

We start the empirical estimation of money demand functions with introducing the long-run, log linear function that is of the form

$$\text{Log } M2_{it} = \beta_0 + \beta_1 \text{Log } GDP_{it} + \beta_2 R_{it} + \beta_3 \text{Log } (ATM_{it}) + e_{it}$$

The conventional money demand $M^d = (Y_t, R_t)$ is misspecified and leads to the bias that gets into the estimated coefficients. Therefore, it has to be enriched with financial innovation (r*) so that it can be represented implicitly as $M^d = (Y_t, R_t, r^*)$. Conventional Demand for Money Function mentioned above is the basis for this specification. The amount of currency in circulation for the 215 countries at the end of December 2013 was used to estimate a demand for currency in circulation. We use a traditional specification of the conventional demand for money, where M2 denotes currency in circulation, GDP denotes real gross domestic product, R is the interest rate, ATM is the number of automated teller machines, and e_t is the error term. We then estimated a demand for M2 with panel regressions with fixed country effects with the goal of checking for cross-section payment technology heterogeneity with t spanning from 2004 to 2013. Data is collected from the official website of the World Bank. The number of ATMs or ATM volume may be positively or negatively related to the demand for currency. In one hand, individuals demand more money since it can be easily accessed. On the other hand, the existence of ATMs reduces the demand for money since individuals can minimize the opportunity cost of idle cash balances. Therefore, ATMs would have a negative impact on currency demand. The overall impact depends on the strengths of negative/positive sides.

[1] cumulative sum of recursive residuals
[2] cumulative sum of squares recursive residuals

3.2. Econometric approach: autoregressive distributed lag (ARDL) models

3.2.1. Definitions

ARDL model was introduced by Pesaran et al. (2001) in order to incorporate I(0) and I(1) variables in same estimation. If the variables are all stationary I(0) then OLS is suitable and if they are all non-stationary I(1) then VECM (Johanson Approach) is recommended. Conventional OLS is not appropriate if at least one variable is I(1). As non-stationary variables change in time so OLS estimates show high t values by mistake as they become inflated due to common time component. In econometric it is called spurious results where R square of the model becomes higher than the Durban Watson Statistic. ARDL is considered a solution to this problem that can handle I(1) variables. Using ARDL model, this section addresses the key question of whether long-run money demand of Malaysia can be influenced by the impact of financial innovation and what are the possible explanations for such strong impacts of financial innovation on the demand for money in this country from 2008 Q1-2015 Q2. Eviews offers powerful time-saving tools for estimating and examining the properties of Autoregressive Distributed Lag (ARDL) models. ARDLs are standard least squares regressions that contain lags of both the dependent variable and independent variables as regressors (Greene, 2008).

ARDL models have become popular method in econometrics as it is able to examine long-run and cointegrating relationships among variables (Pesaran and Shin, 1999). In this section we chose the Autoregressive Distributed Lag (ARDL) modelling approach developed by Pesaran and Pesaran (1997), Pesaran and Smith (1998), and Pesaran et al. (2001). The ARDL has become popular due to a number of advantages compared to other single equation cointegration procedures. It is able to estimate the long and short-run parameters of the model simultaneously yet avoid the problems posed by non-stationary data. Also, there is no need to determine the order of the integration amongst the variables in advance. Other approaches, however, do require that the variables have the same order of integration. In addition, it is statistically much more significant approach for the determination of the cointegration relationship in small samples, while allowing different optimal lags of variables.

Based on Pesaran et al. (1999), the dynamic heterogeneous panel regression can be incorporated into the error correction model using the autoregressive distributed lag ARDL (p,q) technique and described as below (Loayza and Ranciere, 2006):

$$\Delta(y_i)_t = \sum_{j=1}^{p-1} \gamma_j^i \Delta(y_i)_{t-j} + \sum_{j=0}^{q-1} \delta_j^i \Delta(X_i)_{t-j} + \varphi^i[(y_i)_{t-j} - \{ \beta_0^i + \beta_1^i (X_i)_{t-j} \} \varepsilon_{it}$$

where y is the demand for money, X is a set of independent variables including the financial innovation proxy, γ is the short-run coefficients of lagged dependent and δ is the short-run coefficients of lagged independent variables, β are the long-run coefficients, and φ is the coefficient of speed of adjustment to the long-run equilibrium. The subscripts i and t represent country and time, respectively. The long-run money demand regression is placed in the square brackets. Δ is first-difference operator and p is the optimal lag length.

The F test is used to test the presence of long-run relationship. If there is long-run relationship, F test indicates which variable has to be normalized. The null hypothesis for no cointegration among variables in equation (1) is stated as H_0: $\delta_1 = \delta_2 = \delta_3 = 0$ against the alternative hypothesis H_0: $\delta_1 \neq \delta_2 \neq \delta_3 \neq 0$ for our case that includes three independent variables. The F-test having a non-standard distribution depends on (i) if variables of the model are I(0) or I(1), (ii) the number of regressors, and (iii) if the model includes an intercept and/or a trend. The test involves asymptotic critical value bounds, depending whether the variables are I(0) or I(1) or a mixture of both. Two sets of critical values are produced. One set is related to the I(1) series which is called upper bound critical values and the other refers to the I(0) series that is called lower bound critical values. If the F test statistic exceeds upper critical values, it means that there is long-run relationship between the variables regardless of the order of integration of the variables. If the test statistic is less than the upper critical value, the null hypothesis of no cointegration cannot be rejected and if it lies between the bounds, a decision cannot be made without knowing the order of integration of the underlying regressors.

We select the order of the lags in the ARDL model by using either the Akaike Information criterion (AIC) or the Schwarz criterion (SC), before estimation the model by OLS.

Accordingly, 6 lags were chosen. The above equation can be estimated by three different estimators: the mean group (MG) model of Pesaran and Smith (1995), the pooled mean group (PMG) estimator developed by Pesaran et al. (1999), and the dynamic fixed effects estimator (DFE). All three estimators take into account the long-run equilibrium and the heterogeneity of the dynamic adjustment process (Demetriades and Law, 2006) and are computed by maximum likelihood guaranteed to have consistent and efficient estimates of the parameters in a long-run relationship if there is co-integration among variables with the same order of integration.

However, Pesaran and Shin (1999) state that panel ARDL can be used even with variables with different order of integration no matter if they are I (0) or I (1). In addition, the short-run and long-run effects both can be estimated simultaneously from a data set with large cross-section and time dimensions. Finally, the ARDL model produces consistent coefficients despite the possible presence of endogeneity because it includes lags of dependent and independent variables (Pesaran et al, 1999). Finally, the dynamic fixed effects estimator (DFE) that is applied here imposes restrictions on the slope coefficient and error variances to be equal across all countries in the long run. The DFE model further restricts the speed of adjustment coefficient and the short-run coefficient to be equal too. However, the model features country-specific intercepts.

We employ four different types of panel unit root tests: and (i) Levin, Lin and Chu, (ii) Im, Pesaran and Shin, (iii) ADF - Fisher Chi-square, and (iv) PP - Fisher Chi-square to determine the order of integration between all the series in our data-set. Though testing for the order of integration of variables is not important when applying the ARDL model as long as the variables of interest are I(0) and I(1), (Pesaran and Smith, 1995; Pesaran, 1997; Pesaran et al, 1999), these tests are carried out just to make sure that no series exceeds I(1) order of integration. The results indicate that financial innovation has a negative weakly significant impact in the long run and no impact in the short run on money demand according to the DFE estimator. To conclude this argument, financial innovation and money demand have been strange bedfellows. Most studies conclude that as a whole, financial innovation plays a significant role in demand for money.

3.2.2. Background

Specification: An ARDL is a least squares regression containing lags of the dependent and explanatory variables. ARDLs are usually denoted with the notation ARDL $(p, q_1, \dots, q_k)$, where p is the number of lags of the dependent variable, q_1 is the number of lags of the first explanatory variable, and q_k is the number of lags of the kth explanatory variable. An ARDL model may be written as:

$$y_t = \alpha + \sum_{i=1}^{p} \gamma_i y_{t-i} + \sum_{j=1}^{k} \sum_{i=0}^{q_j} X'_{j,t-i} \beta_{j,i} + \epsilon_i \qquad (1)$$

Some of the explanatory variables, x_j , may have no lagged terms in the model (q_j=0). These variables are called static or fixed regressors. Explanatory variables with at least one lagged term are called dynamic regressors.

To specify an ARDL model, you must determine how many lags of each variable should be included (i.e. specify p and $q_1, \dots, q_k$). Fortunately simple model selection procedures are available for determining these lag lengths. Since an ARDL model can be estimated via least squares regression, standard Akaike, Schwarz and Hannan-Quinn information criteria may be used for model selection. Alternatively, one could employ the adjusted R^2 from the various least squares regressions.

Post-Estimation Diagnostics: Long-run Relationships: Since an ARDL model estimates the dynamic relationship between a dependent variable and explanatory variables; it is possible to transform the model into a long-run representation, showing the long run response of the dependent variable to a change in the explanatory variables. The calculation of these estimated long-run coefficients is given by:

$$\theta_j = \frac{\sum_{i=1}^{q_j} \beta_{j,i}}{1 - \sum_{i=1}^{p} \gamma_i} \quad (2)$$

The standard error of these long-run coefficients can be calculated from the standard errors of the original regression using the delta method.

Cointegrating Relationships: Traditional methods of estimating cointegrating relationships, such as Engle-Granger (1987) or Johansen's (1991, 1995) method, or single equation methods such as Fully Modified OLS, or Dynamic OLS either require all variables to be I(1), or require prior knowledge and specification of which variables are I(0) and which are I(1). To alleviate this problem, Pesaran and Shin (1999) showed that cointegrating systems can be estimated as ARDL models, with the advantage that the variables in the cointegrating relationship can be either I(0) or I(1), without needing to pre-specify which are I(0) or I(1). Pesaran and Shin also note that unlike other methods of estimating cointegrating relationships, the ARDL representation does not require symmetry of lag lengths; each variable can have a different number of lag terms. The cointegrating regression form of an ARDL model is obtained by transforming (1) into differences and substituting the long-run coefficients from (2):

$$\Delta y_t = -\sum_{i=1}^{p-1} \gamma_i^* \Delta y_{t-1} + \sum_{j=1}^{k} \sum_{i=0}^{q_j-1} \Delta X'_{j,t-i} \beta_{j,i}^* - \hat{\phi} EC_{t-1} + \epsilon_i \quad (3)$$

where

$$EC_t = y_t - \alpha - \sum_{i=0}^{q_j} X'_{j,t} \hat{\theta}_j$$

$$\phi = 1 \quad \sum_{i=1}^{p} \hat{\gamma}_i \quad (4)$$

$$\gamma_i^* = \sum_{m=i+1}^{p} \hat{\gamma}_m$$

$$\beta_{j,i}^* = \sum_{m=i+1}^{q_j} \beta_{j,m}$$

The standard error of the cointegrating relationship coefficients can be calculated from the standard errors of the original regression using the delta method.

Bounds Testing: Using the cointegrating relationship form in Equation (3), Pesaran, Shin and Smith (2001) describe a methodology for testing whether the ARDL model contains a level (or long-run) relationship between the independent variable and the regressors. The Bounds test procedure transforms (3) into the following representation:

$$\Delta y_t = -\sum_{i=1}^{p-1} \gamma_i^* \Delta y_{t-1} + \sum_{j=1}^{k} \sum_{i=0}^{q_j-1} \Delta X'_{j,t-i} \beta_{j,i}^* - \rho y_{t-1} - \alpha - \sum_{j=1}^{k} X'_{j,t-1} \delta_j + \epsilon_t \quad (5)$$

The test for the existence of level relationships is then simply a test of

$$\rho = 0$$

$$\delta_1 = \delta_2 = \cdots = \delta_k = 0 \quad (6)$$

The coefficient estimates used in the test may be obtained from a regression using (1), or can be estimated directly from a regression using (5).The test statistic based on Equation (5) has a different distribution under the null hypothesis (of no level relationships), depending on whether the regressors are all I(0) or all I(1). Further, under both cases the distribution is non-standard. Pesaran, Shin and Smith provide critical values for the cases where all regressors are I(0) and the cases where all regressors are I(1), and suggest using these critical values as bounds for the more typical cases where the regressors are a mixture of I(0) and I(1).

4. Estimation

According to unit root tests (refer to appendix), MD, GDP, IRATE and ATM have unit root [I(1)] at %5 significance level, however, they become stationary at first difference. Then, we estimate the standard ARDL model with 6 lags (and fixed effects) as below:

D(LMD) = -0.0295 + 0.0064*D(LMD(-1)) - 0.0302*D(LMD(-2)) + 0.1698*D(LMD(-3)) - 0.0623*D(LMD(-4)) - 0.0011*D(LMD(-5)) + 0.1316*D(LMD(-6)) + 1.1832e-12*D(GDP(-1)) + 4.7661e-13*D(GDP(-2)) + 8.1629e-15*D(GDP(-3)) - 1.4373e-13*D(GDP(-4)) - 9.7703e-14*D(GDP(-5)) - 1.2590e-12*D(GDP(-6)) + 0.0013*D(IRATE(-1)) + 0.0006*D(IRATE(-2)) + 0.0006*D(IRATE(-3)) + 0.0020*D(IRATE(-4)) + 0.0004*D(IRATE(-5)) - 0.0001*D(IRATE(-6)) + 0.0009*D(ATM(-1)) + 0.0003*D(ATM(-2)) + 0.0009*D(ATM(-3)) + 0.0006*D(ATM(-4)) - 7.6456e-05*D(ATM(-5)) - 0.0007*D(ATM(-6)) + 0.0023*LMD(-1) + 2.1280e-15*GDP(-1) + 0.0002*IRATE(-1) - 6.0507e-05*ATM(-1)

And obtain Akaike info criterion and Schwarz criterion. Then we repeat the estimation with 4 and 2 lags, other things remain unchanged and we put down AIC and SC values in the table below.

Table (1): Estimated Akaike info criterion and Schwarz criterion for the number of lags

Number of Lags	AIC	SC
6	-2.94	-1.23
4	-2.18	-1.02
2	-1.98	-1.00

From table, we see that the model with 6 lags has the lowest value of AIC and SC so it is the best model.

To test whether or not the variables move together in the long run, we run Wald Test as below:

Table (2): Wald Test

Test Statistic	Value	df	Probability
Null Hypothesis: C(26)=C(27)=C(28)=C(29)=0			-
F-statistic	9.671835	(4, 139)	0.0000
Chi-square	38.68734	4	0.0000

F-statistics should be compared with Pesaran critical value at %5 significance level corresponding to no intercept and no trend. Based on this comparison, we can reject null hypothesis which means that the coefficients are not equal to zero jointly. In other words, LMD(-1), GDP(-1), IRATE(-1) and ATM(-1) have long run association which means all of these variables move together in the long run. Next, we estimate the long run model as LS LMD C GDP IRATE ATM and obtain residual as below:

LMD = 22.5969 + 0000000000004.0*GDP + 0.0006*IRATE + 0.0089*ATM

We copy and paste it and rename it as ECT (Error Correction Term). Then we run the model with 6 lags with an added variable ECT(-1), that is, lagged ECT as following:

D(LMD) = 0.1077 - 0.2944*D(LMD(-1)) - 0.2098*D(LMD(-2)) + 0.0569*D(LMD(-3)) - 0.1322*D(LMD(-4)) - 0.1069*D(LMD(-5)) + 0.0572*D(LMD(-6)) + 1.2386e-12*D(GDP(-1)) + 2.0927e-12*D(GDP(-2)) + 2.0304e-12*D(GDP(-3)) + 1.9457e-12*D(GDP(-4)) + 1.1353e-12*D(GDP(-5)) + 5.8933e-13*D(GDP(-6)) + 0.0038*D(IRATE(-1)) + 0.0045*D(IRATE(-2)) + 0.0045*D(IRATE(-3)) + 0.0063*D(IRATE(-4)) + 0.0046*D(IRATE(-5)) + 0.0021*D(IRATE(-6)) - 0.0020*D(ATM(-1)) - 0.0034*D(ATM(-2)) - 0.0019*D(ATM(-3)) - 0.0014*D(ATM(-4)) - 0.0029*D(ATM(-5)) - 0.0034*D(ATM(-6)) - 0.4345*ECT(-1)

D(LMD(-1), ..., D(LATM(-6)) are all short run coefficients and ECT is the speed of adjustment toward long run equilibrium, meaning that the whole system gets back to long run equilibrium at the speed of 43.45 percent. In other words, the deviation of money demand from long run value is corrected in a bit more than two years. It should be negative and significant.

To test for short run causality, we use Wald Test to find out if the coefficients of the lagged variables are jointly equal to zero or not.

Table (3): Wald Test

Test Statistic	Value	df	Probability
Null Hypothesis:			
C(8)=C(9)=C(10)=C(11)=C(12)=C(13)=0			
F-statistic	0.847067	(6, 142)	0.5357
Chi-square	5.082400	6	0.5333
C(14)=C(15)=C(16)=C(17)=C(18)=C(19)=0			
F-statistic	6.075407	(6, 142)	0.0000
Chi-square	36.45244	6	0.0000
C(20)=C(21)=C(22)=C(23)=C(24)=C(25)=0			
F-statistic	1.781310	(6, 142)	0.1070
Chi-square	10.68786	6	0.0985

According to the result, for GDP and ATM, we cannot reject the null hypothesis so there is no short run causality from GDP and ATM to LMD. However, we can reject null hypothesis for IRATE meaning that there is short run causality from interest rate.

5. Summary

In this study, we estimated a conventional money demand model (as described above) with currency in circulation (M2) as dependent variable and gross domestic product (GDP, constant 2005 US$), interest rate (IRATE), the number of automated teller machines per 100,000 adults (ATM) to take into account for the effects of financial innovation as dependent variables. It covers 215 countries and territories over the period 2004-2013.

ARDLs are standard least squares regressions which include lags of both the dependent variable and explanatory variables as regressors. It is a method of examining long-run and cointegrating relationships between variables. The requirement for this estimation is that variables should be integrated of order 1 and some maybe (not necessarily) of order zero so ARDL requirements for estimation are satisfied. The findings of this estimator is as follow: 1) Lagged variables, that is, MD(-1), GDP(-1), IRATE(-1) and ATM(-1) have long run association which means all of these variables move together in the long run, 2) The speed of adjustment toward long run equilibrium is - 0.4345. It should be negative and significant that it actually is. In other words, the whole system gets back to long run equilibrium at the speed of 43.45 percent, 3) There is no short run causality running from GDP and ATM to MD, and 4) There is short run causality running from IRATE to MD. Again, the results confirm that in the short-run, ATM does not impact money demand.

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A NOTE ON OPTIMAL INCOME REDISTRIBUTION IN A CREATIVE REGION [1]

Amitrajeet A. BATABYAL
Department of Economics, Rochester Institute of Technology, 92 Lomb Memorial Drive, Rochester, NY 14623-5604, USA.
aabgsh@rit.edu

Abstract

We study optimal income redistribution in a region that is creative in the sense of Richard Florida and thereby extend aspects of the recent analysis in Batabyal and Beladi (2017). Using the terminology of these researchers, members of the creative class are either artists or engineers. This bipartite grouping stems from the manner in which creative capital is acquired by the artists and the engineers. Specifically, we show that when the savings rates of the artists and the engineers comprising the creative class satisfy a particular inequality, it is possible for a regional authority (RA) to uniquely redistribute income between these two groups in a way that achieves the so called "golden rule" stock of physical capital.

Keywords: Creative Capital, Creative Class, Golden Rule, Income Redistribution, Region
JEL classification: R11, D31

1. Introduction

According to the urbanist Richard Florida (2002, p. 68), the creative class "consists of people who add economic value through their creativity." This class consists of professionals such as doctors, lawyers, scientists, engineers, university professors, and, notably, bohemians such as artists, musicians, and sculptors. The distinguishing feature of these people is that they possess creative capital which is defined to be the "intrinsically human ability to create new ideas, new technologies, new business models, new cultural forms, and whole new industries that really [matter]" (Florida, 2005, p. 32).

With these twin definitions of the creative class and creative capital in place, we can ask the following question: Is there any difference between the well-known notion of human capital and Florida's newer concept of creative capital? To answer this question, first note that in empirical research, the concept of human capital is typically measured with education or with education based indicators. This notwithstanding, Marlet and Van Woerkens (2007) have rightly argued that the accumulation of creative capital does not always depend on the acquisition of a formal education. Put differently, while the creative capital accumulated by some members of Florida's creative class (doctors, engineers, university professors) does depend on the completion of many years of formal education, the same is not always true of other members of this creative class (artists, painters, poets). Individuals in this latter group may be innately creative and hence possess creative capital despite having very little or no formal education.

Therefore, we are in agreement with Marlet and Van Woerkens (2007) and we would like to emphasize the point that there is little or no difference between the concepts of human and creative capital when the accumulation of this creative capital depends on the completion of many years of formal education. In contrast, there can be a lot of difference between the concepts of human and creative capital when the accumulation of this creative capital does not have to depend on the completion of a formal education. Simply put, because creative capital is of two types, it is a more general concept than the notion of human capital.

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[1] Batabyal acknowledges financial support from the Gosnell endowment at RIT. The usual disclaimer applies.

In a recent paper, Batabyal and Beladi (2017) point out that although there exist many empirical or case study based analyses of the creative class and the impact that this class has on regional economic growth, there are no theoretical studies of the creative class that explicitly model the idea that the creative capital possessed by the members of a region's creative class is of two possible types. As such, they provide the first theoretical analysis of economic growth in a region that is creative in the sense of Richard Florida and where members of the creative class belong to one of two possible groups.

A key contribution of Batabyal and Beladi (2017) lies in its explicit analysis of income distribution issues within the creative class in the region under study. In this regard, two results from the paper are germane. First, the paper shows that when the savings rates of the two groups that comprise the creative class are identical, the distribution of income in the creative region has no effect on the steady state physical capital per creative class member ratio. Second, the paper determines the optimal income redistribution rule that maximizes the average steady state income of the creative class.

In this note we extend aspects of the analysis in Batabyal and Beladi (2017). Specifically, we show that when the savings rates of the two groups that comprise the creative class satisfy a particular inequality, it is possible for a regional authority (RA) to uniquely redistribute income between these two groups in a way that achieves the so called "golden rule" stock of physical capital. The remainder of this note is organized as follows. Section 2 delineates the Batabyal and Beladi (2017) theoretical framework that we work with here. Section 3 shows that there exists a unique income redistribution rule that achieves the "golden rule" stock of physical capital. Section 4 concludes and then suggests two ways in which the research described in this note might be extended.

2. The Theoretical Framework

Consider an intertemporal regional economy that is creative in the sense of Richard Florida. Time is discrete. Let N_t denote the number of persons at time t who comprise the creative class in this region. There are two groups of persons. The first group refers to members of the creative class who are innately creative and hence possess creative capital with little or no formal schooling. These are the *artists*. At any time t, the total number of artists in our creative region is N_t^A. The second group refers to the creative class members who are creative as a result of the acquisition of creative capital through many years of education. These are the *engineers*. Let N_t^E denote the total number of engineers at time t in our creative region. Note that the relationship

$$N_t = N_t^A + N_t^E, \forall t, \tag{1}$$

holds in our creative region.

Each member of the creative class inelastically supplies one unit of effort. Hence, at any time t, every artist receives a wage (unit income) denoted by w_t^A and every engineer receives a wage denoted by w_t^E. Using these two pieces of information and equation (1), we can write

$$N_t w_t = N_t^A w_t^A + N_t^E w_t^E, \forall t, \tag{2}$$

for the aggregate economy of our creative region. We denote the wage (unit income) ratio in our creative region by $w_t^A / w_t^E = \phi$ where $\phi \in (0, \infty)$. It is important to comprehend that ϕ is the income distribution parameter in this note. Obviously, when $\phi = 1$, the incomes of the two groups are equal. However, $\phi \in (0, \infty)$. Therefore, to the right of the point $\phi = 1$, as $\phi \to \infty$ we have inequality of one kind because the income of artists becomes much *larger* than the income of engineers. In contrast, to the left of the point $\phi = 1$, as $\phi \to 0$ we have inequality of a second kind in that the income of artists becomes much *smaller* than the income of engineers. Finally, the proportion of artists in the creative class population is $\zeta \in (0, 1)$ and hence the proportion of engineers in this same population is $(1 - \zeta)$. The creative class population grows at the constant rate $c > 0$.

The members of the creative class collectively produce a knowledge good such as a laptop computer that is also the final consumption good. The price of this knowledge good is

set equal to one at all points in time. The output of this knowledge good per creative class member at time t is $q_t = Q_t/N_t$ and this output is generated by a Cobb-Douglas production function which, in its intensive form, can be written as

$$q_t = f(k_t) = k_t^{\alpha}, \tag{3}$$

where $\alpha \in (0,1)$ and $k_t = K_t/N_t$ is the physical capital per creative class member ratio. There are constant returns to scale in production and we assume that the equilibrium wage and the interest rate (r_t) are set equal to the respective marginal productivities.

The savings rates of the artists and engineers are constants denoted by $\lambda^A \in (0,1)$ and $\lambda^E \in (0,1)$ respectively. For most of their paper, Batabyal and Beladi (2017) suppose that artists save less then engineers and hence these two savings rates satisfy

$$0 < \lambda^A < \lambda^E < 1. \tag{4}$$

It is this inequality in (4) that we alter in our subsequent analysis in this note. However, before we can get to this analysis, it will be necessary to state a particular result obtained by Batabyal and Beladi (2017). Specifically, these researchers show that the steady state physical capital per creative class member ratio or k^{SS} is given by

$$k^{SS} = \left\{\frac{\lambda(1-\alpha)}{1+c}\right\}^{1/(1-\alpha)}, \tag{5}$$

where λ satisfies

$$\lambda = \frac{\phi\zeta\lambda^A + (1-\zeta)\lambda^E}{\phi\zeta + (1-\zeta)}. \tag{6}$$

We are now in a position to demonstrate that there exists a unique income redistribution rule that achieves the "golden rule" stock of physical capital.

3. The Unique Income Redistribution Rule

Let us begin by denoting the unique income distribution rule that we seek by ϕ^U. Next, let k^{GR} denote the "golden rule" stock of physical capital. Two points about k^{GR} are now worth emphasizing. First, adapting the notion of a golden rule stock of physical capital from standard economic growth theory[2] to our creative region, we would say that k^{GR} is the physical capital per creative class member ratio that maximizes consumption per creative class member in the region under study. Second and once again adapting from standard economic growth theory, the golden rule stock of physical capital is given by

$$f'(k) = c. \tag{7}$$

In light of equation (7), let us differentiate the production function in equation (3). We get $\alpha k^{\alpha-1} = c$. This last expression can be simplified to give

$$k^{GR} = \left(\frac{\alpha}{c}\right)^{1/(1-\alpha)}. \tag{8}$$

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2 See Acemoglu (2009, pp. 42-43) for additional details on the golden rule physical capital stock.

The next step is to set the steady state physical capital per creative class member ratio equal to the golden rule stock of physical capital. In other words, we want to set $k^{SS} = k^{GR}$ in equation (5). This gives us

$$\left(\frac{\alpha}{c}\right)^{1/(1-\alpha)} = \left\{\frac{\lambda(1-\alpha)}{1+c}\right\}^{1/(1-\alpha)}. \tag{9}$$

Equation (9) can be simplified to give us an equation for λ. That equation is

$$\lambda = \frac{\alpha(1+c)}{c(1-\alpha)}. \tag{10}$$

Finally, using equation (10) and the definition of λ given in equation (6), we can solve explicitly for the unique income redistribution rule ϕ^U. We get

$$\phi^U = \left(\frac{1-\zeta}{\zeta}\right)\left\{\frac{\lambda^E - \frac{\alpha(1+c)}{c(1-\alpha)}}{\frac{\alpha(1+c)}{c(1-\alpha)} - \lambda^A}\right\}. \tag{11}$$

Inspecting equation (11), it should be clear to the reader that ϕ^U is *unique* because it is a well-defined function of unique constants. In addition, the ratio $(1-\zeta)/\zeta$ on the right-hand-side (RHS) of equation (11) is positive. Therefore, the product of the two ratios on the RHS of equation (11) and hence ϕ^U will be positive as long as for $\lambda^A < \lambda^E$, we have

$$\lambda^E - \frac{\alpha(1+c)}{c(1-\alpha)} > 0 \tag{12}$$

and

$$\frac{\alpha(1+c)}{c(1-\alpha)} - \lambda^A > 0. \tag{13}$$

Combining the inequalities in (12) and (13), we see that the unique income redistribution rule given by ϕ^U is positive as long as the following inequality

$$0 < \lambda^A < \left(\frac{\alpha}{1-\alpha}\right)\left(\frac{1+c}{c}\right) < \lambda^E < 1 \tag{14}$$

holds. We have just demonstrated that as long as the inequality in (14) holds, the RA in our creative region will be able to use the unique income redistribution rule ϕ^U to redistribute income in a way that achieves the "golden rule" stock of physical capital. This completes our discussion of optimal income redistribution in a creative region.

4. The Unique Income Redistribution Rule

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5. Conclusions

In this note we studied optimal income redistribution in a region that was creative in the sense of Richard Florida and thereby extended parts of the analysis in Batabyal and Beladi (2017). Using the language of these researchers, members of the creative class were either artists or engineers. This bipartite grouping stemmed from the manner in which creative capital was acquired by the artists and the engineers. Specifically, we showed that when the savings rates of the artists and the engineers comprising the creative class satisfied a particular inequality, it was possible for a regional authority (RA) to uniquely redistribute income between these two groups in a way that achieved the "golden rule" stock of physical capital.

The analysis in this note can be extended in a number of different directions. In what follows, we suggest two possible extensions. First, it would be useful to extend the analysis conducted here by considering the case in which one group (artists or engineers) produce an intermediate good which is then used by the other group to produce the final consumption good. Second, it would also be informative to embed the economy of the creative region analyzed here in a stochastic environment and then analyze the impact that uncertainty about the actual savings rates of either artists and/or engineers has on the functioning of the regional economy under study. Studies that analyze these aspects of the underlying problem will provide additional insights into the nexuses between the activities of artists and engineers in a creative region and aggregate economic performance in this same region.

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AGGLOMERATION ECONOMICS IN REGIONS: THE CASE IN THE RUSSIAN INDUSTRY

Svetlana RASTVORTSEVA
World Economy Department - National Research University Higher School of Economics, Russia,
http://www.hse.ru
Srartvortseva@gmail.ru

Abstract
The paper deals with the issues of economic activity location in the Russian regions, that is influ-enced not only by factors "first nature" - the presence of minerals, fertile land, favorable geographic position, but also factors of a "second nature", in particular, the agglomeration effects and the econ-omy of scale. Analysis of geographic concentration and regional specialization reflects the general trend of the location of industrial production, investment and human resources, provides the necessary information basis for a balanced economic policy.
Keywords: New Economic Geography, Regional Economics, Location Theory, the Geographic Concentration of Economic Activity, Regions of Russia
JEL classification: R11, R12

1. Introduction

The research of tendencies of the spatial location, arising and developing processes of concentra-tion and industrial agglomeration and changes of territorial specialization allows implementing the regional policy purposefully. It is important to realize what conditions shall be created for attraction of new productions; what population size will be in the future and due to what its change will occur; whether submission of aid grant will obtain proper effect or not; what transportation directions shall be primarily developed. Currently allocation theories have failed: factors of the "first nature" don't ex-plain the efficiency of development of some type of economic activities and their clustering in certain regions. Due to improvement of the existing scientific provisions in this sphere such mainstreams in science as new economic geography, new and newest trade theory have appeared, the prerequisites for their association into a unified doctrine are created. Theoretic provisions in the regions of various countries are tested continuously. The empirical analysis on the basis of the Russia's regions allowed to demonstrate a certain specifics and to reveal some contradiction in the provisions of the existing theories of the allocation.

2. Development of allocation theories

Modern economic science considers the provisions of allocation theories in two main directions: from the perspective of a new economic geography (in terms of study and explanation of economics concentration in certain regions) and from the perspective of a new trade theory (explanation of the provisions of cross-border regions under certain trade conditions). The validity check of the theoretical provisions in the regional economics of the countries of the world will allow to introduce new aspects to development of this field of knowledge, to serve not only as a subject for additional studies, but as a basis for review and supplement of the allocation theories.

The relevant objective, to solution of which the modern research in the sphere of the regional economics is oriented is to create a unified theory explaining the process of spatial concentration and spread of the population, human resources, other factors of production and population welfare (Ottaviano et al., 2003). In 2008, an American economist, Paul Krugman, was awarded the Nobel Memorial Prize in Economic Sciences for his attempt to unite theories of allocation and trade. At that, relevance of the study in this sphere grows.

Let us underline the place and role of the national (including the Soviet) science in development of this field of knowledge. It is known that the classics in allocation theory are A. Weber, J. Thünen, A. Lösch, W. Christaller, D. North, A. Marshall, W. Isard and other

foreign researchers. However this direction was developed to the best advantage and also among Russian scientists in the 60s-70s of the 20th century. Among them: V.S. Nemchinov, A.Ye. Probst, N.N. Nekrasov, A.G. Granberg, Yu.A. Shatalin, I.G. Shilin, A.G. Aganbeguan, A.T. Khruschyov, N.T. Agafonov, P.Ya. Baklanov, M.K. Bandman, etc. Interpretation complexity of the results of their studies in the modern conditions lies in the fact that they were drawn up for planned economy. But it should be noted that a range of the best practices of the soviet authors anticipated foreign studies, and separate conclusions remained relevant to this day.

This Paper we will not enumerate the modern Russian researchers who are involved in development of allocation theory, for fear for disregarding anyone. Such review shall be a subject of a separate publication. Here we can refer to a remarkable work "Evolution of scientific views to allocation theory" (authors Ye.G. Animitsa, P.Ye. Animitsa, O.Yu. Denisova) and agree with the authors on the fact that further studies of our scientists in the field of allocation, development of relations of spatial economic and social systems, study of localization and functioning of economic activity of separate territories considering the practices of new economic geography will allow to make a significant contribution to regional economics (Animitsa et al., 2014).

3. Concentration, agglomeration, specialization: issues of terminology

Allocation of economic activity in a region is defined by level of concentration, agglomeration and *specialization*. If the latter shall be exactly considered relatively to the region and evaluate the degree of dominance of any type of economic activity (or its uniform distribution), then the difference between concentration and agglomeration is not so evident in the research literature. Let us begin with definition of concentration.

Concentration shall be defined in relation to a type of economic activity, sector, subsector, industrial group, etc., and means the degree of clustering or sparseness of manufacturing within a certain territory It is necessary to differ absolute and relative concentration. Industrial sector is *absolutely concentrated*, if several countries, regardless of their sizes, account for significant proportions in total volume of this production (Midelfart-Knavik et al., 2000). Industrial sector is *relatively concentrated*, if any one type of activity differs from those which are in average the most common in the industrial output in the countries. Neoclassical theory usually deals with relative concentration, new economic geography – with absolute one, new trade theory provides both types (Haaland et ak., 1999).

We consider that concentration reflects distribution of certain types of economic activity over geographical space, while *agglomeration* is indicative of practicality of allocation of widely different types of activity within common territory. For example, metallurgy of ferrous and non-ferrous metals in the Sverdlovsk Region is concentration, and clustering of companies of various production branches in the Belgorod Region is agglomeration. Both concentration and agglomeration may take place in one and the same region, but agglomeration is more common process, as it concerns several industrial cross-sections. We consider that the statement "agglomeration process is follow-up concentration of economic activity in a region (city)" is justifiable, but this is not to say that concentration is agglomeration process.

4. Agglomeration and its types

In view of the fact that among economists and geographers the term "agglomeration" is associated rather with urban agglomerations (a certain type of settlement system consisting of several cities), we offer to dwell upon this scientific concept. “Agglomeration - the clustering of economic activity, created and sustained by some sort of circular logic-occurs at many levels, from the local shopping districts that serve surrounding residential areas within cities to specialized economic regions like Silicon Valley (or the City of London) that serve the world market as a whole” (Fujita et al., 1999, p.1).

The term *agglomeration* was firstly introduced by Alfred Weber in 1905 to designate occurring mutual attraction between companies located within one territory. Now, economic literature provides a a clear cut distinction between two types of agglomeration (depending on occurring externalities) – location of companies of one-type activity and different activities within one territory.

In the first case it is accepted to mention *localization economics*. Here we have endogenous effects due to specialization (allocation externalities) and exogenous sources of supplementary benefit. A. Marshall was a pioneer in this research field. He demonstrated that interaction between companies within one territory leads to development of productivity of all production factors. Such agglomeration is empirically assessed by concentration indices.

In the second case, when companies of different types of economic activity prefer to locate within one territory, it is accepted to speak of *urbanization economics*. It is just a place where the term crosses "urban" agglomeration which is more accepted in Russian economic geography. Companies' benefits are increased due to clustering of economic activity and related to variety. Basic principle of economic mechanism of agglomeration process in the region consists in the fact that at production of various consumption and intermediate goods three groups of the factors are of certain importance: increasing outputs (at the level of a separate company), transportation costs and labor migration as well as consumers, respectively.

5. Study methodology

To analyze allocation of certain types of economic activity in the regions we may use a conventional localization index:

$$LQ = \frac{E_{ij}}{E_i} \Big/ \frac{E_j}{E} = \frac{E_{ij}}{E_j} \Big/ \frac{E_i}{E}, \qquad (1)$$

where LQ – location quotient;
E_{ij} – number of people involved in economic sector j in region i;
E_i – total number of people involved in region i;
E_j – number of people involved in economic sector j;
E – total number of people involved in country
j – economic sector;
i – region.

The location quotient shows to what extent concentration of a certain type of economic activity exceeds the national average. That is, the location quotient defines the region relative to particular characteristics of manufacturing. Calculation of the quotient may be carried out not only by number of people involved in the economic sector, but also by production volume and cost of capital funds.

This quotient has a good application-oriented purpose and widely used in terms of development and implementation of regional economic policy. Earlier in the paper (Rastvortseva et al., 2013) we suggested and tested the procedure with the application of location quotient allowing to reveal a potential cluster in a region. For example, five economical clusters were empirically revealed in the Belgorod Region: agroindustrial, extracting, metallurgy industry, machine and equipment industry and construction engineering.

One more methodical tool of analysis of economic activity location is*Herfindahl–Hirschman Index* (*HHI*). The *Herfindahl–Hirschman Index* may also be used for assessment of geographic concentration (HHI_j^C), and for regional specialization (HHI_i^S):

$$HHI_j^C = \sum_{i=1}^{n} \left(\frac{E_{ij}}{E_j} \right)^2, \quad (3)$$

$$HHI_i^S = \sum_{j=1}^{m} \left(\frac{E_{ij}}{E_i} \right)^2 , \quad (4)$$

The Herfindahl–Hirschman Index is an *absolute measure of concentration or specialization*. The Herfindahl Index increases with growth of the degree of concentration or specialization achieving the upper limit 1 when industry *j* is concentrated in one region or region *i* is specialized only in one industry. The main disadvantage of the HHI is sensitivity of its lower limit to number of observations: the lowest level of concentration is 1/*n* (when all regions have equal shares in industry *j*), and the lowest specialization 1/*m* (when all types of economic activity have equal share in region *i*). As an absolute measure this index has one more important disadvantage: regions large by the index due to their high proportion influence significantly on changes in concentration / specialization (the index is shifted to the side of large regions). The concentration degree of economic activity on the regions shall be assessed by the Gini index (*G*).

The Krugman Dissimilarity Index (*KDI*) is *a relative measure of concentration or specialization* The Krugman Index give an estimation by separate sectors of economy (KDI_j^C) and specialization by regions (KDI_i^S):

$$KDI_j^C = \sum_{i=1}^{n} \left| \frac{E_{ij}}{E_j} - \frac{E_i}{E} \right| , \quad (6)$$

$$KDI_i^S = \sum_{j=1}^{m} \left| \frac{E_{ij}}{E_i} - \frac{E_j}{E} \right| . \quad (7)$$

The Krugman relative index of specialization / concentration is used for comparison of one region/ economic sector at large. The index value varies within 0 (identical territorial / sectoral structures) to 2 (absolutely heterogeneous structures).

The concentration indices CR_3, CR_4, CR_5 shows what proportion of people involved in industrial sector is concentrated in three, four or five regions largest by this index:

$$CR_{3j} = \sum_{i=1}^{3} \frac{E_{ij}}{E_j} , \quad (8)$$

$$CR_{4j} = \sum_{i=1}^{4} \frac{E_{ij}}{E_j} , \quad (9)$$

$$CR_{5j} = \sum_{i=1}^{5} \frac{E_{ij}}{E_j} . \quad (10)$$

6. Results of analysis of agglomeration processes in regions

Analysis of the HHI dynamics shows that the Russia's regions have the largest degree of concentration by index of fixed capital expenditures. Till 1999 the concentration index had been increased in a sustained way up to 0.0486, then till 2010 it decreased to 0.029 and further it did not exceed 0.0345 (2013).

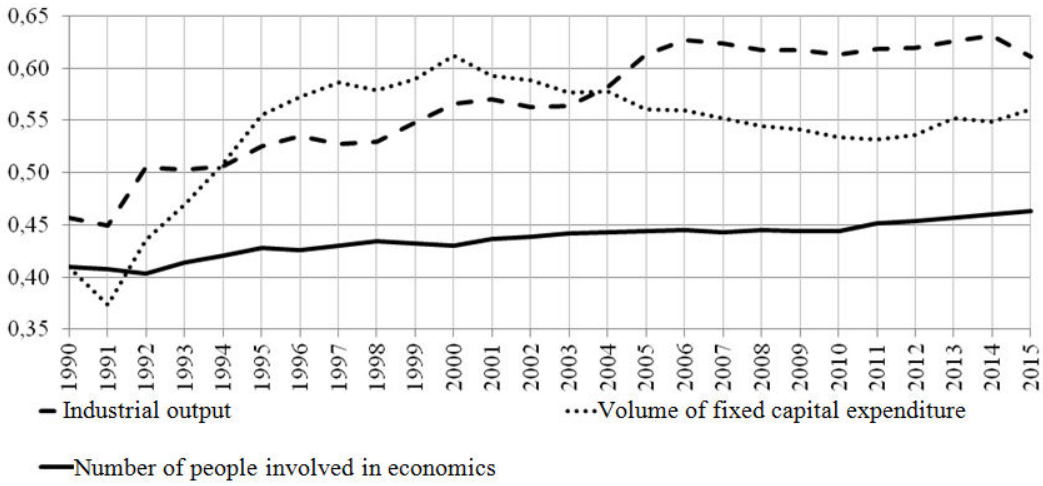
The minimum concentration index but with stable growth trend takes place by the number of people involved in economics. We consider that in connection with significant sizes of the country territory the Russia's population is not marked by high mobility. However even low mobility leads to gradual increase of concentration of human resources in separate regions and consequently to growth of socio-economic inequality. An exception is 2013 – the HHI decreased from 0.0266 to 0.0239 units.

High degree of concentration the regions have by the industrial output index. It is more sensitive to effect of the globalization factors: till 2006 the degree of its concentration in the Russia's regions had stable trend to growth, then smoothly decreased till 2010. The HHI

varies within the period under analysis (from minimum value 0.0234 in 1991 to maximum 0.0439 in 2013).

Let us consider the dynamics of the Gini index by the same indices (Fig. 1).

Figure 1: Inequality dynamics of the Russian regions in 1990-2015, Gini Index



Source: realised by author

The inequality dynamics of the Russian regions by socioeconomic indices has the similar pattern as concentration. The Gini Index by the number of people involved in economics almost completely re-peats the trajectories of the Herfindahl–Hirschman Index, has steady growth, its significance is behind the indices of industrial production and investments. It may be noted that some decrease of the degree of concentration of people involved in economics in 2013 had no effect on positive growth dynamics of inequality of the regions by the index.

High degree of concentration of fixed capital expenditures in 1999 leaded to maximum level of the interregional inequality in 2000. At large the dynamics trajectories of the indices are similar, but the Gini Index variation amplitude is less prominent.

Similar conclusions may also be made on terms of concentration and inequality of the Russian re-gions by the industrial production index. We may make a conclusion that concentration of economic resources and industrial production enhance the interregional inequality.

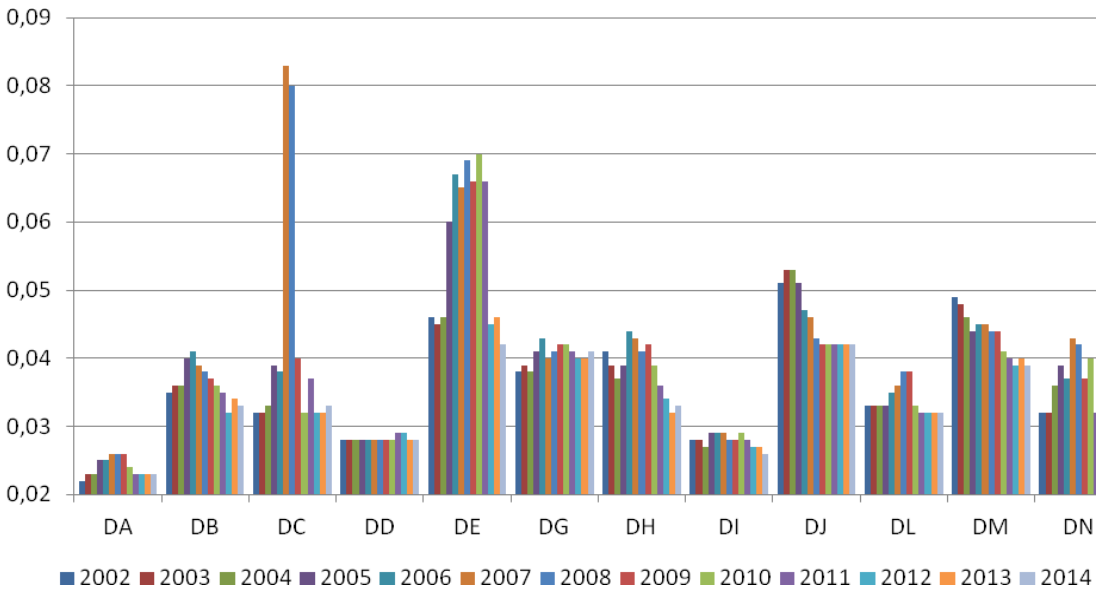
Let us consider the processes of concentration of economic activity in the industrial sector to some detail. To this end we may estimate the dynamics of the region share in the number of people involved in manufacturing industry. For the period from 2002 to 2014 total reduction in the number by 28.23 %; increase of the proportion took place in 38 regions (by all means due to decrease in other regions). We may especially mark the Moscow (its share increased by 1.37 %), Novosibirsk (0.48 %) Regions, the Republic of Tatarstan (0.47 %), Belgorod (0.45 %), Chelyabinsk (0.44 %), Kaluga (0.42 %), Kaliningrad (0.38 %), Omsk (0.30 %), Sverdlovsk (0.29 %), Leningrad (0.28 %), Rostov (0.28 %) Regions. Total share of 11 enumerated regions involved in manufacturing industry is in-creased by 5.16 %, and we may speak of development of the processes of industrial production con-centration, and if a regional share is increased immediately by several economic sectors, also of ag-glomeration presence.

The economic theory provisions indicate the fact that concentration of economic activity increases total efficiency of resources utilization, leads to supplementary benefits and has positive influence on economic development at large. But we shall also understand that concentration growth leads to growth of interregional inequality, firstly by economic and then by social indices. The regions which become less attractive for human, investments and other resources, for development of industrial pro-duction (and auxiliary types of activity), become receiver. The arising expenditures to support such territories decreases incomes obtained by concentration of economic activity in leading regions. That is why we consider that at large high degree of concentration of economic activity in separate regions cannot have positive influence on development of the national economy and social sphere. Taking into account the Russia's immense territory and presence of interregional differentiation by social and eco-

nomic indices, it is necessary to monitor origin and development of agglomeration processes which may enhance the existing imbalances.

It is important to realize which types of economic activity have specific features for concentration within separate territories and which ones have development prospects in any region. The tendency to concentration is mainly attributable to two factors: possibility of extra profit due to the effect of scale and vicinity to the resources (natural resources, highly skilled human resources, etc.). We suggest to consider these types of activity in terms of manufacturing industry. To this end, we shall calculate dy-namics of absolute (the Herfindahl–Hirschman Index – Fig. 2) and relative (the Krugman Index – Fig. 3) indices of geographic concentration (by number of people involved in manufacturing sectors).

Figure 2: Dynamics of geographic concentration of manufacturing by activity types in the Russian regions within 2002-2014, the Herfindahl–Hirschman Index

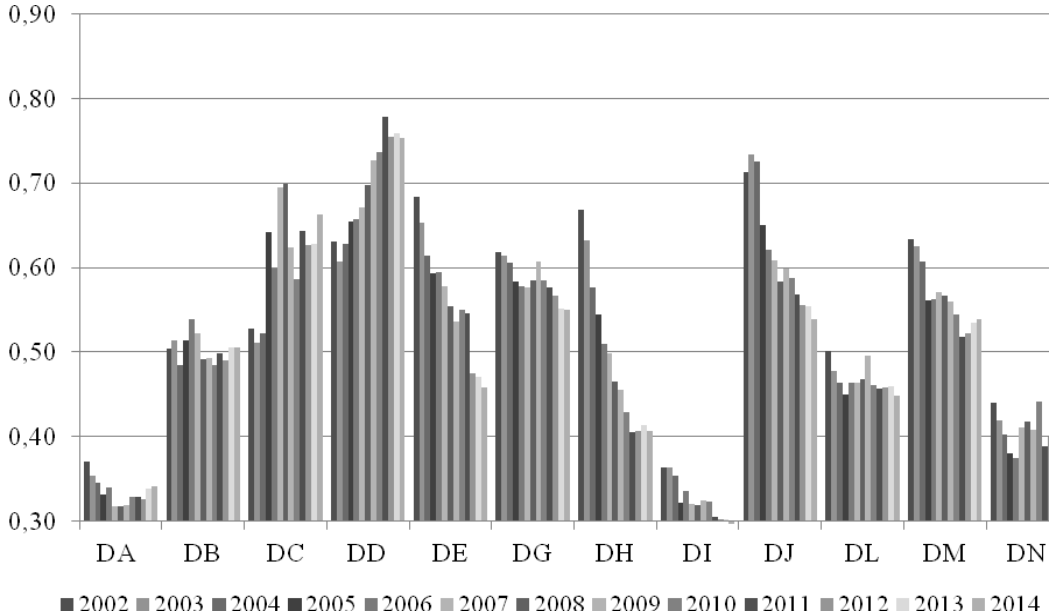


DA – production of food, including drinks and tobacco;
DB – textile and garment production;
DC – production of leather, articles of leather and footwear;
DD – wood and articles of wood;
DE – cellulose and paper production, publishing and printing activity;
DG – chemical industry;
DH – production of rubber and plastic articles;
DI – production of other nonmetal mineral products;
DJ – metallurgical production and manufacture of finished metal articles;
DL – production of electrical equipment, electronic and optical equipment;
DM – production of transportation means and equipment;
DN – other types of production.

Source: realised by author

The Herfindahl–Hirschman Index estimates absolute concentration of certain types of manufactur-ing industry. Traditionally, paper mills, publishing and printing companies, metallurgy, production of transport means and equipment have a tendency to concentrate within separate territories. Food-manufacturing industry, wood processing and production of wood items, production of non-metallic mineral commodities are uniformly distributed over the regions. Similar conclusions may also be made for relative concentration index – the Krugman variety index.

Figure 3: Dynamics of geographic concentration of manufacturing by activity types in the Russian regions within 2002-2014, the Krugman variety index



DA – production of food, including drinks and tobacco;
DB – textile and garment production;
DC – production of leather, articles of leather and footwear;
DD – wood and articles of wood;
DE – cellulose and paper production, publishing and printing activity;
DG – chemical industry;
DH – production of rubber and plastic articles;
DI – production of other nonmetal mineral products;
DJ – metallurgical production and manufacture of finished metal articles;
DL – production of electrical equipment, electronic and optical equipment;
DM – production of transportation means and equipment;
DN – other types of production.

Source: realised by author

Geographic concentration of the human resources in production of food products is not high – the Herfindahl–Hirschman Index is 0.022-0.026 units, the Krugman Index – 0.32-0.37 units. The remark-able thing is that at large in Russia the number of people involved in this sector is continuously re-duced. Concentration growth occurs due to rise of four leading regions in the last few years: the Kras-nodar Territory and Moscow Region (their shares in total number of people involved in the sector is 6 % each), Moscow (about 5 %) and the Belgorod Region (3-3.5 %). Totally in four regions (CR4) al-most 20 % of employees of food production are involved.

Absolute concentration in textile and garment manufacture is reduced. The Herfindahl–Hirschman Index had maximum value (0.041) in 2006, minimum (0.032) − in 2012. The Krugman Index varies within 0.48-0.54. It is worth mentioning that 30% of employee of textile and garment manufacture are concentrated in five regions (CR5). The leaders in this sector are the Ivanovo Region (its share is de-creased) and the Moscow Region (its share is increased). The share of Moscow is increased; among the leading regions participation of Saint Petersburg, the Rostov and Vladimir Regions is decreased.

Absolute concentration of manufacture of leather, leather goods and footwear is not high. An ex-ception is period 2007-2008, when the Herfindahl–Hirschman Index was increased up to 0.08-0.083. This occurred due to significant growth of number of people involved in the sector in Moscow. The leaders in this sector are Moscow (appr. 6 %) and the Moscow Region (5-6 %, the share is decreas-ing). Production is expanded in Saint Petersburg, the Kirov and Chelyabinsk Regions. About 27% of all number of people involved in production are be accounted for the share of five regions. In 11 re-gions this economic sector is not present at

all. Due to this at low absolute concentration (the Herfin-dahl–Hirschman Index is 0.042 on average) high interregional heterogeneity (the Krugman Index − 0.51-0.70) is observed.

The maximum degree of heterogeneity (at moderate concentration) in industry takes place in wood processing and in production of wood items (the Krugman Index – 0.61-0.78, the Herfindahl–Hirschman Index – 0.028). About 25 % of this economic sector are accounted for five regions over the last years. Among the regions with great number of employed people we may mention the Kras-noyarsk and Perm Territories, Kirov, Irkutsk, the Vologda Regions.

In pulp and paper production, publishing and printing activities a tendency of the Krugman Index decreased is observed: in 2002 it was 0.68 unit, and in 2014 – 0.44 units. The degree of concentration is maximum high: on average for the period under analysis − 0.056. At that, more than a quarter of employees is concentrated in Moscow, Moscow Regions and in Saint Petersburg; about 33 % are ac-counted for five regions.

High concentration is observed in chemical production: the Krugman Index varies from 0.52 unit to 0.62 units, the Herfindahl–Hirschman Index – 0.038-0.043. Over 35% of all number of people in-volved in the production sector are be accounted for the share of five regions. The Republic of Tatar-stan takes the first place by the number of employees in chemical production (over 8 %), this share is permanently increased over the last years. The significant scopes of activity are observed in the Perm Territory, Moscow Region, Republic of Bashkortostan − over 7 %, the Samara Region and Moscow – about 5 %.

Obvious tendency in industry dispersion is observed in production of rubber and plastic products. The Krugman Index is decreased from 0.67 unit in 2002 to 0.41 unit in 2014, the Herfindahl–Hirschman Index – from 0.044 in 2006 to 0.033 in 2014. About 30 % of the employees in the sector operate in five regions: the Moscow Region (appr. 10 %), Republic of Tatarstan (6-7 %), in Moscow (appr. 5 %), Nizhni Novgorod Region (over 4 %) and Saint Petersburg. In 2013 the Republic of Bash-kortostan is crowned the leading five − over 3 %.

The lowest level of geographic concentration within the period under analysis takes place in pro-duction of the other non-metallic mineral products – the Krugman Index is 0.30-0.34 unit, the Herfin-dahl–Hirschman Index – 0.26-0.29 unit. The share of five large regions in the index varies about 25 %. The Moscow, Chelyabinsk Regions, Moscow and the Krasnodar Territory may be related to their number.

In metallurgical production, on the contrary, it is necessary to mention high degree of concentration but at its constant decrease. In this economic sector over 26 % of employees operate only in three re-gions of the country: the Sverdlovsk, Chelyabinsk and Moscow Regions. Over 34 % of all employees involved in metallurgy are for the share of five regions (with the Kemerovo and Nizhny Novgorod Region).

Low geographic concentration of production of electrical equipment, electronic and optical equip-ment shall be estimated positively. In five regions of the country about 30 % of the sector is involved. Saint Petersburg (over 8 %), Moscow (about 7 %), the Moscow (over 5 %), Sverdlovsk (about 5 %) and Nizhny Novgorod Regions, and in 2014 – Republic of Tatarstan – almost 4 % are related to this number.

Total number of the employees in production of transport means and equipment is decreased. This economic sector may be described as highly concentrated with decreasing level of heterogeneity. The Herfindahl–Hirschman Index is decreased from 0.049 to 0.039, the Krugman Index − from 0.52 unit to 0.63 unit for the period under analysis. In the last few years the enhancement of the leading regions occurs: The share of the first five territories is increased up to 33.4 %, at that only in the Samara Re-gion, in the Republic of Tatarstan and Nizhny Novgorod region about 25 % of human resources of this industry sector.

The "Other productions" sector has an average degree of concentration, the number of people in-volved here is gradually reduced.

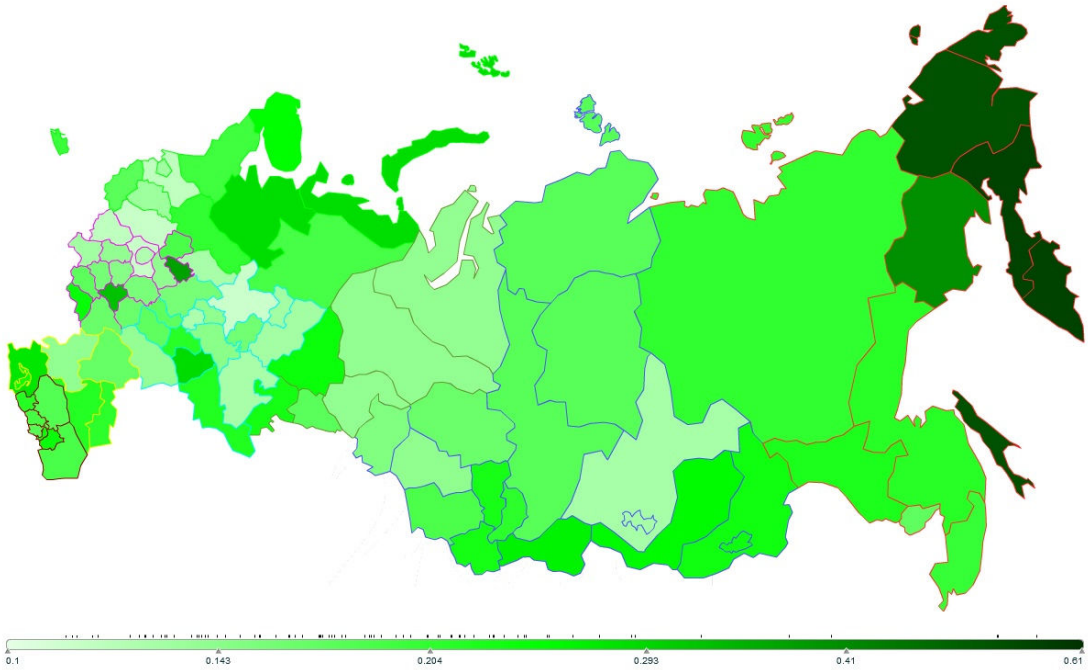
At large the geographic concentration of the number of people involved in the processing industry is decreased (from 0.044 on average by sectors в in 2007 to 0.034 in 2014) is reduced and the degree of heterogeneity (from 0.55 units in 2002 to 0.49 units in 2012-2014). Combination of this tendency with increase by the industrial production volume index (Fig. 1) is indicative of differences in the effi-ciency level: in the leading regions the number of employees is reduced at retention or growth of pro-duction volume.

We may see that the significant share of people involved in many sectors of processing industry is accounted for the Moscow Region, Moscow and Saint Petersburg, Nizhny

Novgorod Region, Repub-lic of Tatarstan, Krasnodar Territory and Perm Territory, Sverdlovsk Region. This is not surprising as the major part of the economically active population is involving these regions.

Let us analyze the dynamics of specialization of manufacturing in the Russian regions within 2002-2014 as per the Herfindahl–Hirschman Index. The results of the analysis are given in Figure 4.

Figure 4: An average value of the Herfindahl–Hirschman Specialization Index for the processing industry by the Russian regions within 2002-2014



Source: realised by author

Within the period under analysis the specialization index by the sectors of processing industry var-ies from 0.106 in the Tver Region (2006) up to 0.696 in the Kamchatka Territory (2013). The average value by the regions is 0.193-0.207. The Kamchatka Territory, Chukotka Autonomous District, Sakha-lin, Magadan, Ivanovo and Lipetsk Regions may be related to the regions with the highest specializa-tion level. The Kirov, Moscow, Tver, Leningrad, Smolensk Regions, Moscow, Chuvash Republic and Bashkortostan, Kostroma, Irkutsk Regions and other differ by low level of specialization. Please note that in the enumerated regions of the Far East the high value of the index is achieved due to significant share of the employees, in food production (DA), in the Ivanovo Region – textile and garment produc-tion (DB), in Lipetsk Region – production of metallurgy and finished metal products (DJ). From 2002 to 2014 28-32 territories may be related to the number of the regions with the specialization level in the processing industry over average and 47-51 territories to the level below average.

For deeper study specialization of the regions earlier we have already provided the analysis (Rast-vortseva et al., 2012) of interaction of its level with the indices of social and economic development: Gross Regional Product per capita batch, labor efficiency, average monthly rated gross payroll, level of unemployment. The Russian Regions were divided into three groups – with low level of specializa-tion, the extracting regions with high level of specialization, regions with high level of specialization and absent extracting sector. It was determined that the regions providing development of its economy due to extracting production "may allow" niche specialization in any industry sector. In the rest cases the deep specialization of the Russian regions is not efficient (Rastvortseva et al., 2012).

The analysis of the Krugman specialization heterogeneity index showed that the Arkhangelsk Re-gion and Nenets Autonomous District, Komi, Republic of Tuva, Samara

Region, Karelia, some Cau-casus republics, the Altai Territory, the Jewish Autonomous Region, the Belgorod Region in addition to the mentioned ones differ from the Russian average level.

7. Conclusion

Development of allocation theory acquires special relevance at present. New factors effecting the geographic concentration of economic activity and regional specialization, such as agglomeration ef-fect from location of production within one territory and increasing output. The degree of dominance of any type of economic activity in the region is estimated by the specialization indices, clustering or sparseness of certain type of activity or resource is determined by concentration. The situation when concentration in the region is observed by several types of economic activity is called agglomeration.

To analyze tendencies of allocation of economic activity in the regions the indices of localization, concentration and specialization of Herfindahl–Hirschman and Krugman, Gini Index, CR3, CR4, CR5. In the course of the study we revealed high concentration of investments and manufacturing in the Russian regions, stable tendency of increase of the index by the human resources. This situation will lead to increase of interregional inequality. In the processing industry reduction of employment oc-curred in 2002-2014, by almost a quarter. Tendency to concentration is determined in pulp and paper production, publishing and printing activities, metallurgy, production of transport means and equip-ment. The Kamchatka Territory, Chukotka Autonomous District, Sakhalin, Magadan, Ivanovo and Lipetsk Regions may be related to the regions with the high specialization level.

The obtained results can be used in the scientific studies for analysis of allocation of economic ac-tivity, assessment of development of agglomeration processed as recommendations at economic policy in the regions.

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BOOSTING THE AUTONOMY OF REGIONAL BANKING SYSTEMS AS A DRIVER OF ECONOMIC DEVELOPMENT: THE CASE OF RUSSIA

Dinara Khamitovna GALLYAMOVA
Doctor of Economic Sciences, Head of the Department of Territorial Economics, Institute of Management, Economics, and Finance, Kazan Federal University
dinara_khamitovna@list.ru

Aidar Il'darovich MIFTAKHOV
Assistant professor Department of Territorial Economics, Institute of Management, Economics, and Finance, Kazan Federal University
miftakhov.a.i@mail.ru

Abstract

The object of the research study reported in this paper is to work out a set of practical recommendations on reforming the key instruments and mechanisms that underpin state regulation of Russia's banking sector to help boost the autonomy of its regions' banking systems based on a set of inferences derived regarding the effect of autonomy in terms of boosts in the efficiency of regional banking systems. The authors' practical recommendations are aimed at stimulating the self-development of the nation's regions. Institutional regulation of the regional banking system is proceeding along the path of putting together regional financial-industrial clusters, participants in which are eligible for the long-term use of the resources available. What is open to question is the degree to which the regulator's standards and requirements are differentiated depending on the specificity of the region's economy and the bank's sectoral specialization.

Keywords: state regulation, regional banking system, Central Bank of Russia, economic growth, monetary-lending policy

JEL classification:

1. Methods

The methodological basis for this study is a set of works by domestic and foreign scholars devoted to the development of the theoretical foundations of financial regulation, banking, and state regulation of the economy; the development of systems and institutional theory with the focus on managing a regional social-economic system.

The study's practical part is grounded in the use of systems analysis, a dialectical approach, factor analysis, time series analysis, as well as a set of multidimensional classification methods (cluster analysis).

The use of a systemic approach has helped view the process of interaction between the banking and real sectors of the economy as an aggregate.

2. Findings

The prevalence of negative trends in the Russian economy is accompanied by the devaluation of the national currency, rising inflation, hikes in the cost of internal and external resources, the technical-technological differentiation of the region's backbone enterprises, and institutional rifts. These trends are leading to risks concentrating within regions' banking and real sectors, which are augmented due to tightening regulatory requirements to financial-lending organizations, which is reflected in multiple instances of banking licenses getting revoked and state support being oriented toward systemically significant participants in the financial market.

In this regard, a major result of this study is having come up with a scholarly rationale for the use of a theoretical approach to the essence and forms of the concept of 'regional banking system' in relation to set objectives for regulating the present-day social-economic system, as well as the development of a set of practical recommendations on reforming the key instruments and mechanisms underlying state regulation of Russia's banking system with a

view to boosting the autonomy of its regions' banking systems based on a set of inferences derived regarding the effect of autonomy in terms of boosting the efficiency of regional banking systems, which is specified in the following tenets:

1. The authors have brought to light the gist of the concept of 'regional banking system' in relation to set objectives for regulating the present-day social-economic system.
2. The authors have worked out a classification of Russia's regional banking systems based on their degree of autonomy and put together a characterization of the types of the regional banking system.
3. The authors have identified the major preconditions for the formation of an efficient autonomous banking system in a region (through the example of the Republic of Tatarstan (RT) (the period in question spanning the time from 1990 to 2014)), as well as the key preconditions for declines in autonomy (starting in 2014).
4. The authors have put together a forecast for the development of Russia's regional banking system (through the example of the RT), factoring in the above preconditions.
5. The authors have put together a set of practical recommendations on reforming the key instruments and mechanisms underlying state regulation of Russia's banking system with a view to boosting the degree of autonomy of its regions' banking systems.

3. Inferences

Russia is currently witnessing a boost in the centralization of its banking system in favor of a group of federal banks whose head offices are located in the city of Moscow. This is causing declines in the autonomy of regional banking systems and the actual regions as a whole, with most of the distribution and redistribution of capital being managed by entities outside the region. Until recently, the Republic of Tatarstan operated quite an autonomous regional banking system, which enabled the region to promptly resolve its economic issues locally. December 2016 saw the start of a banking crisis in the RT, one of the key preconditions for which was the state's economic policy, focused mainly on support for the major federal banks. Failure to adopt a set of economic measures of support for regional banks may gradually deprive the regions of one of their own instruments for boosting economic growth, with the competition within the banking system bound to diminish significantly.

4. Introduction

The current stage in the evolution of the economic system has generated the need to search for answers to new trends associated with external risks of globalization, volatility fluctuations in markets for raw materials and financial markets, economic stagnation, the disruption of interaction between the financial sphere and the material production sphere, and too much reliance on the part of monetary institutions on the high efficiency of regulatory measures.

In a climate of global instability, the results of near-future forecasts for the development of the banking and real sectors are, unfortunately, not very optimistic, which underscores the relevance of theoretical conceptualization and practical application of relevant forms and mechanisms for their institutional interaction, factoring in the conditions of present-day economic reality and all the destabilizing factors.

Based on the nation's administrative-territorial structure, the Russian Federation currently incorporates 85 constituents – state units with a certain degree of political and economic independence (autonomy) within a federation.

It will hardly be possible to resolve the issue of achieving stable and sustainable economic growth in the country without first charting a proper course for the development of its regions. Banking mechanisms and instruments play a determining role in this development since they secure the distribution of capital across the sectors of the economy. Consequently, it may be surmised that a region with an efficient banking sector will be able to exhibit dynamic growth, which should have a positive effect on the nation's economy as a whole. This paper provides an insight into what place regional banking systems occupy in Russia's economy, how autonomy influences their activity, and what recommendations could be proposed in this regard to help boost the efficiency of Russia's banking sector.

It, above all, is worth gaining a proper insight into the concept 'Russia's regional banking system'. The authors construe it as a system whose major participants are:

- Regional state banks – credit organizations whose activity is largely influenced by the governments, or other bodies of authority, of RF constituents; the major spheres of these banks' interests are within the boundaries of a region (republic, oblast, or krai).
- Private banks whose head office is located within the region.
- The branches and additional offices of other banks (out-of-region banks) in the region.
- Institutions concerned with state regulation of banking activity which exercise control and oversight over the activity of banks.

The findings of the authors' analysis have revealed that the current structure of Russia's banking system is such that regional subsystems are not fully autonomous – they are only to a certain degree. This is due to the following factors:

- Banks being highly centralized territorially. Notwithstanding that Russia's banking system currently (as of January 1, 2017) numbers 623 credit organizations (28, p. 184), 314 of them, or more than 50%, are registered in Russia's capital, Moscow.
- Federal banks enjoying a leading role in the structure of the banking system. Russia's banking sector can be regarded as a mixed type of market dominated by an oligopoly, with the nation's 5 largest banks controlling 56.0% of all assets within the industry and 20 banks controlling 78.2%. Note that 15 of these 20 banks are registered in Russia's capital, Moscow.

5. Materials and methods

The methodological basis for this study are works by domestic and foreign scholars devoted to the development of the theoretical foundations of financial regulation, banking, state regulation of the economy, and the development of systems theory and institutional theory with the focus on managing the regional social-economic system.

In particular, the study's methodology is based on the works of C. Woelfel, E.L. Goryunov, P.V. Trunin, S.M. Drobyshevskii, A.E. Dvoretskaya, S.E. Dubova, T.N. Zver'kova, R.A. Musaev, and D.V. Kleshko (6, 8, 9, 12, 14, 20), who have presented the subject of the study as a set of interrelated and interacting elements, as well as R. Churm, N. Chutasripanich, C. Farvacque-Vitkovic, and M. Kopanyi (30, 31, 35), who have presented it as an aggregate of relations. The use of the methodological apparatus of systems theory in this study has helped gain an insight into the process of interaction between the banking and real sectors at the regional level of the economy by viewing them as an aggregate of elements in the economic system that interact and influence each other. This portion of the study relies on the works of J. Delmon, F. Packer, N. Tarashev, L.V. Krylova, M.V. Leonov, T.I. Petrova (32, 42, 18, 19, 22), and others. This study has made it possible to substantiate and expand the ideas of present-day finance theorists as to that the character and caliber of interaction between the sectors are what governs in large part the sustainable development of present-day regional economic systems (the effect of major macroeconomic trends on the development of the regional economy).

6. Literature review

The relevance of the study of negative factors and trends in the global financial system, aimed at seeking out the opportunities for mobilizing the potential of the economy's banking sector is what determines the need to work out a self-consistent, scientifically substantiated concept that is predicated on the critical conceptualization and accrual of knowledge within the framework of systems theory and institutional-evolutionary theory, as well as to work out a set of practical recommendations on the development of relevant forms and methods of interaction between the subsystems at all levels of the banking system in a climate of persistent uncertainty regarding the prospects for economic development.

The study of the nature of and interrelationships between such structure-forming elements in the interaction of the banking and real sectors of the economy as regions, business entities, principles, and forms has been reflected in works by a number of Russian and foreign scholars, like C. Woelfel, E.L. Goryunov, P.V. Trunin, S.M. Drobyshevskii, A.E. Dvoretskaya, S.E. Dubova, T.N. Zver'kova, R.A. Musaev, D.V. Kleshko, Yu.P. Zelenskii, and others. However, despite the detailed insight provided into a number of tenets, there still persists some ambiguity regarding certain issues dealing with insight into the interaction of the banking and real sectors at the regional level. There is a need to take an integrated approach to the study of processes of institutional organization and implementation of

promising forms of interaction between the various levels of the financial system within the context of attainment of sustainable positive macroeconomic effects.

Theoretical and methodological approaches to the study of the role of interaction between the banking and real sectors within the framework of the regional economic system and the augmentation of the state's participation in the process have been addressed in fundamental historical works by A. Smith, K. Marx, J. Keynes, M. Friedman, and J. Schumpeter, as well as in works by a number of present-day scholars, like L.V. Krylova, M.V. Leonov, T.I. Petrova, and others.

Issues related to institutional modernization of the banking system have found reflection in works by G.N. Beloglazova, S.E. Dubova, M.A. Rochev, M.A. Pomorina, T.N. Zver'kova, V.E. Zuev, L.V. Krylova, and many others.

Of special interest for the study are analytical reports by foreign and Russian state and non-governmental organizations, as well as a set of promising state programs (25, 29, 33, 34, 36, 38, 39, 41).

However, with all the depth of the results attained by the above scholars, what still remains open to investigation is the search for areas for boosting the quality and sustainability of the path for development, the efficiency of the state's participation under conditions of crisis phenomena, the role of banks in the development of the regional industrial sector, etc.

The current economic conditions are signaling the need to give a new impetus to the interaction between the state, the banking system, and the real sector of the economy factoring in the combined influence of a set of endogenous and exogenous factors with a view to attaining a sustainable positive macroeconomic effect.

7. Results

I. Findings of an analysis of Russia's regional banking systems intended to assess the degree of their autonomy.

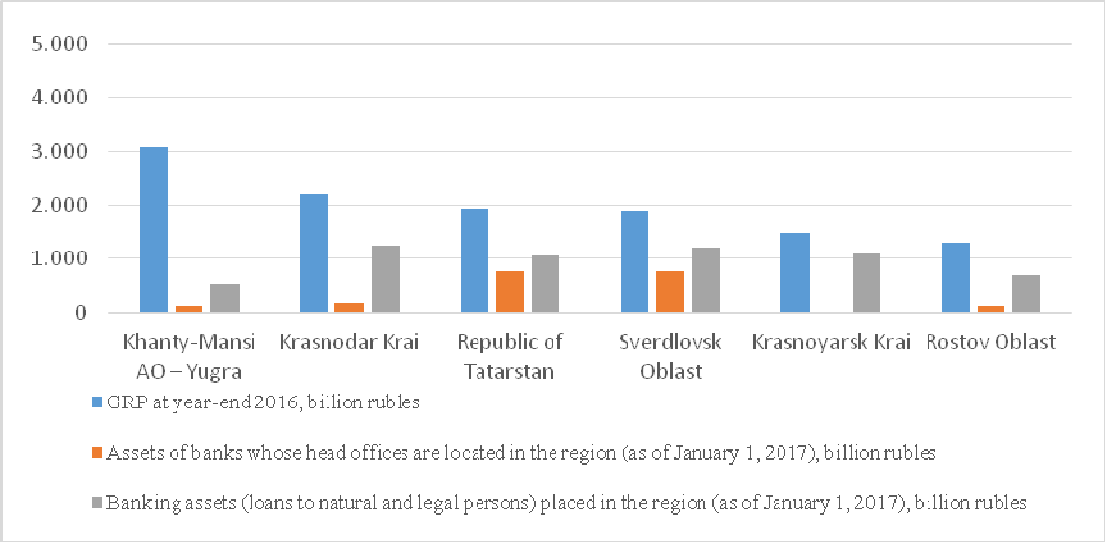
Below is an overview of which of Russia's regions possess a banking system with the highest degree of autonomy. This is based on an analysis of a set of Russia's largest regions with a gross regional product (GRP) of over 1 trillion rubles (at year-end 2016). To be able to properly assess the degree of autonomy of the banking sector, one will have to answer the following questions:

1. To what degree are credit mechanisms integrated into the region's economy? The example of developed countries clearly indicates that the size of banking assets may quite often be above the size of the region's GRP, which is a testimony to how significant the role of the banking sector is in the region's economy. Thus, the answer to this question is the ratio of banking assets[1] placed in the region to its GRP.
2. To what degree is the scale of business conducted by the region's own banks commensurate with the region's economy? This, basically, is about the ratio of the assets of the region's own banks to its GRP. This will help assess the significance of the region's own banks to the region's economic development.
3. To what degree do the assets of the region's own banks cover the region's banking assets as a whole? It is worth understanding here that the assets of the region's own banks incorporate loans granted in other regions, while the region's banking assets may be formed by federal and other regional banks. All else being equal, this indicator characterizes the ability of the region's own banks to meet the need of business entities for loan-based funding in case of all other banks hypothetically leaving the markets.

Figure 1 displays the values of 3 indicators under review (GRP, the assets of the region's own banks, and banking assets placed in the region). It is evidenced by the figure that only 2 regions are exhibiting significant levels in terms of the assets of the region's own banks (Sverdlovsk Oblast and the Republic of Tatarstan).

[1]Banking assets placed in the region are to be construed as loans extended to resident natural and legal persons.

Figure 1. Major indicators for certain regions of the Russian Federation used to assess the degree of autonomy of banking systems (compiled by the authors based on (28, pp. 210-241; 3))



Based on the above data, it is possible to calculate a set of relative indicators answering the 3 questions mentioned above. It follows from Table 1 that the regions identified by the authors based on Figure 1 have the highest degree of autonomy – this, above all, is attested to by Indicators 2 and 3. In the authors' view, an acceptable value of Indicator 3 starts at 40%, since, as was pointed out earlier, the largest federal banks occupy around 50%–60% of the banking market. In this regard, Indicators 2 and 1 are a testimony not to the capacity of the region's banking system for full autonomy but, actually, to the region's lesser dependence on federal and other regional credit organizations.

Table 1. Relative Indicators Characterizing the Degree of Autonomy of a Regional Banking System

Number of the indicator	Indicator 3	Indicator 2	Indicator 1
Formula	Assets of the region's own banks/banking assets placed in the region	Assets of the region's own banks / GRP	Banking assets placed in the region / GRP
Content of the indicator	Extent to which the assets of the region's own banks cover the banking assets of the region as a whole	Extent to which the scale of business conducted by the region's own banks is commensurate with the region's economy	Extent to which credit mechanisms are integrated into the region's economy
Khanty-Mansi AO – Yugra	25%	4%	17%
Krasnodar Krai	15%	8%	57%
Republic of Tatarstan	71%	39%	55%
Sverdlovsk Oblast	64%	40%	63%
Krasnoyarsk Krai	2%	1%	73%
Rostov Oblast	18%	10%	54%

Thus, it can be concluded that the regions of the Russian Federation are inhomogeneous in the degree of autonomy of their banking systems, which makes it possible to divide them into relatively "autonomous" and "dependent". Autonomous regional banking systems are characterized by there being a pool of "personal" banks (i.e. banks registered in the region), state-run and private alike. Being autonomous implies that regional banks are largely integrated into the region's economy and have a significant effect on its development.

The structure of the market of dependent regional banking systems is, normally, an aggregate of, above all, auxiliary, operation-cash, and lending-and-cash offices of federal banks and credit institutions from other regions.

The division of regional banking systems by autonomy is based on that in the first case the decision-making center is located within the region, while in the second case it is outside the region. In the case of state regional banks, the authorities can use them as an instrument for targeted support for regional projects that are in alignment with state objectives when there is a lack of funding on the part of private banks and federal budgetary investments. Besides, storing the remainders of the funds of the region's enterprises (especially, those regarded as system-forming) in accounts at regional banks may increase the chances that they will be redistributed in the form of granted loans in the territory of the region.

With dependent regional banking systems, business entities are faced with high risks of failure to receive loan funds: branch lending policy appears to be more conservative here (there, at best, are small regional limits on lending established without coordination with the central office); most of the time, decisions are made in the head office, whose management may be not fully aware of the sectoral specificity of the conduct of activity across regions. This fact is currently regarded as a bottleneck with federal banks compared with regional ones, in which decisions are, normally, made by beneficiary owners, which reduces the chain: "An application for a loan is simply followed by a decision on lending the funds". In essence, a region that has no autonomous banking system has no financial sovereignty, which means that its resources for independent development are extremely limited.

II. Preconditions for the formation of regions' autonomous banking system.

Below is a detailed overview of the regional banking system through the example of that of the Republic of Tatarstan (RT), which until recently was regarded to be one of Russia's most stable regional banking systems. This includes some of the key preconditions for the formation of an autonomous regional banking system within a region, some of the major reasons behind the crisis phenomena observed since late 2016, as well as a set of practical recommendations for the development of a region's banking sector.

Among the major reasons behind the formation of the RT's banking nucleus is the pretty long period of relative autonomy enjoyed by the RT's National Bank, a territorial institution within the Central Bank of Russia. Right from the time it was founded through to 2014, it was the republic's regulator that independently handled banking oversight activity. Besides, the republic had an informal institution designed to foster banking protectionism. Thus, the making of the regional banking system proceeded in a climate of protection of the banking market from federal and out-of-region expansion. It is worth noting that today the autonomy of the regional institutions concerned with regulating banking activity is minimal. Thus, for instance, in 2014 the National Bank of the Republic of Tatarstan was reorganized into the Tatarstan Division of the Volga-Vyatka Main Branch of the Central Bank of the Russian Federation, with its central office located in a different RF constituent – Nizhny Novgorod Oblast (the city of Nizhny Novgorod). The National Bank's head cash center was closed down.

The stable and sustainable development of the RT's banking system may also be linked to its structure, which incorporates a wide array of credit organizations varying in the size of assets and scale of activity. Table 2 has grouped the RT's banks by the size of their assets and their share in all banking assets combined. It is worth noting that, in terms of the market structure, the Tatarstan model, essentially, imitates the Russian banking system, as:

- there is a chief base bank (PAO Ak Bars Bank and PAO Sberbank);
- banks are clearly segmented into groups based on the size of assets (the gap between the groups is such that a bank's organic growth through the attainment of an average market rate of return does not let it move up into an upper group).

Table 2. Characterization of Banks within the Republic of Tatarstan Based on the Size of Assets (compiled by the authors based on (25))

Name of the bank	Size of assets as of January 1, 2017, billion rubles	Place by the size of assets in the RF banking system as of January 1, 2017 (among 623 credit organizations)	Bank's share in the combined assets of the republic's banks, as of January 1, 2017	Banks grouped by the size of assets
Ak Bars	465.7	20	61.01%	RTs' large regional banks
Avers	102.6	65	13.45%	
Intechbank	29.8	129	3.90%	RT's medium-sized regional banks
Devon-Credit	25.7	142	3.37%	
Tatsotsbank	25,4	143	3.33%	
Akibank	24.0	150	3.15%	
Energobank	22.3	153	2.92%	
Spurt Bank	22.2	154	2.91%	
Bank of Kazan	14.1	190	1.85%	RT's small regional banks
Ankor Bank	8.9	231	1.16%	
Autogradbank	6.0	286	0.79%	
Kamsky Commercial Bank	5.5	297	0.72%	
Zarechye	3.4	359	0.44%	
Tatagroprombank	2.9	377	0.38%	
Altynbank	1.7	454	0.23%	
IK Bank	1.5	469	0.20%	
AutoCreditBank	1.2	491	0.15%	
Network Clearing House	0.3	586	0.03%	

The third reason behind the effective development of both the region's banking system and the republic as a whole is the RT's large enterprises keeping in close contact with banks, which has led to the emergence of financial-industrial groups, with banks playing not a leading role but a "captive" one, i.e. that of a "pocket bank". Virtually all system-forming enterprises in the RT have in their group a credit organization, as is illustrated below:

- The TAIF group of companies (revenue at the end of 2015 – 524 billion rubles) is affiliated with the Avers bank;
- PAO Tatneft (552 billion rubles) is affiliated with the Devon-Credit bank;
- The plants Elekon and Komz (with a combined revenue of nearly 10 billion rubles) are affiliated with the Tatsotsbank;
- The Network Company (23 billion rubles) and the Kamsky Bacon plant (6 billion rubles) are shareholders of Akibank.

Thus, thanks to the high degree of autonomy enjoyed by the National Bank of the Republic of Tatarstan (up until 2014), banks being differentiated by their number, as well as the robust interaction between local banks and local businesses, the Republic of Tatarstan now has in place a regional banking nucleus that is capable of resolving all kinds of issues and providing a wide range of banking products and enjoys an overall favorable banking-investment climate with minor political risks for market participants.

III. Suggestions on putting together an autonomous regional banking system: major issues and a forecast for development.

In recent years, Russia's banking system has been faced with new challenges and risks, which have had a negative effect on the activity of credit organizations in its regions, the RT in particular:

1. A worsening of the macroeconomic state of affairs, which has led to significant declines in entrepreneurial activity across the nation. The ruble's significant devaluation in

2014 resulted in that the RF Central Bank's key rate, which is the major indicator of the cost of money, was sharply increased. During the period 2015–2016, the nation witnessed a smooth drop in the key rate, but the chief conclusion is that the rate stabilized at a level that exceeded the 2013 indicators by as much as twice. This resulted in a decline in the accessibility of loans and, consequently, in the volume of loans granted. Table 3 helps conclude that over the last 2 years the banking sector has virtually stopped growing (factoring in the currency revaluation of assets).

Table 3. Effect of the Dynamics of the Key Rate of the Central Bank of the Russian Federation on the Size of Combined Assets within the RF Banking System (compiled by the authors based on (25, 26))

Year	Key rate during the year	Weighted-average key rate during the year	Dynamics of assets within the banking sector in the year	
			In %, based on nominal indicators	In %, exclusive of currency revaluation of assets
2013	5.50%	5.50%	16.0%	
2014	5.5%–17% (the rate 17% was established on December 16, 2014, with the major effect felt in 2015)	7.88%	35.2%	18.3%
2015	17%-11%	12.64%	6.9%	-1.6%
2016	11%-10%	10.58%	-3.50%	1.90%

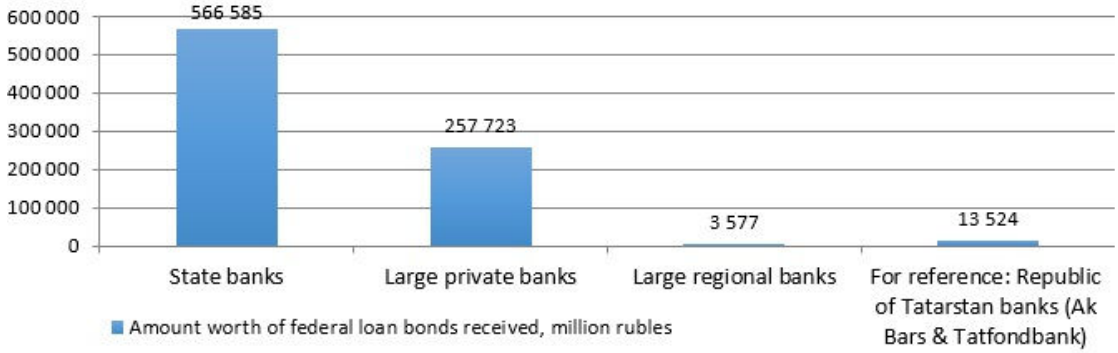
2. Tightened banking oversight. This has shown in an entire array of state measures with respect to regulation of banking standards, the size of charter capital, the procedure for formation of reserves for possible losses from loans, etc. In the end, the chief outcome has been a significant decline in the number of credit organizations in the market. During the period 2011–2016, the banking system was deprived of over 30% of the total number of organizations in operation. That being said, as is evidenced by Table 4, the banking license was stripped from not just small but medium-sized and large credit organizations as well.

Table 4. Credit Organizations Whose License was Revoked, with a Breakdown into Groups by the Size of Assets (compiled by the authors based on (21))

Group of banks based on the size of assets	Number of banks whose license was revoked						
	2011	2012	2013	2014	2015	2016 (as of December 1, 2016)	Total for 2011–2016
1-5	0	0	0	0	0	0	0
6-20	0	0	0	0	0	0	0
21-50	0	0	0	0	1	1	2
51-200	2	0	6	8	14	10	40
201-500	5	6	6	24	34	47	122
Others	15	17	21	56	47	30	186
Total	22	23	33	88	96	88	350

3. State support for banks being narrowly oriented both at the federal and regional level. Factoring in the adverse trends in the banking market, described in Items 1 and 2, the state has taken measures aimed at reducing some of the pressure regarding market liquidity. In the period 2015–2016, the state's chief support mechanism was its program for recapitalizing banks through the Deposit Insurance Agency (DIA) using federal loan bonds. The volume of state funding through the program totaled over 800 million rubles. However, as is evidenced by Figure 2, the bulk of support was provided to banks with state participation (68.4%). Most of the regional banks were virtually deprived of the opportunity to participate in the program due to high requirements for capital (5 billion rubles).

Figure 2. Distribution of state support across groups of banks as part of the state's capitalization program during the period 2015–2016 (compiled by the author based on (16))



As it was pointed out earlier, starting in late 2014 the National Bank of the Republic of Tatarstan had a low degree of autonomy, for which reason support for banks at the regional level using banking mechanisms was not possible. Under those conditions, the republic's government undertook, in accordance with a scenario common at the time to most regions across the Russian Federation, to keep up the stability of the operation of its base bank – PAO Ak Bars Bank. Financial support was provided through state regional institutions:

- Thus, in 2015 amid the bank's losses and declines in capital adequacy down to a level close to the nominal one, the bank's additional shares to the tune of 9.8 billion rubles (25.8% of all of its shares) were bought out by the State Housing Fund under the President of the Republic of Tatarstan.
- In early 2016, the Ministry of Land and Property Regulations of the Republic of Tatarstan bought out 50% of the shares of OOO Ak Bars Development (worth nearly 230 million rubles), specializing in residential construction, with the bank acting as an investor in many of the buildings. Some believe that the deal was associated with the bank itself needing financial support (1).
- In December 2015, as direct support, the bank's capital was supplemented with the shares of the republic's largest chemical enterprise PAO Kazanorgsintez worth around 9–10 billion rubles. The investor was AO Svyazinvestheftekhim, controlled by the RT government.
- An indirect testimony to some support provided to the bank is the deal whereby PAO Tatneft acquired 45.5% in ZPIF Ak Bars-Gorizont (the fund's assets incorporate land plots with a combined area of 50 million square meters) to the tune of 19.8 million rubles, which had been created and then managed by UK Ak Bars Capital, affiliated with the Ak Bars bank. The deal was of a non-market and non-transparent nature; there are experts (1) who believe that the deal had to do with support for the bank.

The above events clearly indicate that during the period 2015–2016 the state regional bank received around 20-40 billion rubles worth of financial support, which helped stabilize the credit institution's normative targets, but at the same time substantiated the state's support for the banking sector being narrowly oriented both at the federal and regional levels.

The factors mentioned above may provide an insight into the underlying causes of the banking crisis in the RT, which started in 2016 following the discontinuation of the operation of PAO Tatfondbank, the republic's 2nd largest bank (ranked 42nd in the Russian Federation in the size of assets). Right now, the bank is under temporary administration by the Deposit Insurance Agency and there is a moratorium on doing banking business with the bank's creditors. The problems of the state regional commercial bank (the PT had long been the owner of a significant number of the bank's shares, making it 51% by early December 2016 (1)) had a negative effect on the republic's other banks as well. Thus, for instance:

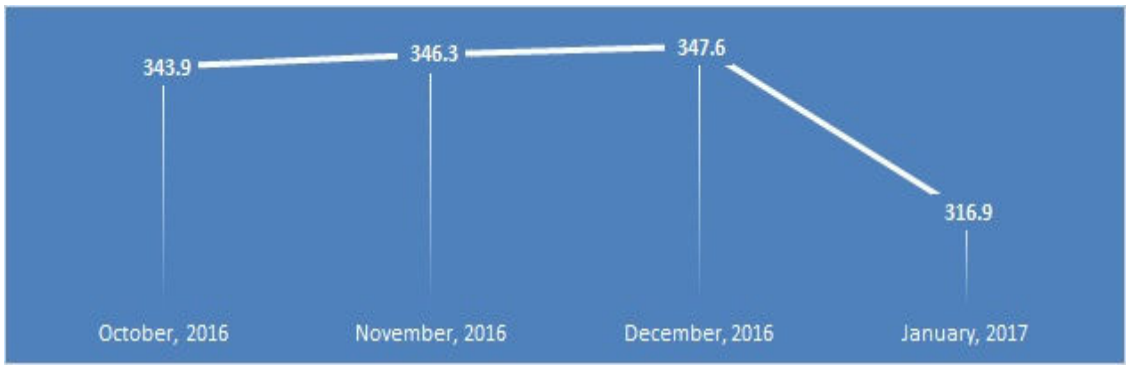
- Tatagroprombank has stopped serving clients and has violated the capital adequacy requirement (23);
- Ankor Bank has stopped releasing funds to clients and is having problems with liquidity (3);
- Intechbank has discontinued its operation and is under temporary administration by the Central Bank.

It is worth noting that among the institutions that have gotten into trouble are either small regional banks (Ankor Bank and Bulgar Bank, formally registered in Yaroslavl but conducting its activity mainly in the RT), or banks affiliated with PAO Tatfondbank (Tatagroprombank and Intechbank). A number of banks have been forced to temporarily discontinue servicing bank cards due to the use of processing by Tatfondbank (Altynbank and Timer Bank (13)).

One of the major indicators attesting to problems within the regional banking system is the dynamics of the remainders of the funds of enterprises and organizations in bank accounts, as these funds are not insured and enterprises would, normally, react promptly to increases in

potential risks by transferring their funds to larger banks. In December, the size of funds held in the republic's banks diminished by as much as 10% (Figure 3).

Figure 3. Dynamics for the funds of enterprises and organizations placed in Tatarstan banks (October 2016 – January 2017, billion rubles) (compiled by the authors based on (25)).



Thus, it may be forecasted that in default of integrated support on the part of federal and republican authorities in the coming 2–3-year period the RT's banking system will undergo radical changes, like these:

- The number of the republic's own banks will decline; only banks backed by the state (Ak Bars Bank) or those forming part of economically strong and stable financial-industrial groups (Avers, Devon-Credit, Tatsotsbank) will be able to conduct business.

- The operation of the above banks will be stable mainly due to non-market liabilities (the funds of the state and quasi-state companies and institutions, including their employees), whereas market liabilities (the funds of any other enterprises and depositors) will be redistributed in favor of federal banks. Considering the low degree of autonomy enjoyed by the National Bank of the Republic of Tatarstan, there are no barriers to this. The RT's regional banking system will be less autonomous. The authors predict that the ratio of the assets of the RT's own banks to its GRP will decrease by 9–15% in the coming 2–3-year period.

8. Discussion

The findings of the authors' analysis of the present-day trends in the development of the banking system have led them to come up with a set of practical recommendations on boosting the degree of autonomy of regional banking systems.

Over the years, the measures taken by the Central Bank of the Russian Federation have led to the centralization of the banking sector and augmentation of the role of federal banks. To conclude, the authors are proposing a set of practical recommendations, which it will be possible to carry into effect only if the regulators turn around toward the development of regional banking systems and make it possible to turn them into growth areas for the economy of RF constituents and, consequently, the entire economy of the Russian Federation as a whole:

1) Putting together new and expanding existing programs related to recapitalization and support for liquidity. The primary objective behind the provision of liquidity to banks is to identify a set of credit organizations (especially, among medium-sized banks) that are capable to achieve, thanks to the state's financial lever, a robust leap in its activity and enlarge the scale of business, while being keen on funding promising sectors and industries along the way. The authors are of the opinion that new liquidity support programs are to meet a set of parameters to enable the attainment of efficiency:

a) Promoting the "monetary" form of support (by analogy with the way anti-crisis support was provided to banks through subordinated loans during the period 2008–2009). This is needed to enable the prompt transformation of funds into loans across a set of promising areas determined by the program upfront. This will be a lot harder to achieve if one resorts to subordinated loans in the form of state securities. Based on an expert assessment by Chairman of the Board of VTB24 M.M. Zadornov concerning the 2014–2016 recapitalization program, "you cannot loan money using federal loan bonds. It is just an accounting function which attests to that you'll have a security listed as your capital" (24).

b) Criteria for being selected based on the bank's size ought to make it possible to participate in the program for medium-sized banks selected based on the size of assets and capital. As of January 1, 2017, these criteria could total as follows:

- for assets – between 20–22 billion rubles and 150–155 billion rubles;
- for capital – between 3 billion rubles and 20 billion rubles.

c) Promoting co-funding on the part of the bank's shareholders based on the "1 ruble of one's own funds to 2 rubles of state support" formula. Boosting liquidity levels in the bank through subordinated loans from the state is, basically, an example of private-public partnership, for which reason the participation of the organization's beneficiary owners in implementing this mechanism appears to be logical. What can become a major contentious issue here is the actual ratio of one's own funds to those borrowed. In the authors' view, the "1-to-2" ratio is the most optimum one. Besides, the preparedness of the bank's beneficiary owners to co-fund will be a competitive factor which will help slash a number of banks – otherwise, it is highly likely that applications will be made by all banks.

d) Using the funds obtained in a targeted manner. The authors find most promise in the following areas for investing bank funds:

- in terms of funding the activity of legal persons – implementing investment projects and possibly establishing a proportion for the distribution of funds between industry and the service sector (70/30);
- in terms of funding the activity of natural persons – mortgage lending to help purchase housing in new buildings.

These areas are intended to ensure the flow of funds into capital-intensive, highly investment-dependent industries, like construction and heavy industry. Funding investment projects specifically – not the current activity of enterprises – will help stimulate the creation of new production operations and products. Otherwise, banks may simply follow the practice of providing funds for the replenishment of working capital, which offers less investment potential. The fact that consumer lending is currently not among the promising areas for the distribution of funds is due to that growth in consumer lending in Russia has, over the last few years, mostly stimulated boosts in the importation of mass-use products, which offers little to no benefit for the development of an economy that is aspiring to be self-sufficient.

2) A crucial problematic aspect of the operation of the nation's banking sector that is worth resolving is the creation by the bank of reserves that could be used to cover possible losses from loans based on checks on the part of the Central Bank of the Russian Federation. Despite the fact that there are numerous quantitative criteria for assessing the quality of a loan, the basis for it, in the end, is a well-founded judgment made by a bank specialist by reference to regulatory documents. In checking a bank, the regulator's stance regarding the classification of loans may be different from a judgement that has been formed. Based on the results of a check, the Central Bank issues a directive pursuant to which the bank is bound to adjust the volume of formed reserves against reclassified loans. The problem is that abrupt one-shot increases in the volume of reserves may reduce the bank's revenue and, consequently, the size of its capital (its personal assets). While a bank's capital is one of the key parameters in meeting Central Bank requirements, above all capital adequacy (Requirement 1).

In the authors' view, amid intensifying negative macroeconomic trends the worsening of banks' credit portfolios is in some cases of an objective nature, something that an institution's risk management is unable to counteract in full measure. In accordance with contractual practice, a bank, theoretically, can get rid of a problem loan – it can demand, in the event of poor financial indicators displayed by the business, that the borrower repays the loan ahead of time. However, in reality, an approach of this kind may cause the business to go bankrupt, which means that the loan will not be repaid to the bank. Therefore, it is customary to employ a number of instruments, like restructuring, etc., to have a loan repaid. The authors are of the opinion that it may be worth projecting approaches of this kind onto the interaction of the central bank and commercial banks as well. Among the possible innovations is the implementation of a mechanism for allowing banks to form a reserve by installments (e.g., in equal portions during the year). This would make it possible to:

- Mitigate the pressure on the credit institution's capital via the formation of revenue during the installment payment period. In other words, a bank with an annual revenue of 100

million rubles that is required to form a reserve in the same amount but during a period of 12 months may get it done without any damage to its capital. A measure of this kind will help banks better "digest" bad debts, with overall improvements expected in the way of indicators of capital profitability and adequacy.

- Provide a bank that lacks revenue with time to attract some funds into its capital from a shareholder or let it look for a strategic investor;
- Mitigate the bank's reputation risks and concomitant risks of drastic outflows of liquidity due to depositor panic.

3) Instituting at the statutory level the possibility for banks and natural persons to enter into deposit agreements on terms different from demand deposits.

It is worth understanding that in the current economic situation the issue of the lack of "long" money in the country is associated not with the reluctance of banks to back the implementation of long-term projects but a deficit of funds in the sources.

For this reason, the authors deem it necessary to permit at the statutory level entering into deposit agreements on terms different from demand deposits in two stages:

1. Entering into such agreements within the limits of deposit amounts insured by the Deposit Insurance Agency. The state, in any case, stands surety for these funds in case a bank's banking license is revoked. This, therefore, could help transform these funds in a short time into a long-term funding resource. It is apparent that when a banking product of this kind comes out the rates on it will be higher than on regular deposits (a deal's earning power is a crucial factor in selecting a banking product).
2. Removing restrictions on the amount. It is worth noting that carrying the reform out in stages may help minimize the degree of abuse on the part of banks and ensure careful implementation, as well as prepare the population for changes in the "rules of the game".

9. Conclusion

The findings of the authors' analysis have revealed that Russia's banking system is going through significant changes at the moment. These changes are caused, on the one hand, by the negative macroeconomic state of affairs witnessed over the last few years, and, on the other, by tightening banking oversight. In this situation, when the quality of loans will be falling objectively due to the downturn of the national economy and state regulatory institutions are raising requirements for the level of mandatory normative targets and volume of reserves, the financial-economic state of banks is expected to only get worse. However, the largest federal banks (above all, the state-run ones) are getting support through state programs, which may bolster their market positions. If there is no support, medium-sized and small regional banks will not be able to conduct their activity efficiently and will have to leave the market.

The solidification of the oligopoly of the nation's largest banks will lead to declines in competition within the sector, while regions which are left without banks of their own will cease to take part in resolving the issue of distributing and redistributing the banking sector's capital – these decisions are going to be made in the bank's head office, which is bound to create significant risks of declines in investment within the region.

The set of practical measures proposed in this paper is aimed at boosting the autonomy of regional banking systems, which may help ensure the prompt resolution of the objectives for a region's economic growth, while boosts in the efficiency of a particular region may have a positive effect on the Russian economy as a whole.

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A MECHANISM TO UNDERPIN STATE PATRONAGE OF NOVEL PUBLIC GOODS: REVISITING THE THEORY OF EFFECTIVE MANIPULATION

Tatyana MELNIKOVA
Candidate of Political Sciences, Associate Professor, Department of History, Philosophy and Political Science, Saratov Social-Economic Institute (branch) of Plekhanov Russian Economic University
tatyana.s.melnikova@mail.ru

Nataliya MITYAEVA
Doctor of Economic Sciences, Professor, Head of the Department of Economic Theory, Saratov Social-Economic Institute (branch) of Plekhanov Russian Economic University
natasha.mityaeva@inbox.ru

Anton PETROV
Candidate of Economic Sciences, Associate Professor, Department of National Economics and State and Municipal Governance, Saratov Social-Economic Institute (branch) of Plekhanov Russian Economic University
petron_anton.m@list.ru

Arina BOBKOVA
Master of Economics, Postgraduate Student, Department of Economic Theory, Saratov Social-Economic Institute (branch) of Plekhanov Russian Economic University
arina_bobkova@list.ru

Abstract

This paper examines the issue of the development of electronic government and electronic democracy in Russia in terms of fostering the public need for the everyday use of electronic services. The authors unfold the essence of E-government and E-democracy through some economic theory concepts. The purpose of this work is to bring to light the characteristics of effective state patronage of these public goods with the use of special manipulation technology. The authors share the results of an expert survey, 'Topical Issues in the Development of Electronic Government and Electronic Democracy in Saratov Oblast: The Public Need Aspect'. The paper describes the concept of a state mechanism for fostering public demand based on the use of manipulation technology – PR, propaganda, and advertising. The authors draw the conclusion about effective manipulation being possible only if the process of cultivating specific mindsets to shape and drive human behavior has an all-encompassing nature.

Keywords: electronic government, electronic democracy, Authorities–Society OEI (open electronic interaction) system, propaganda, political socialization

JEL classification:

1. Introduction

The Information Age is characterized by not only the mass use of information and computer technology and the emergence of new forms of financial-economic relations, the interaction between business entities, and control and accounting within any social-economic system. The current stage in the development of our information-driven society is also distinguished by the emergence of new patronized goods, i.e. public goods the demand for which is trailing that desired by society. New phenomena in society, in turn, are also engendering new subjects of scientific research and facilitating the development of new hypotheses and theories.

There are two clear-cut interdependent trends that can be traced in present-day society: firstly, it is the active development of the foundations of civil society, and, secondly, it is the development of electronic forms of interaction between the authorities and the public. The

development of a new model for the relationship between the government and society is, above all, attested to by the state's current information policy. The concept of electronic government and electronic democracy are not new in Russia. Starting in the 2000s, these systems have been developing quite actively, although the nation has yet to remediate the mismatch between the targets set out on paper and the actual results of these transformations of the authorities-society interaction system. The failed experience of the 'Electronic Russia 2002–2010' federal target program led to the need to reconsider some of the program's key provisions, methods, technology, and effectiveness and result assessment indicators. As a result, a new state program was adopted, 'Information Society 2011–2020'.

Starting in 2011, the nation has worked out and adopted numerous laws and regulations aimed at regulating the area of open interaction between citizens and bodies of authority. Specialists in the area of technological support for the operation of electronic authorities-society interaction systems have achieved notable success in their endeavors: the nation now has a sound e-government infrastructure in place, with quite a serious effort put into mechanisms underlying the infrastructure's key components (EPGU ('Single Portal for Government Services'), SMEV ('Interagency Electronic Interaction System'), ESIA ('Single Identification and Authentication System'), and ESNSI ('Single Regulatory-Reference Information System')).

Thus, there is no doubt that Russia is focused on bolstering and further developing the foundations of its information society, which incorporates all systems of open electronic interaction between the authorities and society (hereinafter 'Authorities–Society OEI system'). Of course, there still remain many unresolved issues, weaknesses, and imperfections in the way of both regulatory and technological support for the nation's e-government and Authorities–Society OEI systems.

No matter how many laws and regulations a nation may adopt, the actual level of employing information-communication technology in state governance may still be quite low. Experts have identified a number of issues currently faced by Russia in its implementation of the electronic government project [13, 14, 16, 22, 26, 29, 30, 33, 36, 42]. Thus, for instance, scholars M.V. Danilina and K.Yu. Bagratuni have noted that "beneath the fabric of the development of technology and implementation of e-government projects lies a huge layer of all kinds of information issues. Currently, there is one issue that the nation has particularly struggled with – a lack of public trust in the new way of communicating, which may be due to a number of factors, like a lack of trust in the traditional work of public officials, as well as "information inequality" among the population, especially in smaller populated areas. Right now, there is a lack of qualified specialists in the area of information technology, as well as a lack of individuals capable of explaining to people the way websites and portals work and convincing them of the need to convert the services into electronic form. A problem that remains topical today is the issue of budget funding for projects on the development of electronic government [6, p. 150].

2. Materials and methods

In looking into issues in the study of the major aspects of the development of e-government and e-democracy, one must not ignore the methodology of economic science, particularly the concept of public goods. The concept is about equal access to goods for all citizens. According to P. Samuelson, "a public good is one that enters two or more persons' utility" [44, p. 108]. D. Bell notes that "social goods are not "divisible" into individual items of possession, but are a communal service – national defense, police and fire protection, public parks, water resources, highways, and the like. These goods and services are not sold to individual consumers and are not adjusted to individual tastes. The nature and amounts of these goods must be set by a single decision, applicable jointly to all persons" [2, pp. 410–411].

An individual has to "double up": on the one hand, the need for public goods cannot be revealed in a market manner due to the "free rider effect", while, on the other hand, it can in a political manner, since people vote for the production of these goods in full measure. So it turns out that people possess several systems of preferences, i.e. standards of assessment, and these systems may, under certain circumstances, exclude each other [43, p.116].

According to the principle of methodological individualism (mainstream economics), if a person has no need for a public good, then society as a whole may not need it either [43, p. 387]. It is all about the actions of an individual being fundamental to the interpretation of such social macroeconomic phenomena as inflation, unemployment, organizational changes, and the evolution of cultural foundations. To help resolve these contradictions, neoclassical scholars are proposing an algorithm of their own: a condition by Margolis [39]. The scholar mitigates the self-interest factor and introduces altruism and a sense of social responsibility into theoretical notions. In other words, altruism turns into a component of rational behavior. Just as is the case with game theory, a competitive edge is with those who have the ability to reach a compromise between individual and group interests.

Of importance in the context of this study is the concept of merit goods [40]. To American economist R. Musgrave, merit goods are goods and services that are "considered so meritorious that their satisfaction is provided for through the public budget, over and above what is provided for through the market and paid for by private buyers" [41, p. 452-453], with demand for these goods on the part of individual buyers trailing that desired by society. "Desired" demand implies individuals' "correct" preferences. "Correct", or "genuine", needs with respect to the production and/or consumption of a certain good, which are different from individual preferences, transform, in turn, this good into a merit one and make it a contender to be a "patronized good". Patronized goods are goods or areas in which the state has a close interest and whose development it finances (science, education, and healthcare).

Merit goods are social goods and are factors in the development of society. Qualitative and quantitative boosts in the sphere of their provision will always be aligned with fundamental social interests, whose major mouthpiece is the present-day state.

3. Literature review

The project on the creation of electronic government became topical thanks to the development of information technology. The first to speak of the technological benefits of the postindustrial era were American researchers D. Bell, J. Naisbitt, and A. Toffler [2, 23, 32]. A. Toffler suggested that "technological innovation consists of three stages, linked together into a self-reinforcing cycle. First, there is the creative, feasible idea. Second, its practical application. Third, its diffusion through society" [32, p. 40]. Today, the implementation of electronic government is expected to help free the public from red tape, optimize state governance, and boost the extent of participation of citizens in the processes of state governance.

In Russia, the electronic government became the subject of comprehensive research after the adoption of 'Electronic Russia 2002–2010' federal target program. For the most part, the views of Russian and foreign researchers on the subject overlap. Thus, for instance, Russian scholar M.Yu. Pavlyutenkova believes that Russia has yet to attain the required level of scientific-technological development to be able to make optimum decisions on electronic government [26, p. 95]. Danish researcher L.-F. Pau suggests that Russia should direct a considerable amount of effort toward bolstering its telecommunications services [42, p. 79]. Both L.-F. Pau and M.Yu. Pavlyutenkova have noted considerable differences in access to the latest information technology among Russia's constituent regions.

There are many scholars engaged in the research into issues related to the development of electronic government and electronic democracy in Russia who have investigated a number of various aspects of this scholarly subject. In particular, the role of electronic government in the system of state governance and its place in the system of public policymaking as a factor in the fight against corruption and bureaucratization has been discussed by researchers E.A. Kashina, K.A. Nemets, S.V. Ponomarev, E.G. Inshakova, R.I. Khabibullin, D.M. Zhuravlev, M.S. Shustova, V.V. Solodov, and others [13, 14, 16, 22, 28, 33, 10, 36, 30, p. 51].

The works of E.A. Kashina, S.V. Ponomarev, and K.A. Nemets look into both the strengths and weaknesses of the implementation of the 'electronic government' project [16, 22, 28]. E.A. Kashina suggests that electronic government is the formula for the "successful operation of the state", as it helps cultivate an electronic interrelationship between society and public authorities [16, p. 12]. Having said that, the expert also points out some of the key issues currently facing Russia in its implementation of the 'electronic government', like a lack

of coordination between the nation's laws and regulations related to the area. Researcher S.V. Ponomarev has also identified some of the major barriers impeding the project's successful implementation, including organizational, political, HR-related, and technological ones [28, p. 15]. K.A. Nemets suggests that e-government may help offset our traditional stereotypes of the government and develop a relationship of trust between the nation's government authorities and citizens through electronic interaction [22].

According to E.G. Inshakova, to achieve the efficient operation of its electronic government, the nation ought to, above all, enhance its regulatory and legal framework. In particular, it pays to "work out statutes aimed at regulating electronic document flow, put together special rules for the use of electronic document archives, intended to eliminate the need for issuing and storing paper documentation" [14, p. 15].

R.I. Khabibullin points out the lack of a universal concept on "regulating social relations developing in the information environment" [33, c. 112].

D.M. Zhuravlev proposes an economic scheme for the development of electronic government and an algorithm for assessing its efficiency [10].

Some of the issues of an organizational, political, and psychological nature impeding the comprehensive assimilation of e-government have been identified by M.S. Shustova [36].

Information technologies have also brought about a certain amount of electronic corruption, which has been examined in the works of V.V. Solodov [30].

Scholars N.S. Vinogradova and O.A. Moiseeva are convinced that e-government will help create in Russia an open platform for dialogue between the government and society, suppress the resistance of bureaucracy, and minimize corruption – but this requires developing a proper material and technical infrastructure with a view to utilizing cutting-edge software tools [46]. The above authors have also noted that the Russian nation is currently divided between those who support the implementation of the e-government project and those who are against it. Those for it believe that implementing the project will help boost Russia's economic potential and investment attractiveness. While those against the idea are worried that Russia may eventually turn into a part of the system whose decision-making center is based in Washington, for it is in the US that the idea of "open government" first originated.

Research has also been conducted into the interrelationship between electronic government and electronic democracy, the essence of post-industrialism as a new phenomenon, and the prospects for the development of electronic democracy as a service in the Internet space, with some researchers regarding the system as a purely political project and tagging e-democracy (as a concept) as a "remedy" for all the "diseases" that have afflicted the present-day political system, comparing electronic democracy to ancient Athenian democracy [11, 1, 24, 3]. Further, for obvious reasons, some researchers and opposing critics come to the conclusion that electronic democracy in Russia is more of a project that is sham and decorative [28, 29].

M.D. Zemskov views e-government in the context of conceptualizing the information society, laying most of the emphasis on the democratic features of electronic government – not as solely the product of technological modernization [11].

E.V. Baryshev points to the need for enhancing the democratic process through cutting-edge information technology, as online democracy makes it possible for citizens to openly express their will [1]. This view is shared by N.O. Obrykova, who believes that information-communication technology will enable citizens to take an active part in political decision-making [24].

L.M. Volkov regards electronic democracy as the opportunity to implement electronic voting through an Internet platform, which will contribute toward compliance with the "one person, one vote" principle [3].

M.Yu. Pavlyutenkova devotes in her study a sizable amount of attention to the history of the creation of the e-government project, the international experience of installing an electronic government, and some of the ways to achieve success in this area. Among the standard-bearers of successful electronic government, implementation is South Korea, which has a well-organized system of government websites that are perfectly accessible to everyone. The use of the 'Government for Citizens' program has made it much easier for bodies of authority and private individuals to communicate with each other: "the financial reports of legal persons and tax returns of natural persons are submitted in electronic form, with

professional advice provided to taxpayers in online mode" [26, p. 95]. In 2014, South Korea ranked 1st on the E-Government Development Index. But in 2016 the palm was taken by Great Britain. In analyzing the experience of Western European nations, a group of researchers has found that to facilitate the successful development of electronic government in Great Britain they have appointed a designated responsible person, the e-Envoy, who answers to the Prime Minister. The e-Envoy's primary job is to eliminate the barriers between government institutions and society, his duties including making sure all members of the Parliament respond to letters sent by citizens to their special email addresses set up by the Office of the e-Envoy [51].

Of interest is the experience of Kazakhstan, where there have been several stages in the development of e-government [8]. It can be asserted today that the republic has achieved impressive success in the area, which may be illustrated by the following results: 1) all the key components of electronic government infrastructure are in place; 2) there is a well-organized regulatory and legal framework in place; 3) there are a variety of electronic services being offered by the nation's government agencies; 4) there have been major gains in improving the nation's computer literacy levels.

Canadian researcher M. Zherebtsov asserts that Russia has reached significant heights in the area of IT development and has all the potential necessary to successfully implement its electronic government project [47]. However, there are a number of systemic factors impeding this process, one such factor being a lack of political will to undertake such reform.

Some foreign researchers are of the opinion that Russia has done well in terms of the development of the latest telecommunication systems, which appears to have facilitated its economic rejuvenation [48, 49, 50]. Yet, against that backdrop of success, there are certain areas that need work, like the uneven development of processes of informatization across Russia's regions [42]. In this regard, of interest is a work by Yu.V. Irkhin that is focused on the issue of information inequality – a problem that Russia may face if it implements its electronic government project in a hasty fashion [15].

The authors are convinced that most of the issues in the interaction between the authorities and citizens are of relevance for many countries, including Russia, and, with the development of the information society, despite the fact that the latter is intended to ensure the transparency of government operations and "all-in" civil participation, they are not likely to go away but may just migrate to a different area of existence instead.

In parallel with the development of electronic democracy, there may emerge all kinds of risks and threats in the form of cyber attacks. Summarizing the experience of international experts, S.E. Grishin comes to the conclusion that in order to resolve these issues the scientific community may need to work out a special conceptual approach, while the authorities ought to operate in a proactive mode in the area [5].

When considering the prospects for the development of electronic government in Russia, one may need to factor in the likelihood that once it is implemented successfully there may arise the problem of excessive politicization of issues related to social life. An example of this possibility is the current situation in the US, where the electronic government has been around for several decades now. Researcher Zh. Chen has analyzed headlines on 160 American government websites and come to the conclusion that they are too politicized: "…the headings signify the core political values of the idealized democracy, equality, liberty in the USA, refreshing the American Dream in the digital age" [38, p. 34].

Forecasts for the development of electronic government in Russia made by A.Yu. Tsaplin sound quite pessimistic. The expert is convinced that "electronic government is a new colorful, eye-catching electronic "bundle" of traditional institutions of state government" [35, p. 82] and it is, therefore, unlikely that electronic government will enhance the quality of state government going forward, as the nature of Russian authority is unlikely to change so easily.

Thus, in exploring electronic government and electronic democracy as new phenomena of the information society, scholars are addressing a variety of aspects: issues related to improving the efficiency of public officials, remediating technical imperfections and glitches, ensuring the accessibility of technology and services, streamlining the regulatory and legal framework, and enhancing the various facets of a philosophical nature. However, one has yet to thoroughly explore the interrelationship between the degree to which these systems are developed and the public demand for them.

4. Results

The primary purpose of this study is to explore the nature of effective government patronage of e-government and e-democracy through the instrumentality of the technology of political manipulation. The authors have conducted an analysis of the dynamics of the development of e-government and e-democracy in Russia (through the example of Saratov Oblast). In Russia, the process of informatization of society remains one of the top items on the government's agenda. It, however, is worth identifying a set of major issues impeding the proper implementation of said project: a lack of a uniform regulatory and legal framework, limited access to the Internet in some of Russia's constituent regions, and a lack of information-technological knowledge among a significant portion of the population. As a result, Russia has dropped 8 spots in the e-government development rankings. In 2016, Russia was ranked 35th, compared with 2014, when it ranked 27th.

A key issue is a lack of public demand for the services of electronic government and electronic democracy due to people's information incompetence. The state can artificially create demand for e-government and e-democracy by relying on the use of manipulation techniques. Yet, as these systems develop, the role of the state may eventually tone down when there is a benign social-political state of affairs in the country.

Right now, the Russian government's priority number one is creating the right conditions for every citizen with a view to boosting their information literacy levels. Timely and thorough work in this area is the formula for the sustainable development of the nation.

5. Discussion

In the authors' view, Authorities–Society OEI systems match the attributes of merit goods, as they are intended for individual consumption but possess a pronounced secondary consumer effect that is delayed in time, i.e. social utility. The thing is there is no objectively formed demand for e-democracy and e-government. The development of Authorities–Society OEI systems requires cultivating public demand for these services. Under economic theory, it is a demand that begets supply [21].

It is worth admitting that the area under examination may witness a reverse effect as well: a robust supply of all kinds of elements in the Authorities–Society OEI system may beget some demand for e-democracy and e-government, and, going forward, this artificially formed demand may create the preconditions for a more intensive development of all Authorities–Society OEI systems.

The problem is that the relatively insignificant costs of production of goods that make up the Authorities–Society OEI system may cause consumers to be unwilling to pay for these goods, a phenomenon known as the "free rider" effect. On the other hand, the absence of a positive price may result in the reluctance of business entities to produce such goods. The above reasons force the state to take on the supply of these goods and resort to its taxation mechanisms so as to cover the costs of producing them.

It is obvious that there is a contradiction between current individual and long-term social interests in relation to production of this type of merit goods, and this contradiction is governed by various laws and mechanisms underlying the formation and detection of real demand: individual interests are detected through the market, and social interests are shaped by the institutions of the political system [18]. Here, it is worth keeping in mind that in the area under review the government's activity levels have nothing to do with failures in the market – they change under the influence of various political and social factors in the context of the history of a specific nation.

It may be stated that production of the elements of the Authorities–Society OEI system is appreciably dependent on the degree of government intervention: when government intervention is insufficient, production of the system's elements shrinks, which naturally causes additional government demand for them. It is required that the state takes an active part in furthering the process of production of these special goods in volumes that are needed by society. This activity is aligned with national interests and serves as one of the conditions for boosting the economic potential and efficiency of the national economic system.

In accordance with the postulates of economic sociodynamics, every market participant engaged in the exchange process, including the state, tends to pursue interests of its own, while the cumulative demand for merit goods forms based on individual and social utility [4].

The authors venture the assertion that as the systems of e-government and e-democracy develop and become more sophisticated the need for government intervention may go away (or lessen) under certain social-economic and political circumstances – in the event there gain a foothold sustainable norms of individual behavior that will ensure the consumption of these goods in volumes desired by society. In this regard, it is at this stage in the process of cultivating sustainable public demand for e-democracy and e-government that the state may need to make an extra effort, an effort that may have a significant social effect in the near future.

Inherent to the process of production and provision of e-government and e-democracy goods is the so-called "public goods paradox", whereby social goods, on the one hand, possess a null social value, but, on the other, public goods, as an object of state activity, must possess a non-null social value. In the authors' view, in the case of Authorities–Society OEI systems the useful effect is predicated on the social contract. In other words, the useful effect of goods is geared toward groups of people and is expected to gain a foothold in public consciousness. Such, for instance, is the effect of legislation, social stability, and public order. It would be useless for a particular person if it were not simultaneously directed toward all other members of the community.

This angle to the study of e-government and e-democracy is utilized by the authors in their scientific-research work funded through a grant from the Russian Humanities Research Foundation, 'Cultivating the Public Need for the Development of the System of Electronic Government and Electronic Democracy' (Research Project No. 15-33-01234). The hypothesis underlying the above work implies cultivating demand for socially useful goods by way of a system of manipulating public consciousness, with these manipulation activities (carried out as part of the process of development of the Authorities–Society OEI system) obviously regarded not as a means of infringing upon the legitimate interests of citizens but as a means of "guiding" them.

It is worth noting that the findings of an expert survey [1] conducted as part of the research study also substantiated the viability and relevance of the authors' hypothesis. Below are some of the results of the expert survey 'Topical Issues in the Development of Electronic Government and Electronic Democracy in Saratov Oblast: The Public Need Aspect'.

The experts were asked to evaluate the activity of the federal authorities in the area of electronic government in the period 2011–2015 across the following areas:

- overall,
- in the way of shifting to the provision of services in electronic form,
- in the way of organizing interagency electronic interaction,
- in the way of streamlining the methodological and regulatory and legal framework,
- in the way of cultivating public demand (popularizing the benefits of) for receiving government services in electronic form.

The answer 'Yes – there are meaningful results' was given on the first item by 95.6%, second – 93.3%, third – 86.7%, fourth – 75.6%, and fifth – 71.1% of respondents. Just 28.9%

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[1] The expert survey was conducted December 10 through December 27, 2015, by the Department of History, Philosophy, and Political Science at the Saratov Social-Economic Institute (branch) of Plekhanov Russian Economic University among members of the regional bodies of authority and local self-governing authorities, researchers, and members of nonprofit organizations and government agencies within Saratov Oblast. All in all, the survey engaged 46 people. It was conducted based on a formalized questionnaire developed by associate professor T.S. Melnikova. Data were gathered via the analysis of filled-out questionnaires involving the calculation of a percentage of all survey respondents.

Eksperty SSEI REU im. Plekhanova otsenili elektronnoe pravitel'stvo [Experts at the Saratov Social-Economic Institute of Plekhanov Russian Economic University evaluate electronic government]. (2016, February 16). (in Russian). Retrieved from http://www.vzsar.ru/news/2016/02/16/eksperty-ssei-rey-im-plehanova-ocenili-elektronnoe-pravitelstvo.html

of experts said nothing significant has been done in the way of cultivating public demand for e-government in Russia.

When asked to evaluate the federal authorities' performance in the area of development of electronic democracy in the period from 2011 to 2015, the experts gave a lower number of high grades. 60% of respondents answered 'Yes – there are meaningful results' regarding the authorities' overall performance in the area, 55.6% – the performance of the 'Russian Social Initiative' portal, 51.1% – streamlining the methodological and regulatory and legal framework, and 53.3% – cultivating public demand (popularizing the benefits of) for the use of the mechanisms of electronic democracy.

All in all, the experts could choose from 3 variants of the answer. Based on the survey results, none of the experts gave a negative answer ('No – things have only gotten worse') to both the first and second questions, which inquired whether the respondent liked the job the federal authorities had done in the area or not.

The most popular answers to the question "What do you think is the main reason behind the creation of an electronic government in Russia?" were the following:

- 'Boosting the accessibility of government services' – 84.8%,
- 'Boosting the openness of information about the work of government agencies' – 65.2%,
- 'Encouraging the social-political participation of citizens in the life of the nation' – 45.7%.

In the experts' view, the most significant benefits offered by electronic government to the population are the possibility of receiving government services in electronic form (91.3%), the possibility of receiving the latest information on bodies of authority, both state and municipal (65.2%), and the possibility of submitting a complaint or a proposal to bodies of authority in electronic form (50%). Of the greatest value for citizens are the following mechanisms of electronic democracy: the possibility of taking part in the discussion of legislative initiatives (67.4%), the possibility of submitting an initiative of one's own (56.5%), and the possibility of tracking the progress of work performed by bodies of authority (54.3%).

Regarding the major factors impeding the development of electronic government in Saratov Oblast, there was the following distribution of expert answers (3 variants of the answer to choose from):

1. The insufficient degree of activity among the population and the lack of demand for electronic government services – 66.7%;
2. Insufficient incidence of Internet access and the lack of liability for failure of government officials to provide a quality electronic service – 26.7% each factor;
3. The poor level of political support for the project – 24.4%;
4. The low number of services available through the portal (services one can use without direct in-person contact with a government employee) – 20%;
5. The lack of functionality for citizens to evaluate services provided in electronic form – 15.6%;
6. The lack/imperfect condition of the regulatory framework – 11.1 %;
7. Other: the lack of functionality for citizens to obtain the result of a service in electronic form – 2.2%.

As per respondents, the major factors inhibiting the development and spread of electronic democracy in Saratov Oblast are: the insufficient degree of activity among the population and the lack of demand for electronic democracy services (71.1%), the poor level of political support for the project (40.0%); insufficient incidence of Internet access (26.7%), the lack of the regulatory framework (22.2%), and some other factors (2.2%).

In the experts' view, among the factors that may help boost citizens' levels of activity in terms of using the electronic government system are the following (5 variants of the answer to choose from): citizens being personally interested in doing it/the prospects of deriving worthwhile personal gain doing it (54.3%), effective technical support for the system's operation (remediation of glitches in the operation of portals, websites, and applications) (52.2%), citizens having the necessary resources (material resources, unrestricted access to the Internet, spare time) (47.8%), citizens being well-educated, proficient, and well-informed about the benefits of electronic interaction (43.5%), raising a new generation of active citizens of the information society (28.3%), stimulating and incentivizing citizens to use e-government services (26.1%), the openness and transparency of the activity of bodies of authority (23.9%), and high levels of trust in bodies of authority (10.9%).

The respondents were also asked which factors could help boost citizens' level of activity in the use of the electronic democracy system on a daily basis. The results were as follows: citizens having the necessary resources (material resources, unrestricted access to the Internet,

spare time) (56.8%), effective technical support for the system's operation (remediation of glitches in the operation of portals, websites, and applications) (54.5%), citizens being well-educated, proficient, and well-informed about the benefits of electronic interaction (45.5%), citizens being personally interested in doing it/the prospects of deriving worthwhile personal gain doing it (38.6%), stimulating and incentivizing citizens to use e-democracy services (20.5%), the openness and transparency of the activity of bodies of authority (18.2%), raising a new generation of active citizens of the information society (15.9%), patriotism, a sense of being part of one's nation's, town's, village's destiny (15.9%), there being individual leaders, activists among citizens (11.4%), and other factors (11,4%).

The advisability of more active information coverage of the results and more active promotion of the benefits of the electronic government and electronic democracy projects was pointed up by 80.4% of experts, who picked the need to inform the population already now (without waiting until the 'Information Society 2011–2020' program is over). Also, 82.6% of experts said that it is advisable and necessary to start today already work on teaching citizens and cultivating in them the major competencies and culture of interacting with bodies of authority by way of electronic services.

At the end of the survey, the experts shared their views concerning the advisability of developing and implementing a special document, 'The Concept on Cultivating the Public Need for Developing of the System of Electronic Government and Electronic Democracy Through to 2020'. 56.5% of respondents said it is advisable to do so at the federal level (developing a single concept for the entire nation), with 32.6% opting for doing so at the regional level (developing an individual concept for each region), 6.5% not finding it advisable deadline-wise and stating that a period longer than through to 2010 may be required, 2.2% not finding it advisable on the whole, and 2.2% providing other suggestions.

As key initiators of the development of electronic forms of interaction between bodies of authority and citizens, as well as commercial and non-commercial organizations, the experts picked (3 variants of the answer to choose from) bodies of authority (95.7%), nonprofit organizations (47.8%), the scientific community (37%), and commercial organizations (10.9%).

Thus, based on the survey findings, the experts acknowledged the need for cultivating the public need for the everyday use of the e-government and e-democracy systems, as well as the existence of an interrelationship between the public need for and the pace of development of the Authorities–Society OEI system. Most of the survey participants deemed it necessary to conduct more active information-propaganda work on popularizing electronic government and electronic democracy, while acknowledging, on top of that, the need for outreach and awareness-raising activities aimed at teaching citizens and cultivating in them the necessary competencies and culture of interacting with bodies of authority via electronic services. These views are shared by many a researcher. M.Yu. Pavlyutenkova suggests that one of the key barriers impeding the implementation of the e-government project is "a lack of educational programs for providing instruction to public officials and citizens on how to provide and use government services, respectively, and utilize the technology of electronic government in practice" [26, p. 10]. Researchers N.S. Vinogradova and O.A. Moiseeva assert that computer literacy is indispensable to the successful development of electronic government. It is also noted that public officials themselves lack the special competencies required in the area and are significantly lagging behind in terms of knowledge of the latest information technology [46, p. 8].

Electronic government and electronic democracy are the elements of information policy which should be analyzed through the prism of philosophical, politological, sociological, and economic concepts. In a general philosophical context, it is state policy that acts as the basis for information policy. The integrity of the state and its ability to stay democratic and secure sustainable development depend on efficient information interaction between the authorities and society. The fundamental concepts of information policy are communication and information, i.e. interpersonal communication and its content side. Thus, the state's information policy is aimed at meeting the information needs of society using the latest information-communication technology.

The authors' scientific-research project brings forward a state mechanism for cultivating public demand for electronic government and electronic democracy [20]. Each of the

mechanism's components matches a certain manipulation technology – PR, propaganda, or advertising.

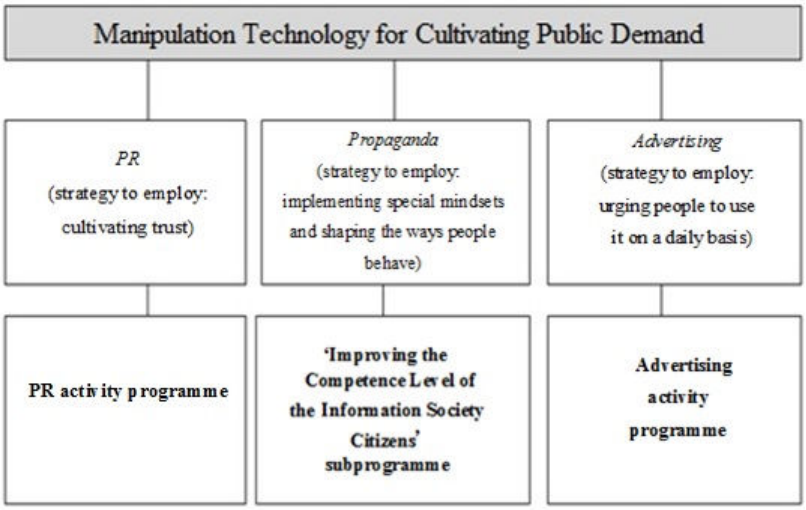
The mechanism's first component corresponds to the technology of PR and is represented by a program that captures the objectives of PR campaigns, everything that has to do with planning, arranging, and implementing PR activities on popularizing and cultivating public trust in Authorities–Society OEI systems.

The second component could be represented by a special government program (subprogram), 'Improving the Competence Level of Citizens of the Information Society'. This document, which brings to light, both concept- and content-wise, and factors in all the characteristics of the system of consumption of these "patronized" goods intended for an "electronic" citizen (issues related to teaching one the ethics of the Information Age citizen, the basics of information security, the latest technology of electronic government and electronic democracy (that is intended for everyday use), cultivating in Russian people the judicious conduct of the citizen of the electronic society, and much more), matches the technology of propaganda, as the instrumentarium of learning and mundane interpersonal communication (being part of a group and being engaged in the common process of cognition), supplemented by the administrative resource, has always been a powerful means of propaganda [31].

The third component of the state mechanism is an advertising activity program that will set out the goals and objectives for the development and conduct of advertising activities, including posting information of an advertising nature on the various carriers that can be accessed by the public on a daily basis (billboards, utility bills, public transit tickets, Internet banners, radio and TV commercials).

The above state mechanism for cultivating public demand for electronic government and electronic democracy is illustrated in schematic form in Figure 1.

Figure 1: The mechanism for cultivating public demand for electronic democracy and electronic government



Source: Own

Altogether, this mechanism may require being captured in a regulatory-institutional manner in the form of a special document which the authors would designate as 'The 2017–2020 Strategy for Cultivating the Public Need for Open Electronic Authorities–Society Interaction'. The authors believe it is advisable to adopt a strategy of this kind at the federal level; it is also worth having it implemented prior to the expiration of the government program 'Information Society 2011–2020'. It pays to capture in the document the characteristics of conducting advertising activity, promoting the advantages of electronic interaction between citizens and the authorities, citizens and various organizations and institutions, and propagandizing the 'active citizen of the Information Age' behavior model.

After they adopt the Strategy, it pays for regions to develop and implement regional programs in the area.

It pays to conduct an advanced analysis of issues and solutions related to the development of the Strategy as part of a separate scholarly work, while for purposes of the present paper it may suffice to focus on the characteristics of the implementation of one specific component of the mechanism underlying the cultivation of the public need for electronic democracy and electronic government – the technology of propaganda, the most powerful means of manipulating the minds of people.

Note that right now there are various strategies and programs for the development of the information society that have been implemented at the federal and regional levels, like 'The Strategy for the Development of the Information Society in the Russian Federation' No. Pr–212 of February 7, 2008, the Government Program of the Russian Federation 'Information Society 2011–2020', and the Government Program of Saratov Oblast 'The 2014–2017 Information Society'. Most of the subprograms are, however, not very clear in their objectives about the actual cultivation of public demand for e-government and e-democracy and have yet to properly address the need for stimulating this demand through government intervention.

In this regard, it appears advisable to develop and implement relevant subprograms within regions' government programs on all criteria (identifying a social problem, assessing existing managerial potential and implementation experience, and measuring efficiency, i.e. the ratio between the resources expended and the results achieved). Subprograms of this kind are already being implemented in Russia. For instance, the federal project 'Furthering Improvement in People's Financial Literacy and the Development of Financial Education in the Russian Federation' has been implemented as Subprogram 7 within the Government Program of Saratov Oblast 'The Development of Education in Saratov Oblast Through to 2020'.

The authors feel that the 'Improving the Competence Level of Citizens of the Information Society' subprogram should have the following special objectives: boosting the efficiency of interaction between citizens and bodies of authority; boosting the level of protection of the citizens' interests in their interaction with the authorities; boosting citizens' level of proficiency necessary to engage in open electronic Authorities–Society interaction. That being said, the functions of the executive agent ought to be performed by the region's line ministry/committee on informatization, while the roster of co-executive agents for the subprogram ought to include, by all means, the region's Ministry of Education.

Altogether, the subprogram must involve the implementation of specific activities for various target (age) groups, which it is advisable to set apart from each other by reference to the stages of political socialization. In construing political socialization, it is customary to invoke the general concept of "socialization" of a person, which, in the broadest sense, signifies that an individual turns into a social being through the assimilation of an accepted system of social roles. Political socialization is justly regarded as the process of interaction between the individual and the political system, the purpose whereof is getting the individual adapted to the system and turning him into a citizen [25, p. 65].

The stages of political socialization are closely linked to the stages in the making of a person and his cognitive development. In present-day society, the first stage begins quite early – at the age of 3–4. At this age already, through the family and the media, the child acquires his first knowledge of politics in forms that he can access it in – information that goes on to have a meaningful effect on the child's subconscious. "School is where a new stage of political socialization commences. Under the influence of socializing institutions, there occurs the quantitative accumulation of knowledge about politics and their qualitative modification. It is at school age onwards that one starts to develop a conscious attitude towards politics. The next, youth, the stage is characterized by the introduction of new elements of the conveyance of political values. Here, one encounters new tools of political socialization – informal youth groups, an entire youth subculture as a whole. In some cases, they may play an alternative role in relation to former institutions of political socialization, actively familiarizing the individual with alternative political (or apolitical) notions" [25, p. 66].

Projections of the stages of political socialization may be extended to the process of formation of an Information Age person as well. It is worth keeping in mind the continuous nature of the process of political socialization and the process of resocialization. Political

consciousness is subject to changes throughout a person's life; it stands to reason that the outcomes of these changes may be almost unnoticeable in adults compared with changes that occur in childhood or youth.

The activities carried out under the subprogram may be divided into age groups:

1) activities for 11–16-year-old teens. By degree of propaganda effect, these are the most powerful, as they shape the way in which people behave and think based on specific mindsets being cultivated. This includes educational programs on the ethics and culture of citizens of the electronic society, the fundamentals of interacting with the authorities, other citizens, and various organizations, the basics of information security, etc.;

2) activities for 16–23-year-olds are, mostly, aimed at expanding their knowledge and skills related to the electronic interaction between the authorities and society. Here it pays to set up special interest clubs (e.g., clubs for high-schoolers) that would organize various outreach and awareness-raising activities, contests, fairs, etc. Additionally, it could be elective courses at institutions of mid-tier and higher vocational learning. This kind of activities is aimed at cultivating a higher level of competencies in Information Age citizens and may offer potential in the way of inducing one to develop one's personal notions of how to enhance an electronic interaction system;

3) activities for individuals older than 55 are aimed at boosting the computer literacy of retired persons, helping them master the skills necessary to utilize the latest digital technology in everyday life and use personal computers for searching for information, communicating online, sending and receiving electronic messages, as well as helping them master the skills necessary to use online portals related to the provision of state and municipal services.

In most regions across the nation, activities of this kind geared to senior citizens are normally implemented as a public project funded by grants. As an example, there is the 'All-Russian Retired Citizen Computer Literacy Project', implemented by the all-Russian nonprofit organization 'The Union of Russia's Retired Citizens' jointly with Russia's constituent regions. Another project is the 'Timurians of the Information Society' movement, implemented by the Russian Agency for the Development of the Information Society (RARIO) .[2] The movement's mission is to conduct computer literacy workshops to, above all, help senior citizens master the skills necessary to use the various goods offered by the information society.

There is one more project that is worthy of mention – the 'Gubernatorial Plan on Eliminating Digital Inequality in Yaroslavl Oblast' [3] In 2010, with support from the Department of Informatization and Communications of Yaroslavl Oblast, the region's authorities opened up the first computer consulting center, and in 2013 the project received the status of a "gubernatorial project" (following the passage of the Decree of the Governor of Yaroslavl Oblast No. 136-r on Adopting a Roster of Assignments). The project's target audience is comprised of retired citizens, people with disabilities, and high school students, and its indirect audience is represented by specialists and instructors, employees of municipal institutions, members of the business community and general public. The results of the implementation of the above project have been quite impressive and may serve as a positive example of the use of technology for popularizing the benefits of the information society and teaching citizens the basics of electronic interaction;

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[2] Rossiiskoe agentstvo razvitiya informatsionnogo obshchestva [Russian Agency for the Development of the Information Society]. (n.d.). Vserossiiskoe detsko-yunosheskoe i molodezhnoe timurovskoe (dobrovol'cheskoe) dvizhenie. Napravlenie: Timurovtsy informatsionnogo obshchestva [The All-Russian Children's, Youth, and Junior Timurian (Volunteer) Movement. Strand: Timurians of the Information Society]. (in Russian). Retrieved from http://rario.ru/projects/timurovci.php

[3] Government of Yaroslavl Oblast. (2015). Realizatsiya Gubernatorskogo proekta po likvidatsii tsifrovogo neravenstva v Yaroslavskoi oblasti [Implementation of the Gubernatorial Plan on Eliminating Digital Inequality in Yaroslavl Oblast]. (in Russian). Retrieved from http://media.wix.com/ugd/ff6341_9d463c9aac694e0b8a67df5474c7c782.pdf

4) citizens aged from 24 to 45–50 years old who are already characterized by a relevant mindset and type of conduct in the information society; a key role in fostering this group's public need for the Authorities–Society OEI system will be played by advertising and PR.

Altogether, the results obtained through the authors' study are expected to facilitate the enrichment of existing knowledge in the area of electronic government and electronic democracy. What makes its contribution special is its interdisciplinary orientation, as the subject under study may not be the subject of study of just one sole science.

6. Conclusion

Summing up, it is worth noting that certain regions of the Russian Federation have been quite active in popularizing the latest technology related to the interaction of citizens with each other, the authorities, and various organizations, with outreach and awareness-raising work being conducted regarding the use of the advantages of the latest electronic services. However, these practices are pretty much local, as every region has its own target audience, a different understanding of project objectives, not to exclude the sham component.

Considering the historical and political and social context, it is the all-encompassing nature of the process of cultivating various mindsets to shape and drive human behavior by way of manipulation techniques that has made it effective and "fool-proof". It pays to carry out propaganda activities for all population age groups and across all regions concurrently. In addition, taking into account Russia's extensive experience using "classic" manipulation technology in politics [7, 12, 17, 27], it is worth noting that it is only through the use of all 3 the manipulation technologies (PR, propaganda, and advertising) that manipulation may be effective and major results may be achieved.

The significance of this study lies in that it brings to light the potential of using manipulation technology in the process of cultivating public demand for patronized goods. The state patronage mechanism proposed by the authors makes the process of cultivating the public need for the everyday use of e-government and e-democracy services integrated.

Altogether, the new angle to the study of e-government and e-democracy offered by the authors may help take to a whole new level the way man resolves issues in the interaction of the authorities and the public, as well as remediate the effects of the initially one-sided bureaucratic approach to the concept of electronic interaction services, by putting a primary focus on a managerial approach to state governance [9, p. 128] and an orientation toward the citizen (the consumer of government services), his rights and needs, which should enable Russia's information society to keep in step with the global trend of cultivating "digital", "smart" government.

Citizens' growing individual need for everyday use of open electronic authorities-society interaction systems will, eventually, take public demand to a new level, inducing thereby the streamlining of the legal and infrastructural components, citizens ultimately being the ones who will facilitate the development of electronic interaction services and the evolution of open dialogue in a modern democratic state.

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MEASUREMENT OF THE ADMINISTRATIVE BURDEN FOR THE ESTABLISHMENT OF SHIPPING COMPANIES IN GREECE

Nikos ALABANOS
Department of Maritime Studies, University of Piraeus
nikosalab@yahoo.gr

Sotiris THEODOROPOULOS
Professor at the Department of Maritime Studies, University of Piraeus
stheod@unipi.gr

Abstract

In the current economic environment of regulatory competition, the reduction of administrative burden (AB) is of crucial importance for the creation of favourable conditions, in order to attract foreign investments. The importance of administrative burden reduction is becoming more important on the agenda of the available policy tools, in order to widen the competitive advantage of national economies. At EU level, efforts to implement the principles of good regulation are of high political priority for the reduction of administrative cost. A key component for the implementation of the principles of good regulation and administrative cost reduction for entrepreneurship is the measurement & reduction of administrative burden via the development of specific methodological tools. In this paper, we estimate the administrative cost for the establishment of shipping companies in Greece, based on a hybrid model that is based on the existent ABM's structure (mainly on the international SCM) with the introduction of certain amendments, while we submit a concrete proposal for the reduction of AB in the related topic.

Keywords: administrative burden, good regulation, shipping, SCM
JEL classification: G38, K20, L51

1. Introduction

Bibliography describes in detail the consequences of regulatory framework failures that create distortions in the markets, both through the influence of microeconomic behavior of economic units or the optimal distribution of social surplus among interest groups. The introduction of regulatory compliance requirements, require a high administrative cost and time loss in order to meet the goals.

This type of distortions may lead to competitiveness gap situations (Alabanos, Theodoropoulos, 2016) such as: a) alteration of the relative input prices, b) negative input impact on the production process, technology and innovation, c) encouragement of rent-seeking situations, d) failure of operational budget schedule (cost, revenue, profit, opportunity cost etc.), which could cause non-reliable or biased decision-making situations. Furthermore, the regulatory process is affected by a tremendous competition among interest groups for rent seeking, regulatory annuities claims, or for regulatory process capturing by economic agents, consisting implicitly of technical barriers enforcement (entry barriers) or inefficient production costs reduction or maintenance of a politically optimal distribution of the rents (proceeds).

These negative aspects, so far, require an integrated approach in order to assess the costs and benefits in the process of legal framework rationalization or amendment, mainly in areas where market competitiveness is being influenced. In that context EU, with the White Paper on European Governance, has already recognized the need for "improving the efficiency of regulatory acts and simplifying them. European Commission (2005) highlights the importance of strengthening the economic impact assessment in order to contribute to the objectives of the renewed Lisbon strategy by: a) an integrated impact assessment of the legislative and regulatory proposals, b) integration of administrative burden calculation into the integrated impact assessment agenda and the establishment of a common approach for administrative

burden reduction among Member States, b) improvement of EU legislative framework impact assessment.

European Commission had launched a joint strategy for the reduction of administrative burdens on businesses from the existing regulation by 25% by 2012, endorsed by the Spring European Council on March 2007. Furthermore, a common "once only strategy" with principle initiatives across the European Union's (EU) 28 Member States (MS) and the 6 Associated Countries, referring administrative burden reduction through an integrated e-Government Action Plan, could generate a total net impact amounting to around € 5 billion per year by 2017, while a digital by default strategy at EU28 level could result in around € 10 billion of annual savings, with the economic impact being higher when there is a swift digitization of transactions.

2. Maritime Clusters Competitiveness and Administrative Burden

Administrative burden and institutional barriers can discourage the investment process primarily by affecting the stability of the business environment and business risk, either for the creation of new businesses or the expansion of existing activities (e.g. complex bureaucratic structures for the establishment, licensing and installation of business units, compliance with the business supervision framework, non-protection of intellectual property and innovation) (Baygan & Freudenberg, 2000). For this reason, country's regulatory burden tends to be associated with a high reluctance for the mobilization of investment funds due to increased risk and vice versa. The inefficiency or the excess cost of the regulatory framework affects directly maritime markets competitiveness. That cost is an additional burden for all imported products, as also as a tax on total exports.

Excessive regulatory costs reduce the competitiveness of the economy's products in the markets, while inhibiting simultaneously its growth prospects. In extreme cases, the expected benefits from the remove of trade barriers can be offset by the ineffectiveness of the regulatory framework in the maritime sector and specifically at ports level (Trujillo, L, G. Nombela, 1998). In addition, the failure to create conditions of sufficient competition in the maritime sector is a burden that is passed on to end-users with particularly high price level. The regulatory policy affects – implicitly or explicitly - three (3) key determinants that favor the growth of maritime clusters (De Lange, 2004) namely: (a) dissemination of knowledge (e.g. spillovers, regional development poles with universities, e.t.c.), b) innovation dynamics (e.g. linking R&D with development objectives, strengthening PPPs, e.t.c.) and c) complementarity of maritime clusters. Furthermore, the State through the regulatory process could play a key role in order to ensure long-term competitiveness of the maritime grid.

Maritime transport sector still suffers significantly form administrative burden pitfalls, as the single internal market for free movement of goods across EU waters is still a demand (i.e. significant administrative processes burden freight cargo companies, delays ship arrivals and departures at ports, while finally fees and commissions burden heterogarily more maritime transport). The European Commission adopted the Blue Paper agenda favoring this way an Integrated Maritime Policy for the European Union (European Commission, 2007a), and a detailed action plan for its achievement (SEC (2007)/1278). EU Roadmap for a Single European Transport Area [COM (2011) 144] sets out a series of initiatives to facilitate shipping within the EU "blue zone" (Blue Belt). Blue Belt includes also clear political guidelines for the significant reduction of administrative burden in the maritime transport sector within the EU, as also for the creation of "blue stripes" for the acceleration of administrative procedures at EU ports for community products. This initiative is estimated to reduce the administrative burden at the amount of 2.4 billion € during the period 2009 - 2040.

The key-factors for the excessive administrative burden at EU maritime transport market are according to EU conclusions (SEC 2009/46) the followings:

- Different transfer processes associated with the movement of dangerous goods by sea, compared to those transferred on land, aggravating thus the combined transport.
- Veterinary and plant health controls for products appropriateness at intra - EU maritime transport (except for some regular transport links between ports), are treated as import / export trade with third countries, followed by all accompanying formalities.

- The common regulatory framework governing the intra - EU maritime transport of goods, subjects into different interpretative rules, either by individual Member-States or even from port destinations within Member-States.
- The navigation technologies are fragmented and not interconnected, either at Member - State level, or at port level, preventing a common, integrated and compatible e-exchange platform for declarations and formalities throughout the EU maritime transport space.
- **The corresponding administrative procedures are not implemented with a common proxy through the Member - States.**

3. Administrative Burden Model Methodology

This section presents the methodology for the measurement of administrative burden for the establishment of Shipping Companies in Greece. The methodological tool is a hybrid Administrative Burden model that is based mainly on the S.C.M. structure (Alabanos, Theodoropoulos, 2016). For the identification of the legal framework we trace back data from: a) The National Printing Office database (www.et.gr), b) The legal database (www.nomoteleia.gr) that contains the legal framework, as well as the relevant case law (Table 1).

Table 1: Legal Framework for the Establishment of Shipping Companies in Greece

Nr.	Legal Framework
1	The provisions of L. 89/67 "concerning the establishment in Greece of foreign commercial and industrial companies" (Gazette 132/A/67) as supplemented by L.378/68 "on completion of L.89/67" (Gazette 82 /A/ 1968).
2	The provisions of Ar.25 of the L.27/75 (Gazette 77/A/75): “Concerning the taxation of ships, the imposition of contribution for the development of merchant shipping, the establishment of foreign shipping companies and the regulation of related issues" as it has been replaced or amended.
3	The provisions of ar.34 of the L.3427/05 (Gazette 312/A/05).
4	The L.814/78 (Gazette 144/A/78): “Referring the amendment of tax and other related provisions”.
5	The Joint Ministerial Decision Nr.1246.3/4/94/94 of the Ministers of National Economy, Finance and Shipping (Gazette 919/B/94): “Regulation of details regarding the establishment in Greece of offices or branches of foreign or national shipping companies, as it has been amended”.

Source: et.gr, nomotelia.gr

Via the collection of the related data it is assessed the level of actual compliance for each information obligation (I/O) or Administrative Activity (A.A.) of the legal framework. To assess the level of actual compliance, we processed information from: (a) the Directorate of Maritime Policy and Development of the Ministry of Shipping Greece; (b) the Department of Merchant Shipping of Cyprus, (c) Legal experts specializing in Maritime Law. Information obligations (I/O) or Administrative Activity (A.A.) that were considered to have no impact on shipping companies were excluded from the measurement. Data collection was based on expert’s answers, while the standardization of time processing was elapsed, due to restricted resources. Moreover, the actions required by Shipping company to comply with the obligation to provide information, except for the verification according to the legal framework, they have been verified with experts in maritime sector.

4. Administrative Burden Measurement: The Case of Shipping Companies Establishment in Greece

From the combination of the above institutional framework, a shipping company in order to establish a branch in Greece submits a relevant application form to the Maritime Policy and Development Directorate by attaching the following supporting documents:

1. An application form in which they are also included: (a) the exact company name; (b) the headquarter and the nationality of the company; (c) the company type; (d) the activity in the origin country and the activity of its branch in Greece, e) full details of its representative

and f) the branch offices address. In the above-mentioned application, it should also be stated that:

The company bears the obligation to import in Greece per annum a non-obligatory transferable foreign exchange of at least USD 50,000, in order to cover the operating costs of the company's office in Greece, as well as non-obligatory transferable foreign exchange for company's payments in Greece on its behalf or on behalf of third parties.

The company undertakes the obligation to deposit a letter of guarantee for the benefit of the Ministry of Finance (M.o.F.) from a domestic or foreign bank which is compatible with the relevant pattern that has been demonstrated by M.o.F. The letter of guarantee will be forfeited in favor of the State in case of violation of the provisions of the Greek Laws and the terms of licensing. The letter of guarantee provided by the Directorate for Maritime Policy and Development amounted to USD 10,000.

2. A Company's corporate statute or a validated copy of it, as well as an official translation thereof in the Greek language, in which it is, clearly indicated the shipping activity of the company.

3. A copy of company's management board minute validated for the authenticity of the signature, for the establishment of a company's office in Greece and the appointment of the representative.

4. A recent attestation (not more than two months) from the relevant Consulate in Greece or a competent authority of the origin country of the company's headquarter, in which it is stated that the company operates according to the law in the corresponding country.

5. Law Statement by the representative of the shipping company in Greece, duly authenticated for its signature, with the following assertions:

The acceptance of representative appointment at company's office or branch in Greece.

Confirmation that company's activities are restricted into shipping of Greek or foreign flag vessels of more than five hundred (500) cores, mainly routed to international voyages.

For shipping companies that operate at shipping management market, it is requested the ship name, the flag, the IMO number, the capacity of the ship and the ship owning companies that it represents.

6. If a holding company is going to be established, then a formal assignment approval of the ship owning company duly validated for its signature authenticity is requested. In case that the company is also the ship owner, and then it is validated a copy of the ship's nationality document.

7. A Treasury Fee is needed of total amount equal to € 2,000.

The implementation of the model designates that the total administrative cost for the establishment of a shipping company in Greece is amounted to 9.630 €, while the administrative cost per information obligations and the time needed are displayed in the following table (Table 2).

Table 2: Measurement of the administrative burden for the establishment of shipping companies in Greece

Information Obligations (I/O) – Administrative Activity (A/A)	Description	Legal Provisions	Involved Personnel (Entity)	Involved Entities	Time Processing (t)	Frequency Processing (f)	Cost per Activity
I/01: Licensing Application	Application for a shipping company establishment decision in Greece	M.D.1246.3/4/94/94 (Gazette 919/B/94)	Applicant Company	Ministry of Shipping and Island Policy			8.130,00 €
A.A.1: Familiarization with Information Obligation	Company stakeholders are informed about the relocation process being followed	M.D.1246.3/4/94/94 (Gazette 919/B/94)	Applicant Company	Legal Consultant			8.130,00 €

A.A.1.1: Data Recovery	Recovery of the following documents: a) Application, b) Commitment to import in Greece per annum a non-obligatory transferable amount of at least fifty thousand (US $ 50,000), c) Commitment to deposit for the benefit of M.o.F. a letter of guarantee from a domestic or foreign bank of the amount of $10.000, d) Declaration of the Law No. 1599/86 from the company's representative in Greece, e) Good Standing from the directors / officers that represent the company, endorsed by a consular authority according to apostille (Hague 1961).	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Legal Consultant	24/72 hours	1	3.000,00 €
A.A.1.2: Data Recovery		M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Public Service	1-2 hours	1	60,00 €
A.A.1.3: Data Recovery	Official translation for the shipping company's statute by the competent services of the Ministry of Foreign Affairs	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Public Service	72/96 hours	1	200,00 €
A.A.1.4: Data Recovery	Board of Directors (BoD) minutes (signature verified) with the decision for the establishment of the Company's office in Greece and for the appointment of a company representative	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	α) Company, β) Public Service	1-2 hours	1	100,00 €
A.A.1.5: Data Recovery	A recent (< of two months) attestation of the relevant Consulate in Greece or a competent authority of the origin country of the company's headquarter, from which it is resulted that the firm exists and operates legally in country	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Public Service	24/48 hours	1	100,00 €
A.A.1.6: Data Recovery	Certified copies of the ships nationality documents	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Public Service (e.g. KEP)	1-2 hours	1	100,00 €
A.A.1.7: Payments	Payout of a fee to the Public Coffers	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Tax Office (DOY)	1/2 hours	1	1.770,00 €
A.A.1.8: Data Submission	Document Submission A.A - .2-A.A.8 to the Licensing Authority	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Ministry of Shipping and Island Policy	2 hours	1	100,00 €
A.A..1.9: Payments	Deposit of a Bank Guaranteed Letter from a recognized domestic or foreign of the amount of US $ 10,000, within 2 months of the completion of the A.A.1.8.	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Ministry of Economy	24 hours	1	400,00 €

A.A.1.10: Data Recovery	Written inform within 3 months from the approval of the establishment of the Office or Branch in to the competent Ministries referring: (a) the exact firm name; (b) the headquarter and the nationality of the company; (c) the company type; (d) the activity in the origin country and the activity of its branch in Greece, e) full details of its representative and f) Branch offices address	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Ministries: a) Shipping and Island Policy (Directorate of Maritime Policy and Development), β) Economy, Development and Tourism, γ) Finance (Directorate of Income taxes)	3-4 hours	1	300,00 €
A.A.1.11: VAT record	Accounting expenses for start-up -VAT number acquisition	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Tax Office (DOY)	20 hours	1	2.000 €
I/O2: Licensing Obligations	Submission of the relevant documents	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Ministry of Shipping and Island Policy			1.500,00 €
A.A.2.1: Data Recovery	Information retrieval about the amount of foreign currency that is being imported each, which is converted in Euros.	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee		72/120 hours	n	300,00 €

A.A.2.2: Data Submission	Annual report to the competent Ministries: Ministries: a) Shipping and Island Policy (Directorate of Maritime Policy and Development), β) Economy, Development and Tourism, γ) Finance (Directorate of Income taxes) referring to: a) company activity, (b) the number of employees; c) the identity and the exact address of the foreign and Greek staff employed there; and (d) the currency amount that is imported every year.	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Ministries: a) Shipping and Island Policy (Directorate of Maritime Policy and Development), β) Economy, Development and Tourism, γ) Finance (Directorate of Income taxes)	24/48 hours	n	300,00 €
A.A.2.2: Data Submission	Submission of confirmatory documents of foreign exchange inflow: (a) Bank certificate in Greece for the foreign currency inflow and for the conversion into national currency, as well as the amounts in Euros that were directed to payments by the company in Greece.	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Ministries: a) Shipping and Island Policy (Directorate of Maritime Policy and Development), β) Economy, Development and Tourism, γ) Finance (Directorate of Income taxes)	48/72 hours	n	300,00 €
A.A.2.3: Data Submission	Notification of any company's alteration (e.g. headquarters, company's activities, headquarters, name, representative in Greece) within fifteen (15) days of the change.	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Ministries: a) Shipping and Island Policy (Directorate of Maritime Policy and Development), β) Economy, Development and Tourism, γ) Finance (Directorate of Income taxes)	24/48 hours	n	300,00 €
A.A.2.4: Data Recovery	Recovery of all the necessary notification related to recruitment, dismissal, and residence of the Office or Branch personnel , within 10 days of the alteration.	M.D.1246.3/4/94/ 94 (Gazette 919/B/94)	Applicant Company or Employee	Ministries: a) Shipping and Island Policy (Directorate of Maritime Policy and Development), β) Economy, Development and Tourism, γ) Internal Affairs	24/48 hours	n	300,00 €
				Total hours	364,5 - 608,5	Total Cost	9.630,00 €

5. The Case of Cyprus - A Comparative Analysis

According to data from the Department of Merchant Shipping of Cyprus[1] and other state sources[2], for the registration and establishment of a shipping company in Cyprus, the following steps are followed:

- The registration process of a company includes the completion and delivery of the application for the approval of the company's name to the Cyprus Tax Authorities, while a fee is requested (payment by a check in the name of the Cyprus Tax Authority with the aforementioned fee).
- The application can be submitted through a lawyer or by mail. Alternatively, the application may be submitted to the "One Stop Shop", which was created to reduce bureaucracy and significantly reduce the average time for setting up a company.
- After obtaining the company's name, the relevant documents for the registration of the company (Company's statute, Founding Document, etc.) are submitted through a lawyer to the Cyprus Tax Authorities. The relevant cost includes a payment of € 105 as fee, a subscription tax on the nominal capital of the amount of 0.6%[3] and the amount of € 100 as legal documents costs.

The total cost for the establishment of the shipping company, the registration of European VAT, the issuance of a bank account and the corporate stamp, amounts to € 1,500 - 1,800 (Table 3).

A comparative analysis among the different administrative procedures followed in Greece and Cyprus leads to the following conclusions:

- The administrative cost for the establishment of a shipping business in Greece is 535% - 642% higher than the corresponding in Cyprus, while it is indicative for the need of administrative procedures simplification in Greece, as they do not favor the competitiveness of the maritime sector (see Chart 1).
- The time length for the completion of the above-mentioned administrative procedures in Greece are 3.5 to 3.7 times higher than in Cyprus, a result that is tightly linked with the prerequisite to carry out more administrative procedures in Greece (15 steps) in comparison with Cyprus (8 steps), which normally require spending more working hours (see Chart 2).
- Driven cost procedures for the establishment of a shipping business in Greece are linked mainly with: i) The obligation for an annual non-obligatory transferable amount of at least US $ 50,000 as input, ii) The obligation for a Bank Deposit Guarantee Letter of an accredited national or international Bank of the mount US $ 10,000 and iii) The submission of confirmatory documents for the above-mentioned foreign currency input. These prerequisites accounts for 38.4% of the administrative burden of shipping companies set up in Greece.
- Main administrative activities that refer to data submission (e.g. A.A.1.10, 2.2, 2.3 e.t.c.) could be simplified. These processes could be carried out via e-government applications and/or to be submitted electronically to a one Stop Shop public service.
- The implemented data submission processes that could be an interim public administration cross-check activity (e.g. A.A.2.2., 2.3 and 2.4. include data that either exist in public service databases or could be submitted into a corresponding public database, e.g. the general commercial registry - http://www.businessportal.gr).

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[1] *http://www.mcw.gov.cy/mcw/dms/dms.nsf/registercomp_gr/registercomp_gr?OpenDocument*

[2] *http://www.businessincyprus.gov.cy/mcit/psc/psc.nsf/All/AF36BC1B32458A7AC22579E50023FAD5?OpenDocument*

[3] *According to the companies Law, the minimum capital share for the establishment of a company in Cyprus is €100. The capital share of the company must be in EUROs. The shares that may be issued by the company are either "preferred stocks" or "common stocks"(http://www.olc.gov.cy/olc/olc.nsf/all/E1EAEB38A6DB4505C2257A70002A0BB9/$file/The%20Companies%20Law,%20Cap%20113.pdf?openelement)*

Chart 1: Administrative Burden for shipping company establishment (Greece vs. Cyprus)

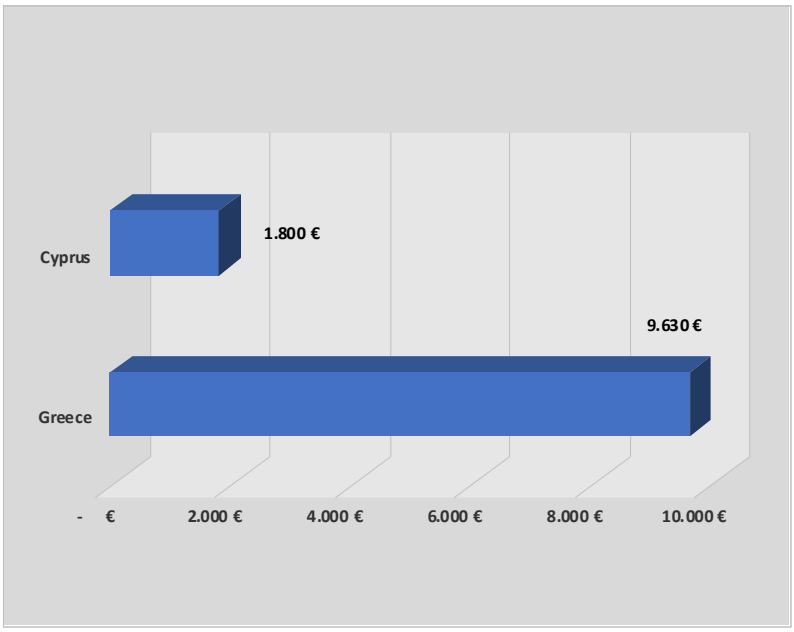

Chart 2: Time Length for the establishment of a shipping company (Greece vs. Cyprus)

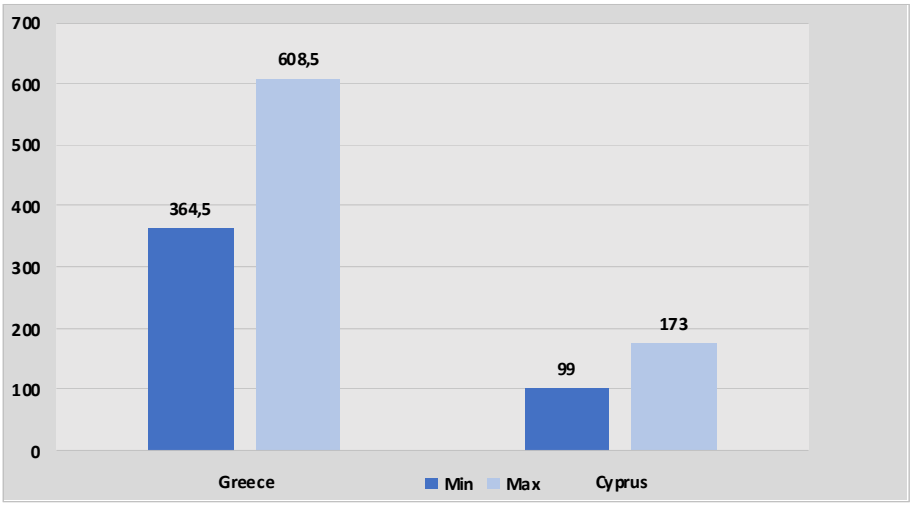

Table 3: Measurement of the administrative burden for the establishment of shipping companies in Cyprus

Information Obligations (I/O) – Administrative Activity (A/A)	Description	Involved Personnel (Entity)	Involved Entities	Time Processing (t)	Cost
I/O 1: Information Obligations - Licensing Application	Information regarding the request for the establishment of a shipping company in Cyprus	Applicant Company or Legal Consultant	a) Department of Merchant Shipping of Cyprus, b) One Stop Shop, c) Cyprus Tax Authorities, d) Legal Consultant		

A.A.1: Familiarization with Information Obligation	Inform the Stakeholder about the relocation process being followed	Applicant Company or Employee or Legal Consultant	One Stop Shop or Cyprus Tax Authorities	2-3 hours
A.A. 1.1: Data Recovery	Application for approval of the company's name	Applicant Company or Employee	Cyprus Tax Authorities	24/48 hours
A.A. 1.2: Data Recovery	Approval of a Company's Name	Applicant Company or Employee	Cyprus Tax Authorities	
I/0 2: Licensing Application	Decision request for the establishment of a shipping company in Cyprus	Applicant Company or Legal Consultant	a) One Stop Shop, b) Cyprus Tax Authorities, c) Legal Consultant	
A.A. 2.1. Data Submission	Submission of a copy of Company's statute and Founding document	Applicant Company or Legal Consultant	Cyprus Tax Authorities	24/48 hours
A.A. 2.2. Data Submission	They are also submitted: a) a form with the employees and the directors of the company; b) a statement of the company's registered office; c) a written statement by the lawyer hat the registration procedure and the company's statutes are in accordance with the law	Applicant Company or Legal Consultant	Cyprus Tax Authorities	
A.A. 2.3. Payments	Remuneration € 100 for procedures acceleration	Applicant Company or Legal Consultant	Cyprus Tax Authorities	1-2 hours
I/O 3: Licensing Approval	Submission of relevant statutory and regulatory acts	Applicant Company or Legal Consultant	Cyprus Tax Authorities	

A.A. 3.1. Data Submission	The applicant company submits in addition to a certified copy of the Company's statute, 4 certificates: Certificate of Registration, Shareholder Certificate, Personnel Certificate and Company Registration Address Certificate (total cost € 220)	Applicant Company or Legal Consultant	Cyprus Tax Authorities	24/48 hours	
A.A. 3.2. Data Submission	Submission of Company's statute and the founding document of the shipping company for the acquisition of VAT number	Legal Consultant	Cyprus Tax Authorities	24 hours	
A.A. 3.3. Payments	Payment of € 105 fee, plus subscription tax on the nominal capital (0,6%) and the cost of legal documents (€ 60)	Legal Consultant	Cyprus Tax Authorities		
		Total hours	99 - 173	Total Cost	1.500 - 1.800 €

6. Conclusion

Key issue for the public sector especially in the maritime sector is to identify those regulatory interventions that will enhance its competitiveness and will support the transformation of traditional maritime and industrial networks into innovation networks. The reduction of regulatory and administrative cost plays significant role, since it directly affects the structure and the competitiveness of maritime cluster sectors. Public sector in Greece should take all the necessary initiatives in order to reduce the administrative burden procedures in order for the Greek shipping sector to remain competitive and attractive for foreign investments. The redesign and reduction of the administrative procedures for the establishment of shipping companies in Greece could be one link into that chain. In favor of maritime sector competitiveness Greece should take certain initiatives into the following direction: a) elimination of the "driven costs administrative procedures" for the establishment of a shipping business in Greece, b) restriction of the time length for the completion of the administrative procedures for the establishment of a shipping company and c) simplification and digitalization of data submission or recovery processes.

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PRODUCTIVE EFFICIENCY OF PORTUGUESE VINEYARD REGIONS

Ana MARTA-COSTA
Corresponding author. Assistant Professor. University of Trás-os-Montes e Alto Douro (UTAD) and Centre for Transdisciplinary Development Studies (CETRAD), Portugal, www.utad.pt
amarta@utad.pt

Vítor MARTINHO
Coordinator Professor. Agricultura School, Polytechnic Institute of Viseu, Portugal
vdmartinho@esav.ipv.pt.

Micael SANTOS
Research fellow. University of Trás-os-Montes e Alto Douro (UTAD) and Centre for Transdisciplinary Development Studies (CETRAD)
micaels@utad.pt

Abstract
The overall globalization in wine industry and the search for sustainability of the sector has increased competition which highlights the importance of productivity gains. The purpose of this paper is to analyse the productive efficiency of the viticulture sector for the Portuguese regions, over the period 1989 to 2007, with data from the EUFADN, using both a deterministic and stochastic approach. The results show an increase of Technical Efficiency (TE) when used the stochastic frontiers analysis (SFA) in all regions, while the data envelopment analysis (DEA) approach through the Malmquist index reveals a stabilization of TE.

Keywords: Efficiency, productivity, Portuguese regions, viticulture.
JEL classification: C6, Q1

1. Introduction

Over the last decades the wine industry has been subject to an intensive globalization and international competition, a fact that poses both challenges and opportunities to the wine regions, which are compelled to adopt innovative strategies.

Despite recent impressive performance of the New World wine countries, both in output and exports, the European Union (EU-28) continues to be, in 2014, world's leader in wine production, occupying almost 50% of vineyards area worldwide and responsible for around 65% of the wine production by volume and trade (GAIN, 2015). Nevertheless, the recent trend has been for the EU-28 vine growing area (of just under 3.5 million ha in 2013) to decline, due to shrinking margins and EU subsidies paid to farmers to uproot their vines. The EU's Common Agriculture Policy (CAP) aims to increase the competitiveness of the wine industry, maintaining the best traditional practices, reinforcing the rural social fabric and preserving environmental sustainability.

The winemaking sector plays also a key role in the Portuguese economy. Portugal is the 11th wine producer and the 9th exporter in value and volume in the world (OIV, 2016). Half of the total national wine production is exported, which represents nearly 2% of national exports (IVV, 2013). Portugal's 2014 wine production was 3.62% of the EU-28 (589 million litres) and the 2015 grape growing area was 217,000 ha (GAIN, 2015 and OIV, 2016). The country is divided into 14 main high quality wine producing region.

In recent decades the grapevine/wine sector has been modernized, creating strict regulations to guarantee wine characteristics, making this sector generally more competitive on the global market. However, the increase of competitiveness imposed by globalization has led new challenges and threats for the survival of the firms in the wine sector (Sellers-Rubio et al., 2016). The grape growers should achieve better levels of efficiency and improve the performance of their firms who makes the studies on the productive efficiency more important. The producers always aspire at increasing the efficiency of their production process, but they do not always succeed in optimizing it. The research of reasons behind firm

inefficiency is very important to correct fragilities and to improve efficiency in the production context.

The production efficiency estimation regarding different vineyard systems plays an important role in the field of economic context, as it allows managements to reach high levels of performance restricting resources, minimizing undesired inputs or optimizing desired outputs. However, organizations' competitiveness allied to efficiency analysis must be allocated also as a key tool in improving social wellbeing and promoting sustainable development (Marta-Costa, 2010a, 2010b; Marta-Costa and Silva, 2013) as the concept evolves the parsimony use of economic resources in order to reach cost minimization, output and profit maximization (Sampaio, 2013). Given the continuous pressure on vineyard products' margins, improvements in organisations' economic efficiency can boost the financial situation of both farms and vineyard-dependent communities.

The aim of this paper is to analyse the Technical Efficiency (TE) of the vineyard sector in Portuguese regions, using both a deterministic and stochastic approach, over the period 1989 to 2007, using data from the European Farm Accountancy Data Network (EUFADN, 2017).

2. Productive Efficiency of Viticulture Sector: A Literature Review

The concept of productive efficiency has been decomposed into technical and allocative efficiency, by Farrel (1957). The first occurs when given a certain level of inputs, the Decision Making Unit (DMU) is able to produce the maximum level of outputs or, given a certain level of output, the DMU is able to minimize the level of input (Fleming et al., 2014). The allocative efficiency reflects the ability of a firm to use the inputs in optimal proportions, given their respective prices to minimize the cost or maximize the revenue (Aparicio et al., 2013).

Increasing production efficiency on the wine sector calls for a better understanding of the key factors driving the performance of vineyard systems. This could be a difficult task due to the heterogeneous characteristics of the used production systems (Sellers-Rubio et al., 2016). For instance, in the case of Portugal, the farms are composed by several blocks and each block represent a different variety of grapes/vines and management. The multiple effects of the grapevine physiology and the grapevine-environment-agronomy interactions are widely recognised, and have implications on yield and berry quality, which in turn determine the major drivers of the vineyard efficiency.

Related to the heterogeneous characteristics of the used production systems, for example Moreira et al. (2011), in their study of Chilean wine grape producers, classified four categories of planting vine systems: simple cordon, double cordon, pergola and other training system, which affect the productive efficiency of farms. The pergola system was the most productive, while the simple and double cordon were less productive. Regarding to TE the other training systems exhibit a highest level, followed by simple cordon, pergola and double cordon.

Other studies relate efficiency levels both to microeconomic factors, such as farm and farmer characteristics (Conradie et al., 2006; Henriques et al., 2009); grape variety (Coelli and Sanders, 2013; Manevska-Tasevska, 2013); diversification and specialisation (Henriques et al., 2009; Coelli and Sanders, 2013); irrigation (Conradie et al., 2006; Henriques et al., 2009), and to macroeconomic factors, such as developments in the financial system; the quality of human capital, and per capita wine consumption (József and Péter, 2014).

The value and volume of grapes or wine are the main variables identified by the literature regarding the outputs of the vineyard systems. According to Sellers-Rubio et al. (2016) and Sellers-Rubio and Más-Ruiz (2015) the output in monetary terms reveals the ability of wine producer to transform inputs into wine outputs value or value of grapes produced and it represents the economic concept of efficiency. Although the quantity of output in volume corresponds to the technical concept of efficiency and it is evaluated by the wine producer ability to transform some inputs into litres of wine or quantity of grapes produced.

In other words, some farms are concerned to produce as much as possible at the lowest price, while other prefers to produce less and with higher quality to sell wines with a higher price. According to Coelli and Sanders (2013) variable of output estimated in quantity terms does not take into account differences in quality. The production efficiency estimation of wine sector, in terms of quantity, is present in the studies of Tóth & Gál (2014), Moreira et al.

(2011) and Freitas (2014). Although, the production efficiency estimation, in terms of value, giving attention not only to price of each wine or grape produced but also to the quantity, was developed by Sellers-Rubio et al. (2016), Sellers-Rubio & Más-Ruiz (2015), Aparicio et al. (2013), Vidal et al. (2013), Brandano et al (2012), and Henriques et al. (2009).

These two ways of efficiency conceptualizations of the farms is of great importance in supporting famers' decisions to adapt their vineyards and production systems and open discussion regarding the model to pursue for the future, sometimes associated with the availability of the data.

The studies with values of output use variables such us sales revenue, profit volume and earnings (Sellers-Rubio et al. 2016; Sellers-Rubio & Máz-Ruiz, 2015; and Brandano et al., 2012), total output in value (Henriques et al., 2009) and value of domestic and foreign sales (Aparicio et al., 2013; Vidal et al., 2013). While when output are in volume the used variables are the quantity of wine production (Tóth & Gál, 2014) and quantity of grapes produced (Moreira et al., 2011; Freitas, 2014).

For inputs, we found three main categories of variables for the study of the vine-growing system efficiency: labour, capital and land. However, intermediate consumption can be an important input like Freitas (2014) studied. Moreover, Coelli and Sanders (2013) identify irrigation for inputs too, but this variable is important only for dryland farms. Some studies identify only two inputs (labour and capital), such as Sellers-Rubio et al. (2016), Sellers-Rubio & Más-Ruiz (2015), Freitas (2014) and Brandano et al. (2012). But, Tóth & Gál (2014), Moreira et al. (2011) and Henriques et al. (2009) added the used land while Aparicio et al. (2013) used also the number of vinegrowers. Other studies (Aparicio et al., 2013; Vidal et al., 2013) opted by the lonely input of land.

Also, the same variable could be measured by different ways. The labour input is studied by the number of employees (Sellers-Rubio et al., 2016; Sellers-Rubio & Más-Ruiz, 2015) or by agricultural employment (Tóth & Gál, 2014), labour cost (Moreira et al., 2011; Brandano et al., 2012) or by work hours (Freitas, 2014; Henriques et al., 2009). The land input variable seems to be more consensual and are measured by the used area of land in hectares. For the capital input, the papers use some variables such as equity level of winery (Sellers-Rubio et al., 2016), funds of company (Sellers-Rubio & Más-Ruiz, 2015), level of debt (Sellers-Rubio et al., 2016; Sellers-Rubio et al., 2015), net agricultural capital stock (Tóth & Gál, 2014) and capital like machinery costs and other fixed assets (Moreira et al., 2011; Freitas, 2014; Brandano et al. 2012; and Henriques et al., 2009). In addition to these inputs, some studies also include the intermediate consumption with the vegetal production such the costs with pesticides and fertilizers (Moreira et al. 2011; Freitas, 2014; and Henriques et al., 2009).

These multiplicity of the variables used for productive efficiency estimation intensifies the discussion about the different results that could be gathered and how could they influence the decision of the farmers and other stakeholders of the industry. Besides the main groups of variables of outputs and inputs, the literature refers also to other variables regarding the inefficiency of the farms. Some examples of these variables are the access to finance, planting vine system, type of wine, grape quality, type of firm, employment rate, average of wages paid, gross domestic product and others (Moreira et al., 2011; Fuensantana et al., 2015; Tóth & Gal, 2014).

In general, the reflection of the literature of production efficiency studies shows that there are some variables that are consensual and common in several works, as land area, labour and capital (inputs). However, there are other variables that can affect the efficiency in different ways but there are not consensual. The great diversity of variables that have already been used, makes the study of productivity and efficiency very complex and complicated to estimate. Despite this, these studies are very important for wine-growing producers because the efficiency is a goal that they have in mind.

Empirical studies have adopted two main alternative approaches, often based either on (non-parametric, non-stochastic) mathematical programming models or on (stochastic, parametric) econometric models. Both are very useful to support decision-making because they give an indication of what the main characteristics of farm are and how some of the problems identified may be solved (Silva et al., 2013).

According to Coelli et al. (2005) exist four methods: least-squares econometric production models; total factor productivity indices; data envelopment analysis (DEA); and stochastic

frontiers analysis (SFA). The first two models assume that all firms are technically efficient, although the last two are the methods most used to estimate efficiency especially at one point in time. While the method least-squares econometric production models and stochastic frontiers involve the econometric estimation of parametric functions, the method total factor productivity indices and DEA do not (Coelli et al, 2005).

The DEA and SFA are the methods most used in literature of productive efficiency. DEA estimate the efficiency frontier and the distance of production frontier of the DMUs to the efficient frontier give us a measure of inefficient (Sellers-Rubio et al., 2016; Sellers-Rubio & Más Ruiz, 2015; Brandano et al., 2012). DEA is a non-parametric methodology based on linear programing techniques and is not necessary to include specific functional forms for the production function (relationship between inputs and outputs) to establish the efficient frontier (Sellerrs-Rubio & Más Ruiz, 2015; Brandano et al., 2012; Cullinane et al., 2006; Henriques et al., 2009; Moreira et al., 2011). A DMU is efficient in DEA analysis if no other DMU is able to produce more outputs from the same inputs or is able to produce the same outputs with less inputs (Sellers-Rubio & Más Ruiz, 2015). Moreover, a DEA can study a framework with multiple input-output focuses on a virtual single input-output structure (Brandano et al., 2012; Cullinane et al., 2006). Furthermore, DEA considers specification error as minimal, so not consider random shocks or measurement errors and all factor are due to inefficiency (Cullinane et al., 2006). When panel data is available, the DEA allows the calculation of the Malmquist index, which estimates the changes in productive efficiency during the analysed period (Fare et al., 1994).

SFA is an alternative approach of DEA and was introduced simultaneously by Aigner et al. (1977) and Meeusen and van Den Broeck (1977). This approach as some advantages, such as include measurement errors and random shocks, analyze the structure and investigate the determinants of producer performance. However, to have this structure and to investigate determinants it is needed a more solid economic theory (Cullinane et al., 2006). Moreover, the SFA needs to have a functional form, so there is a greater risk of imposing a priori assumptions about production technology and it is difficult to verify the precise specification of the error structure (Cullinane et al., 2006).

The Stochastic Production Frontiers (SPF) is used by several articles like Moreira et al. (2011); Tóth & Gal (2014) and Mourão and Martinho (2016). Although, the DEA is used by studies such as Sellers-Rubio et al. (2016), Sellers-Rubio et al. (2015), Freitas (2014), Vidal et al. (2013), Fuensanta et al. (2015), Aparicio et al. (2013) and Brandano et al. (2012).

3. Data and Empirical Model

The database from EU (EUFADN, 2017) is available for the period 1989 to 2007 and for the five regions of Portugal (Entre Douro e Minho and Beira Litoral; Trás-os-Montes and Beira Interior; Ribatejo e Oeste; Alentejo and Algarve; and Açores and Madeira), which allows a panel data, despite the aggregated available information in an average value.

Descriptive statistics for the data used in this analysis are presented in Table 1.

Table 1. Descriptive statistics of variables for regions from 1989 to 2007

Descriptive statistics	Wine and grapes (Euros)	Vineyards area (Ha)	Inputs for all the activities of the farms		
			Labour (Hours)	Total specific costs (Euros)	Average farm capital (Euros)
Obs.	95	95	95	95	95
Mean	1939	0.864	3370	5536	35703
Std. Dev.	1291	0.634	455	3610	18989
Min	276	0.040	2141	1729	19216
Max	5539	2.120	4754	17839	106245

Source of data: EUFADN (2017)

Of stressing that the sample farms is around 500 and 1000 in Entre Douro e Minho and Beira litoral, Trás-os-Montes and Beira interior, and Ribatejo e Oeste (in this region changed to 200-500 after the year 2000). In Alentejo and Algarve, and Açores and Madeira the sample is around 200 and 500.

In this work we studied the SPF function proposed by Aigner et al. (1977) and Meeusen and van Den Broeck (1977). Although, we used an extension of the original model established by Battese and Coelli (1992), that is typically used when panel data is available to explain the change in TE (Battese and Coelli, 1995). The used model can be represented as:

$$\log(Y_{it}) = \propto + \beta_1 \log X1_{it} + \beta_2 \log X2_{it} + \beta_3 \log X3_{it} + \beta_4 \log X4_{it} + v_{it} - u_{it} \quad (1)$$

where (1) is a Cobb and Douglas (1928) function, being the Yit the wine and grape p

roduction in euros of the i-th region in the t-th year; α is the constant; β is the unknown parameters to be estimated, being X1 the vineyard area in hectares; X2 represents the labour in hours; X3 the average farm capital in euros; and X4 the total specific costs in euros; vit is the random error and uit is the non-negative random variable, associated with technical inefficiency in production of firms in the industry involved. The selected input variables of this model are the most consensual in the literature that affects the TE of the vineyard sector.

When this model is estimated, the TE is given by:

$$\mathrm{TE} = \exp(-u_i) \quad (2)$$

The calculations of the model (1) and (2) were performed with resource to the SFA (time-varying decay) and using Stata (2017) software. Time-varying decay models allow for changes in the TE over the considered period and the pertinence of these models is verified through the eta values (Battese and Coelli, 1992). Eta refers to time-varying inefficiency effects and positive values signify that the firms improve their TE over time.

In this study we also used the Malmquist (1953) index, which was introduced by Caves et al. (1982) with resource to DEA model (Fare et al., 1994) using the DEA Program (DEAP) 2.1 version. The DEAP allows the application of Malmquist DEA methods to panel data to calculate indexes of total factor productivity (TFP) change divided in efficiency change and technical change. The efficiency change represents the deviations of best practice frontier, while the technical change reflects the frontier shift over time, so the efficiency change reflects the "catching-up" effect, while technical change reflects "frontier shift" effect (Sellers-Rubio et al., 2016). The Malmquist index is estimated using distance functions and through the available panel data it allows the study of the changes in efficiency on different regions of Portugal. An input-oriented model was used to obtain an efficient unit based on a proportional decrease of its input, while the outputs proportions remain unchanged (Coelli et al., 2005).

The Malmquist index quantifies the change in total factor productivity (TFP) between two data points by calculating the distance ratio of each point relative to a common frontier. According to Grifell-Tatjé and Lovell (1996), for a given unit, the (product-oriented) index of Malmquist TFP between periods t (base period) and t+1 is given by:

$$M_{t,t+1}(y_{t+1}, x_{t+1}, y_t, x_t) = \left[\frac{d^t(y_{t+1}, x_{t+1})}{d^t(y_t, x_t)} \times \frac{d^{t+1}(y_{t+1}, x_{t+1})}{d^{t+1}(y_t, x_t)} \right]^{1/2} \quad (3)$$

$M_{t,t+1}(y_{t+1}, x_{t+1}, y_t, x_t)$ is the geometric mean of two Malmquist indexes (ratios between distance functions), adopting the first as reference technology of period t and the second one of period $t+1$. A value of the Malmquist index greater, equal or less than one indicates the occurrence of growth, stagnation or decline of TFP.

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4. Results

The table 2 presents the results of the model (1). Its analysis shows that the wine and grape productions are mainly explained by the vineyard area and by the average farm capital (statistically significant). These results reveals the importance of the efforts made to modernize the farms, namely with the structural financial supports from the Community Support Frameworks applied in the Portuguese agricultural sector. The other inputs (labour and specific costs) are not statistically significant. Probably this situation occurs because these inputs reflect all the activities of the farm, instead only from the vineyard activity. All parameters have a positive signal, which means that the increase of the inputs (average farm capital, labour and vineyard area) allows an increase of the production, with the exception of the specific costs that have an inverse relationship with the production of wine and grapes. However, the values of the parameters show the pertinence of the model, namely the results for the parameter gamma. They reveal a model constant to the scale (1.082) which means that the increase in the quantity of use of the inputs determines a proportional increase of the quantity of the output.

Table 2. Results considering SFA of production function (time-varying decay), across the period 1989-2007 and for five Portuguese regions, with the logarithm of wine and grape productions as dependent variable

Variables	Parameters and statistical t
Constant	3.484 (1.070)
Logarithm of vineyard area	0.550* (9.330)
Logarithm of labour	0.033 (0.090)
Logarithm of total specific costs	-0.052 (-0.400)
Logarithm of average farm capital	0.447* (2.310)
/mu	0.100 (1.220)
/eta	0.109* (4.170)
/lnsigma2	-2.244* (-14.570)
/ilgtgamma	-2.935* (-2.160)
sigma2	0.105
Gamma	0.050
sigma_u2	0.005
sigma_v2	0.100

Note: *, statistically significant at 5%. Source of data: EUFADN (2017).

The table 3 presents the results for TE (time-varing decay) for the Portuguese regions over the period 1989-2007.

Table 3. Results for TE (time-varying decay), across the period 1989-2007 and for five Portuguese regions

Year	Entre Douro e Minho and Beira Litoral	Trás-os-Montes and Beira interior	Ribatejo and Oeste	Alentejo and Algarve	Açores and Madeira	Annual mean
1989	0.851	0.427	0.460	0.221	0.491	0.490
1990	0.865	0.466	0.498	0.258	0.528	0.523
1991	0.877	0.504	0.535	0.297	0.564	0.555
1992	0.889	0.541	0.571	0.336	0.598	0.587
1993	0.900	0.576	0.605	0.376	0.631	0.617
1994	0.909	0.610	0.637	0.416	0.661	0.647
1995	0.918	0.642	0.667	0.456	0.690	0.675
1996	0.926	0.672	0.696	0.494	0.717	0.701
1997	0.934	0.700	0.722	0.532	0.742	0.726
1998	0.940	0.726	0.747	0.567	0.765	0.749
1999	0.946	0.750	0.770	0.602	0.786	0.771
2000	0.952	0.773	0.791	0.634	0.806	0.791
2001	0.956	0.794	0.810	0.665	0.824	0.810
2002	0.961	0.813	0.828	0.693	0.841	0.827
2003	0.965	0.831	0.844	0.720	0.856	0.843
2004	0.968	0.847	0.859	0.745	0.870	0.858
2005	0.972	0.861	0.873	0.768	0.883	0.871
2006	0.974	0.875	0.885	0.789	0.894	0.884
2007	0.977	0.887	0.896	0.809	0.904	0.895
Annual mean	**0.931**	**0.700**	**0.721**	**0.546**	**0.740**	**0.727**
TE_{2007}/TE_{1989}	**1,148**	**2,077**	**1,948**	**3,661**	**1,841**	**1,827**

The results for the estimated TE (table 3) demonstrate the increase of index over the period 1989-2007, for all Portuguese regions. Entre Douro e Minho and Beira Litoral have the higher TE (annual mean of 0.931) while Alentejo and Algarve have the lower values (annual mean of 0.546). However, the most efficient group of regions - Entre Douro e Minho and Beira Litoral - only has a TE of 1.148 times for 2007 greater than 1989, while the most inefficient

group of regions - Alentejo and Algarve - has a TE 3.661 times greater in 2007, related to 1989.

The results regarding the DEA approach through the Malmquist index are in table 4.

Table 4. Malmquist index results of annual and region means

Malmquist Index summary of annual means					
Year	**Efficiency change**	**Technical change**	**Pure TE change**	**Scale efficiency change**	**Total factor productivity change**
1990	0.999	0.657	0.999	1.000	0.656
1991	0.909	0.854	0.909	1.000	0.776
1992	0.863	1.462	1.068	0.808	1.261
1993	1.257	1.123	1.016	1.238	1.412
1994	1.016	0.681	1.016	1.000	0.692
1995	0.911	0.865	0.911	1.000	0.787
1996	0.960	2.021	1.097	0.875	1.940
1997	1.095	0.969	0.958	1.143	1.061
1998	1.042	0.699	1.042	1.000	0.728
1999	1.001	0.754	1.001	1.000	0.754
2000	0.862	2.467	0.967	0.891	2.126
2001	1.138	0.838	1.014	1.122	0.954
2002	0.984	0.823	0.984	1.000	0.809
2003	1.034	0.532	1.034	1.000	0.550
2004	0.894	3.280	0.935	0.956	2.934
2005	1.112	0.687	1.063	1.046	0.764
2006	1.007	0.885	1.007	1.000	0.891
2007	0.974	0.987	0.974	1.000	0.960
Mean	**0.998**	**1.000**	**0.998**	**1.000**	**0.998**
Accumulated $_{1990/2007}$	**0.973**	**0.998**	**0.972**	**1.000**	**0.965**
Malmquist Index summary of firm means					
Region	**Efficiency change**	**Technical change**	**Pure TE change**	**Scale efficiency change**	**Total factor productivity change**
Entre Douro e Minho and Beira Litoral	1.000	0.833	1.000	1.000	0.833
Trás-os-Montes and Beira interior	0.998	0.909	0.998	1.000	0.907
Ribatejo e Oeste	1.000	1.008	1.000	1.000	1.008
Alentejo and Algarve	0.997	1.056	0.997	1.000	1.052
Açores and Madeira	0.998	1.240	0.998	1.000	1.237
Mean	**0.998**	**1.000**	**0.998**	**1.000**	**0.998**

On the one hand, the analysis reveals that, in an annual perspective, the TFP increased in 1992 (because of the technical change), 1993 (in consequence of increases of all indexes), 1996 (strong increase in the technical change), 1997 (increase in the efficiency change, derived from the scale efficiency change) and strongly in 2000 and 2004 (because of greater increases in the technical change). On the other hand, TFP decreased in the other years, due to the technical change, and in 2007 due to the efficiency change. Considering the mean and accumulated values over the analysed period and for the five Portuguese regions, it is observed that the TFP decreased slightly because of small decreases in the efficiency, derived from the efficiency change, more precisely of the pure technical efficiency.

In any case, the TFP shows an increasing trend during the period in terms of regional analysis. Ribatejo and Oeste, Alentejo and Algarve, and Açores and Madeira improved their TFP derived from the increases in the technical change. However, the TFP of Entre Douro e

Minho and Beira Litoral, and Trás-os-Montes and Beira Interior regions decrease due essentially to the decrease of technical change.

The joint analyse of the previous tables (3 and 4) emphasize different results. While the SFA (table 3) shows the increasing of efficiency, the Malmquist index (table 4) shows that the efficiency productivity index do not change over the period 1989-2007. The gains of efficiency, through SFA (table 3) decrease in last years, from 0.810 (2001) to 0.895 (2007), in annual mean values. Although, the Malmquist index (table 4) had more loses in the efficiency change, with indexes of 0.863 (1992), 0.862 (2000) and 0.894 (2004), precisely the years closest to the most important CAP reforms.

In terms of regional analysis, while the SFA shows that the Entre Douro e Minho and Beira Litoral are the most technical efficient region (table 3) and with some growth, the Malmquist index shows that TFP change decreases over the period 1989 to 2007, due to the technical change (table 4). However, the Alentejo and Algarve is the most inefficient regions through SFA (table 3), but with the greatest progress. The Malmquist index emphasizes this situation, once it reveals a positive change in TFP for the same regions.

5. Conclusions

The estimation of productivity efficiency of Portuguese regions over the period 1989-2007 conduct to the different results when is used SFA and DEA through Malmquist index. Based on the first approach all regions improve TE over the period 1989-2007, while it is noted a decrease when calculated the Malmquist index or TFP change due to the efficiency change. It means that some farms have difficulties in approaching the best frontier of production.

In regional terms, SFA shows the improved technical progress for all Portuguese regions, especially in the most inefficient regions, such as Alentejo and Algarve, while Malmquist index reveals that only two groups (Açores and Madeira; and Alentejo and Algarve) enhanced the TFP change and other two regions decreased the index (Entre Douro e Minho and Beira litoral; and Trás-os-Montes and Beira Interior). All these changes in Malmquist index are derived from technical change that reveals that some regions had technological progress and others had loses in efficiency due to the non-modernization of its production technologies.

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THE EMPLOYABILITY AND WELFARE OF FEMALE LABOR MIGRANTS IN INDONESIAN CITIES

Devanto SHASTA PRATOMO
Senior Lecturer, Brawijaya University Indonesia
dede_gsu02@yahoo.com

Abstract

The aim of the study, first, is to examine which factors are important to explain the employment status of female labour migrants in the cities in Indonesia. The second aim is to examine the welfare of female labour migrants measured by their earnings to occupation and poverty status in the cities. This study takes advantage of a data source of Rural Urban Migration of Indonesia and China (RUMiCI) of 2011 conducted by Australian National University (ANU) focusing on four Indonesian cities, including Tangerang, Samarinda, Medan, and Makassar. The study concludes that female migrants survive in the cities in terms of their employability and welfare. Although there is no significant difference in terms of their occupation status compared to female non-migrants, female life-time migrants mostly receive higher earnings and less likely to be living under poverty. Education is an important predictor for employability and welfare of female migrants.

Keywords: Rural-Urban Migration, Female Workers, Employment, Poverty
JEL classification: J61, I32, J16

1. Introduction

More than two decades, most countries in Southeast Asia, including Indonesia, have been experienced a great urban population growth (Firman, 2016). According to 2010 Population Census, the annual rate of urban population in Indonesia grew by 3.33 percent, which is more than doubled the annual rate of total population which grew by only 1.35 percent. The high population growth rates in the areas are dominated by in-migration from rural areas (rural-urban migration) (Firman, 2016). In total, Manning and Pratomo (2013) noted that there are about three million people in Indonesia had migrated from rural to urban areas in last five years. The massive rural-urban migration is a result of the economic development, together with the transformation of economic structures from less productive agriculture sector in rural areas to modern industry and service sectors in urban areas.

Although migration in Indonesia is still dominated by males, more than 40% of rural-urban migrants now are females (Effendi et al, 2009). In other words, females are now as likely as males doing migration, both internal and international migration. Females are no longer migrate for family reunification only, but they also migrate in their capacities as workers (Oishi, 2002). In Indonesia, the recent increased number of female internal migration is quite significant, potentially related to the improved transportation and travel safety within the country (Gunawan, 1996). Oishi (2002) also argued that global economy and the export-oriented industrialization supported social acceptances in global female migration.

There are three main females' motives of internal migration in Indonesia. First, females migrate to continue their studies for higher education in the universities, which more likely to be found in the cities. Malamassam (2016) showed that in Indonesia mostly there are more young female migrants for education than the male migrants. Young female migrants tend to face less family constraint compared to males (Fan, 2003).

Second, females migrate to the cities to enter the labour market in the modern sector, transforming from local agricultural landscapes in rural areas. However, compared to males, female migrants find more difficulties in accessing the modern sector employment in urban areas. The study by Manning and Pratomo (2013) showed that female migrants in the cities have lower probability to enter formal sector occupation compared to males and more likely to join the informal work, where the barriers to entry tend to be low. Effendi et al (2009) also

noted that a high proportion of female activities are recorded as family workers, which is classified as informal sector employment.

Third, there are some female migrants who migrate reflecting a process of family migration, following their parents or husbands. From family perspectives, female migration is important for family reunification process. At destination, female migrants are more likely to participate in employment which is closely related to the needs of the family (Donato, 1993 and Zlotnik, 1995).

Related to female migrants employability, the aim of the study, first, is to examine which factors are important in explaining the occupation status of female migrants in labour market in Indonesian cities. Although most of the previous studies (see Singh et al 2004, and Manning and Pratomo, 2013) showed that several female migrants have to work in the informal sector and having difficulties to enter the formal sector, Effendi et al (2009) showed that recent female migrants in Indonesia tend to be more educated with more probability to enter formal sector employment.

The second aim of the study is to examine the welfare among female migrants in the cities. Firstly, the welfare is measured by the earnings to occupation among female migrants' workers in the cities. As pointed out by Manning and Pratomo (2013), duration of stay is important, as a result of assimilation process in the cities. Therefore, among them, female long-term migrants are predicted to have greater probability to be employed as paid employed in formal sector employment and receive better payments than female recent migrants.

Finally, the welfare can also be measured by the poverty status of female migrants in the cities. The previous study by Resosudarmo et al (2009) found that more than 10% of total life-time migrants are likely to be included as poor households. Therefore, female migrants are also under risk of being poor when they move to the cities, if they cannot compete with the local residents in terms of their employability.

The study takes advantage of a data source of Rural Urban Migration of Indonesia and China (RUMiCI) of 2011 (the latest round of RUMiCI) conducted by Australian National University (ANU) focusing in four Indonesian cities, including Tangerang, Samarinda, Makassar, and Medan. The study contributes to the literature by providing information on employability and welfare of female migrants in the cities in Indonesia. Compared to the studies of Indonesian female international migrants, the study of rural-urban migration in Indonesia is relatively limited. The study therefore significantly increases the scope of previous explorations and more explicitly expand the analysis to the internal aspects of migration policy in Indonesia.

The rest of this paper is organized as follows. Section 2 discusses the research methodology. Section 3 discusses the data set used the study. Section 4 analyses the main findings. Section 5 provides conclusions.

2. Research Method

To determine the employment opportunities of female migrants, a multinomial logit model will be estimated by a maximum likelihood method. In the first estimate, a multinomial logit model is used due to that the dependent variable consists of four possible employment categories of females in the cities, including (1) paid employment, (2) small business, (3) unpaid family workers, and (4) unemployed categories. The main independent variable used in this study is the migration status of females including whether she is categorized as recent female migrants, life-time female migrants or female non-migrants. Following Manning and Pratomo (2013), migrant is defined based on the household head status assuming that the status affects the behavior of the head's spouse and other member of household. Females are categorized as migrants if the household heads have lived for at least five continuous years in rural areas before 12 years old. Meanwhile, among migrants, females are categorized as recent migrants if the household heads move to the cities from the village within the preceding five years before the survey conducted, while they are categorized as life-time migrants if the household heads have already moved to the cities for more than five years. The others are categorized as non-migrants

It might be expected that recent female migrants are less likely to be involved in paid employment category, which is mostly defined as formal sector employment, particularly because of its short time for adaptation during their stay in the cities (see Manning and

Pratomo, 2013). Life-time female migrants, in contrast, with more duration of stay in the cities are more likely to be included as paid employment and (or) doing small business. The other independent variables used in the equation include: educational attainment, age, number of dependent, urban-rural residential dummies, previous activities in the village, main reason for migration, and partner's/household head's occupation status.

In the second estimation, the earnings among females labor migrants who are working in the cities are estimated indicating the welfare of females in the cities. The Ordinary Least Square (OLS) estimate is used with the log of earnings is employed as a dependent variable. The migration status of females in the cities, including recent migrants and long-term migrants with the reference of non-migrants are also worked as the main independent variable. The other independent variables tend to follow the first estimation.

Finally, the study will also look at the female migrant household to examine the probability of female migrants' households living at a poverty in destination as another proxy for welfare of migrants in the cities. The dependent variable includes three different poverty levels based on the definition constructed by the Indonesian Central Bureau of Statistics using household expenditure data in four cities, namely (1) poor households, (2) near-poor households, and (3) non-poor households (see Resosudarmo et al, 2009). Females are categorized as who are living in poor households if their per capita household expenditure are below the poverty line of the cities. Near-poor households category is added to see whether females are living in the vulnerable condition. In the study, female migrants are categorized as near-poor households if their per capita household expenditure is in 20% above the poverty line. Meanwhile, female migrants are categorized as non-poor households if their per capita household expenditure are above 20% of the poverty line. The independent variables will also follow the first and second estimation with the migration status of females is employed as the main independent variable.

3. The Data Sources

The data used in this study is the Rural Urban Migration of Indonesia and China (RUMiCI) data set of 2011 surveyed by the Australian National University (ANU). RUMiCI is a longitudinal-household level survey (2008-11) conducted to investigate the socio-economic conditions of individuals who have migrated from rural to urban areas. RUMiCI data for Indonesia focuses on household who were living in the four largest recent migrant destination cities in Indonesia including Tangerang (Banten province, sub-urban of Jakarta, the capital city), Medan (North Sumatra province), Samarinda (East Kalimantan province), and Makassar (South Sulawesi province). The cities are also chosen to represent four largest geographic islands in Indonesia: Java, Sumatera, Kalimantan, and Sulawesi. The survey cities (regions) is presented in figure 1.

The total sample of RUMiCI for Indonesia consists of around 900 non-migrant households, 900 long-term migrant households, and 600 recent migrant households. The sample used in the study consists of more than 1400 female migrants and non-migrants who are in the labor force, consisting of 473 females from Tangerang, 467 females from Medan, 281 females from Makassar, and 238 females from Samarinda.

Figure 1: Survey Regions in Indonesia

Source: https://www.rse.anu.edu.au/research/centres-projects/rural-urban-migration-in-china-and-indonesia/survey-documentation/

Compared to other data set in Indonesia, such as the Indonesian Family Life Survey (IFLS) or the Population Census, RUMiCI offers large number of observations or households focusing on rural-urban migration data. The Indonesian National labor Force Survey (Sakernas) does not provide the rural-urban migration data. Table 1 presents the summary statistics (mean and standard deviation of the predictors).

Table 1. Summary Statistics of the Explanatory Variables

	Paid Employment		Self-Employed		Unpaid Family W		Unemployed	
	Mean	S.E	Mean	S.E.	Mean	S.E.	Mean	S.E.
Recent Migrant	0.133	0.014	0.049	0.010	0.139	0.029	0.192	0.050
Lifetime Migrant	0.319	0.019	0.422	0.023	0.360	0.041	0.280	0.060
Age	34.342	0.416	43.507	0.499	39.522	1.126	30.526	1.284
Age-sq	1287.0	31.479	1999.0	45.812	1733.3	95.072	1024.2	92.648
Married	0.631	0.019	0.833	0.0180	0.786	0.035	0.596	0.065
Widowed	0.090	0.011	0.124	0.016	0.029	0.014	0.052	0.029
Medan	0.313	0.019	0.338	0.022	0.25	0.037	0.280	0.060
Samarinda	0.128	0.013	0.215	0.019	0.242	0.036	0.245	0.057
Makassar	0.180	0.015	0.197	0.019	0.242	0.036	0.245	0.057
No. dependent	0.957	0.040	1.058	0.051	1.102	0.094	1.280	0.143
Education	10.764	0.157	8.443	0.178	8.676	0.316	9.105	0.490
Head of HH is working	0.875	0.013	0.910	0.013	0.941	0.020	0.789	0.054
N	623		426		136		57	

Note: S.E.: Standard Deviation Source: Author Calculation

4. Empirical Results

Table 2 presents the occupation status of females labor migrants in four cities in Indonesia using a multinomial logit. As mentioned above, the occupation status is divided into four categories of employment, including whether females are categorized as: (1) paid employed, (2) self-employed, (3) unpaid family workers, or (4) unemployed. Females who are

out of the labor force are excluded from the analysis, assuming they are not intended to enter the labor market. The study reports the marginal effects of each coefficient to make the interpretation more informative and comparable within different categories.

Based on the result, the migration status of females across the four different categories of employment are not significant in all categories. The result indicates that there is no significant difference between female migrants, both recent and life-time migrants, and also female non-migrants in the probability of joining each employment category in the cities. Unlike Manning and Pratomo (2013), the result suggests that the adaptation or assimilation of female migrants in the cities in Indonesia is not an issue, and also suggest that Indonesian cities are relatively friendly for female migrants who enter the cities to join the labor market. The result is different with Manning and Pratomo (2013) that suggest recent migrants (not specific on females) tend to be employed in the informal sector while long-term migrants are more likely to be employed in the formal sector.

Education is an important factor for females in the cities in choosing employment category. Females with higher education have higher probability of joining paid employment category in the cities. Paid employment is the formal sector employment which is mostly benefitted by permanent job security, health insurance, and old-age pensions. The result is consistent with Gong et al (2004) in Mexico found that higher educated females not only have a greater probability to be employed, but also more likely to be employed in the formal sector employment. On the opposite side, females with lower education are more likely to enter self-employment and unpaid family employment, which more likely categorized as informal sector employment. Some less educated females are also likely to be trapped as unemployed.

Table 2. Employment Status among Female Migrants and Non-Migrants

	Paid Employment		Self-Employed		Unpaid Family W.		Unemployed	
	M.E.	P value	M.E.	P value	M.E.	P value	M.E.	P value
Recent Migrants	0.024	0.67	-0.081	0.13	0.047	0.22	0.009	0.57
Lifetime Migrants	0.007	0.82	-0.006	0.84	-0.0007	0.97	-0.0008	0.94
Age	-0.016	0.12	0.033	0.00	-0.012	0.01	-0.004	0.26
Age Squared	0.0005	0.70	-0.0002	0.02	0.0001	0.00	0.00002	0.70
Married	-0.194	0.00	0.217	0.00	-0.0171	0.58	-0.005	0.73
Widowed	-0.011	0.90	0.138	0.12	-0.121	0.00	-0.005	0.81
Medan	-0.107	0.01	0.089	0.03	-0.001	0.96	0.019	0.27
Samarinda	-0.236	0.00	0.137	0.00	0.057	0.09	0.041	0.10
Makassar	-0.204	0.00	0.117	0.01	0.06	0.07	0.026	0.21
No, dependent	-0.028	0.09	0.009	0.52	0.011	0.19	0.006	0.16
Education	0.033	0.00	-0.021	0.00	-0.008	0.00	-0.004	0.00
Working Head of HH	-0.061	0.24	0.039	0.41	0.066	0.00	-0.004	0.07
Number Obs.	1242							
R-squared	**0.1424**							

Note: M.E. : Marginal Effect
Source: Author Calculation

Marital status is another important predictor for the occupation categories of females in the cities. The married females are less likely to participate in formal sector employment as paid employees compared to single or unmarried females. In contrast, married females are more likely to be employed in the occupation with more flexible working hours i.e. self-employed, allowing them to combine employment with their domestic responsibilities. The results are in line with the number of dependent variable, which suggests that an increase in the number of dependents in the households, females are less likely to work as paid employees. However, marital status is not significant as a predictor for females in unpaid family work and unemployment categories. In addition, if the head of household (and/or any other household

member) is working, females are less likely to be unemployed and more likely participating in unpaid family work.

Comparing the cities, all of the cities showed a negative coefficient for paid employment category. The result suggests that Tangerang (the reference), which is sub-urban of Jakarta, is employing more paid employment than the other cities in Indonesia. In other words, females in Tangerang have a greater chance to be employed as paid employees than females in other cities. This is related to the location of Tangerang which closed to the Jakarta, the capital city of the country that offers more varied modern sector employment than other cities in Indonesia.

For robustness check of the important of each predictor influencing the occupation status of female migrants, table 3 presents the same estimate but focusing on female migrants only (excluding female non-migrants). Most of the variables show the same sign with the first estimation. The education consistently shows as an important factor for female migrants entering paid employment category. On the opposite side, the lower education the female migrants have, the higher probability of being employed as self-employed, unpaid family workers, and unemployed.

The household characteristics are also significant. The married female migrants are less likely to enter the paid employment category, but more likely to be self-employed, relating with the possible time flexibility in self-employment category. Female migrants with more dependent are less likely to be employed in paid employment category, and more likely to be employed in self-employed and unpaid family workers categories.

Table 3. Employment Status among Female Migrants (Migrants Only)

	Paid Employment		Self-Employed		Unpaid Family W.		Unemployed	
	M.E.	**P value**	**M.E.**	**P value**	**M.E.**	**P value**	**M.E.**	**P value**
Age	0.002	0.92	0.022	0.09	-0.019	0.00	-0.004	0.22
Age Squared	-0.0001	0.39	-0.0002	0.35	0.0002	0.00	0.00002	0.47
Married	-0.298	0.00	0.321	0.00	0.004	0.92	-0.028	0.29
Widowed	-0.148	0.28	0.300	0.04	-0.138	0.00	-0.013	0.5
Medan	-0.117	0.07	0.179	0.01	-0.073	0.02	0.011	0.65
Samarinda	-0.21	0.00	0.153	0.03	-0.031	0.33	0.089	0.07
Makassar	-0.219	0.00	0.187	0.01	0.007	0.85	0.024	0.41
No, dependent	-0.009	0.00	0.058	0.02	0.031	0.02	0.004	0.44
Education	0.042	0.00	-0.027	0.00	-0.011	0.00	-0.003	0.07
Working Head of HH	-0.016	0.85	0.057	0.43	0.03	0.47	-0.072	0.08
No. Obs,	578							
R-squared	0.1754							

Note: M.E. : Marginal Effect, Source: Author Calculation

Table 4 presents the earning estimates of female workers indicating the welfare of females in the cities. Using OLS, the estimate is separated based on earnings of two occupation categories, i.e. Earnings of paid employment (first column) and earnings of self-employed (second column), assuming that those two categories has very different characteristics, where paid employment has more stable earnings than self-employed.

Based on the result, comparing the recent female and life-time female migrants, life-time female migrants are paid higher for paid employment category**.** The result suggest that earnings will improve in line with the females' length of stay in the cities. This is potentially related with the assimilation process faced by female migrants. The recent female migrants also tend to be young with less working experience with life-time female migrants. However, the earning estimate for self-employment category is not significant, suggesting that there is no significant difference in earnings between recent and long-term female migrants. The result indicates that probably skills and experience are more important than migration status explaining the earnings of self-employed, which need more creativity.

Consistent with the first estimation, education plays an important role on earnings in both paid employment and self-employment categories, suggesting that an increase in education will increase earnings that they receive. Comparing the coefficient of education variables for paid employment and self-employment, education for paid employment category (0.116) is relatively higher relative to self-employed category (0.029) suggesting that education is more important if females would like to enter paid employment category rather than self-employment. Overall, it should be noted that the study only compares the estimates among females, a study by Pirmana (2006) showed that females in urban areas in Indonesia generally received less earnings than male workers.

Table 4. Earning Estimates for Female Migrants and Non-Migrants

	Paid Employment		Self-Employed	
	Coef.	P value	Coef.	P value
Recent Migrants	-0.037	0.70	-0.299	0.22
Lifetime Migrants	0.239	0.00	-0.087	0.42
Age	0.017	0.40	0.048	0.18
Age Squared	0.001	0.75	0.001	0.22
Married	-0.053	0.53	0.084	0.76
Widowed	-0.068	0.60	-0.063	0.84
Medan	-0.231	0.00	0.114	0.43
Samarinda	-0.054	0.58	-0.025	0.87
Makassar	-0.081	0.35	-0.171	0.28
No, dependent	-0.041	0.19	0.072	0.18
Education	0.116	0.00	0.029	0.06
Working Head of HH	0.003	0.98	0.315	0.09
Constant	12.214	0.00	11.974	0.00
Number Obs.	614		418	
R-squared	0.312		0.047	

Source: Author Calculation

Finally, table 5 presents the results of poverty status estimation among female labor migrants and female non-migrant. The poverty status is divided into three categories, including poor, near-poor and non-poor, as mentioned in the methodology section. As presented in the table 5, we can see that lifetime female migrants, as well as recent female migrants, are less likely to be categorized as poor households and more likely to be categorized as non-poor. The coefficient is higher for recent migrants on lifetime migrants. The result is consistent with Resosudarmo et al (2009) showing that migrants do make it as measured by improvement in their socio-economic status.

Education, once again, is the most important predictor as the higher their education the less likely they are categorized as poor households. The number of dependent is also significant, suggesting the higher number of dependent the more likely they are categorized as poor and less likely to be categorized as poor or near-poor. The working head of household is also significant, indicating more people in the household have a job. Interestingly, females work as self-employed and unpaid family workers are more likely categorized as non-poor. On the other hand, females work as paid employees are not significant.

Table 5. Poverty Status among Female Migrants and Non-Migrants

	Poor		Near-Poor		Non-Poor	
	M.E.	P value	M.E.	P value	M.E.	P value
Recent Migrants	-0.053	0.00	0.006	0.80	0.047	0.10
Lifetime Migrants	-0.029	0.03	-0.03	0.04	0.060	0.00
Age	-0.008	0.01	0.002	0.68	0.007	0.21
Age Squared	0.0001	0.02	-0.00002	0.64	-0.00007	0.25
Head of HH	-0.003	0.89	0.005	0.86	-0.001	0.97

	Poor		Near-Poor		Non-Poor	
	M.E.	P value	M.E.	P value	M.E.	P value
Married	0.036	0.07	0.012	0.59	-0.048	0.12
Widowed	0.04	0.43	0.005	0.91	-0.044	0.47
No of dependent	0.031	0.00	0.027	0.00	-0.059	0.00
Education	-0.011	0.00	-0.009	0.00	0.021	0.00
Working Head of HH	-0.061	0.05	-0.022	0.42	0.083	0.04
Paid Employment	-0.03	0.26	-0.036	0.21	0.066	0.11
Self-Employed	-0.056	0.02	-0.055	0.03	0.111	0.00
Unpaid Family W.	-0.058	0.00	-0.035	0.13	0.092	0.00
Medan	-0.029	0.05	-0.035	0.02	0.064	0.00
Samarinda	-0.006	0.70	0.006	0.75	0.0006	0.98
Makassar	-0.049	0.00	-0.071	0.00	0.12	0.00
Number Obs	1242					
R-squared	0.1218					

Note: M.E. : Marginal Effect, Source: Author Calculation

5. Conclusion

This study examines which factors are important to explain the employment status and welfare of female labor migrants in the cities in Indonesia. This study takes advantage of a data source of Rural Urban Migration of Indonesia and China (RUMiCI) of 2011 surveyed by Australian National University (ANU) focusing on four Indonesian cities, including Tangerang, Samarinda, Medan, and Makassar. Based on the results, the study concludes that female migrants survive in the cities. Unlike Manning and Pratomo (2013), there is no difference in occupation among recent migrants, long-term migrants, and non-migrants. However, female life-time migrants are the most successful category in terms of survival in the cities. They receive higher earnings and less likely living in poor households. Across explanatory variables, education consistently plays the most important role for surviving female migrants in the cities.

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PROJECT-BASED APPROACH TO FORMATION OF INNOVATIVE REGION RECEPTIVITY

Galina Yakovlevna BELYAKOVA
Dr. Habil. In Economic Sciences, Professor Department of Economics and Business Processes Management Siberian Federal University
gbelyakova00@bk.ru

Gennadiy Pavlovich BELYAKOV
Dr. Habil. In Economic Sciences, Professor Department of Organization and Management of the High Technology Production Siberian State Aerospace University (named after Academician Mikhail F. Reshetnev)
belyakov_gennadiy@list.ru

Ekaterina Vladimirovna SUMINA
Ph. D. in Economic Sciences, Associate Professor Department of International Business, Siberian State Aerospace University (named after Academician Mikhail F. Reshetnev)
ekaterina.v.sumina@mail.ru

Artem Alexandrovich BADYUKOV
Post-Graduate Student Siberian State Aerospace University (named after Academician Mikhail F. Reshetnev).
a.badyukov@inbox.ru

Abstract

The present research is devoted to the formation process of innovative region responsiveness on the grounds of a project-based approach to management. The factors and content of the project-based approach as a methodological basis for management over innovative activity were elucidated. The role of human capital assets in providing innovative development of regional social and economic systems was determined. The formation levels of innovative regional economy responsiveness at the main stages of innovative project were presented. It was proved that innovative entrepreneurship has a key role in a region's innovative responsiveness formation. The methodological basis comprises a number of Russian and foreign fundamental research works on regional economy, innovative development, and project management. The following scientific research methods were used during the research: system analysis, factor analysis, statistical analysis, component analysis.

Keywords: project-based approach, innovative region receptivity, formation process of the innovative responsiveness, innovative entrepreneurship.

1. Introduction

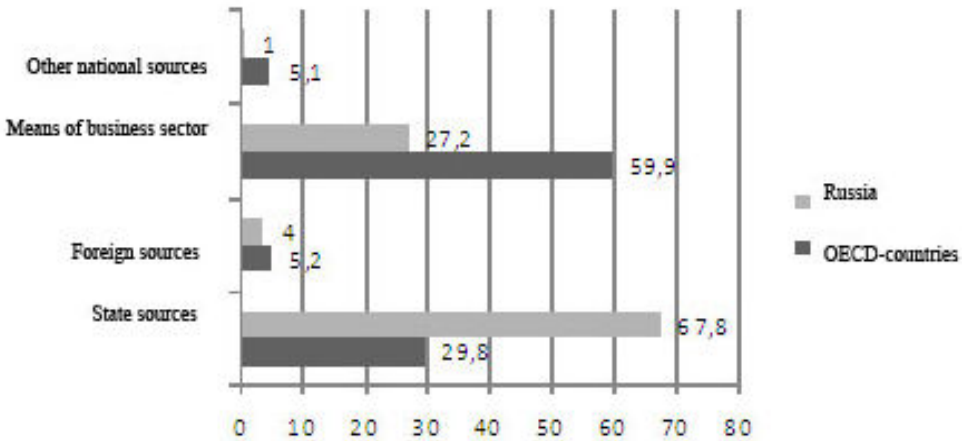
The required reindustrialisation processes of the Russian economy form the agenda by laying the emphasis on a role of innovations in solving modernization problems of diversified economy growth, as well as that of industrial potential development, and an increase in science-based technologies. The Russian economy has faced some external geopolitical challenges and objectives whose scale and complexity are similar to those encountered in the 1920s. The industrial potential should be restored on a new technological basis. It is necessary to develop a strategy of reindustrialisation or "new reindustrialization" taking into account up-to-date technological structure, which should serve as a response to the modern challenges of the international market and as a way to solve internal social and economic problems. Over the last 13 years, the industry increased only 1.6 times, with natural resources dependence of the Russian economy remaining unchanged (Valentey, 2015).

2. Literature review

B. Santo considers innovation as a public, technical and economic process that leads to the creation of products and technologies with improved characteristics if it is based on economic benefits and ideas and inventions are implemented (Santo, 1990). J. Schumpeter treats innovation as a new scientific and organizational combination of production factors motivated

by the entrepreneurial spirit (Schumpeter, 1982). According to the international standards of Oslo, innovation is a result of the innovative activity implemented as a new or enhanced product introduced to the market (Guidance of Oslo, 2010). The analysis of numerous interpretations of this concept allows to define the key characteristics and the role of innovations in a regional management system. Innovations, being both a factor and a result of the most favourable scenario of a region economic development, reflect the possibilities and needs of the entrepreneurial sector as well as the demand for innovative products. According to the annual reports of World Economic Forum (WEF), Global Competitiveness Index (GCI) of the Russian Federation has grown from the 64th (2013-2014) to the 45th position (2015-2016) in a general rating (The Global Competitiveness Report, 2015–2016). It should be stressed that the position of Russia has improved in many respects due to the macroeconomic external factors but the innovative potential of the national economy remains unrealized. Despite the prevalence of higher education, the infrastructure condition, the significant size of the domestic market, and other strong points, the Russian economy has "innovative unresponsiveness", i.e. a set of factors preventing practical implementation and commercialization of innovations. The entrepreneurial sector of the economy has a critical role in these processes. The modernization of the Russian economy implies the development intensification and qualitative changes in production factors, which remains the priority over a long period of the Russian history. However, taking into account the current structure of expenses and economic recession, the reserves for a structural manoeuvre are rather low. Attempts to increase the productivity of a research and development (R&D) sector, represented by an increase in governmental financing programmes for the R&D without the coordination with business development strategy do not give the due result. The structure of the expenses for the R&D by financing sources in Russia and the member states of the Organization for Economic Cooperation and Development (the OECD) in 2012 is shown in Figure 1 (Semenov, 2014).

Figure 1. Structure of expenses for researches and developments by financing sources in Russia and member states of the OECD (6)



Therefore, new administrative approaches, such as the project-based one, should be introduced globally. They allow to raise social and economic effects, to accumulate and to optimize limited resources, to systematize factors and to make innovative processes at the level of both regional and business systems transparent. In essence, a "project" (derived from Lat. "projectus" - "thrown ahead", plan) is a kernel of innovative development. Besides, the project-based approach, being a modern administrative one, is a definite solution with no alternatives in a complex interaction and influence of factors of micro-, meso- and macro-environments (Gurova, 2015). Heizer, J., Render, B. define the basic characteristics of the project (Heizer and Render, 1999). Meredith, J., Morris, P .W .G., Thomsett, R (Meredith, 2000; Morris, 2000, 2004; Thomsett, 1993) research the essence of a project-based approach in enterprise management, application of project-based approach in the management of research activities. The objective of the present paper is to examine the role and the content of project-based approach as a necessary methodological basis for the formation of the region's "innovative responsiveness". The essence of innovative activity as a new knowledge

reproduction justifies the demand for the project-based approach at the level of regional systems.

3. Materials and method

The research methodology comprises a number of Russian and foreign fundamental research works on a project-based approach to management, a regional economy. Some of the works are devoted to the problems of innovative regional economic systems development and to the formation of regional government tools. In the course of the research, the authors applied the methods of synthesis, various types of analysis, namely system, scientific, formal and logic, comparative ones; as well as some economic and statistical methods.

4. Results and discussion

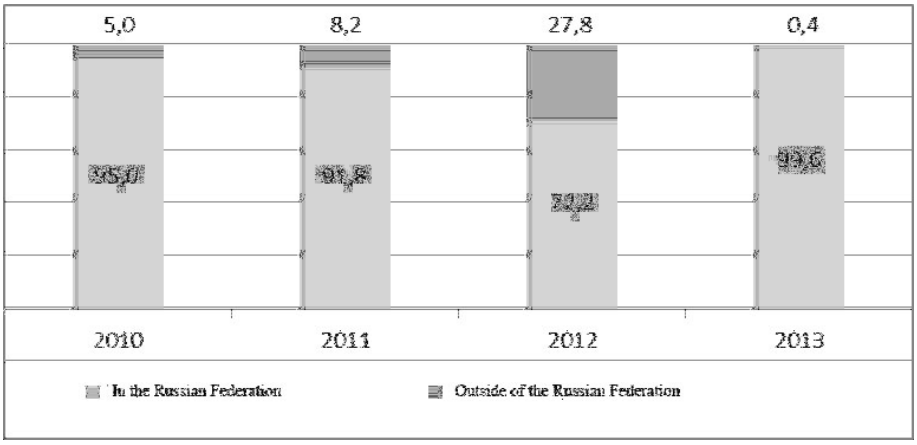
The "Innovative responsiveness" category is used by researchers in the field of innovative development, regional management and is mentioned in legal acts (Suslov, 2007). Innovative responsiveness is a complex indicator of a national economy as a system and is interpreted in the scientific literature as the ability to implement innovations in various social and economic systems. At micro- and meso-levels, innovative responsiveness is treated as an innovation preconception mechanism, as a degree of a system's readiness to develop and implement innovative projects and programmes. A region's innovative responsiveness consists of availability and ability of regional subjects and their executive bodies to create, carry out and realize innovative processes, proceeding from available conditions and resources and within specific regional innovative policy (Ivanova, 2008; Belyakova and Vladimirova, 2011).

The gravity of the problem is confirmed by the fact that only 10 % of all scientific developments made in the Russian Federation were commercialized within 20 years of market transformations. The lag of Russia from the advanced countries is estimated as 40-50 years in this sphere. The implementation of innovative projects provides developing countries with 50 to 85 % of Gross Domestic Product (GDP) growth. In Russia the proportion is reverse: 80 % of GDP growth is secured by raw materials, which also proves the necessity for innovative transformations as a basis of reindustrialization. The empirical research has proved that the distribution of innovative activity among the regions is extremely uneven. In 2013, 65.4 % of all Russian innovative products were produced in two federal districts (FD) - Central (Moscow and Moscow oblast) and Volga FD (the Republic of Tatarstan and Samara oblast). For the first time since 2008, the capital of Russia yielded its leading position among the Federal subjects of Russia in the innovative development rating composed by the Higher School of Economics (HSE). The third place was taken by St. Petersburg. The first ten positions in the rating included also Mordovia, Kaluga oblast, Nizhniy Novgorod oblast, Tomsk oblast, Chuvashiya, Khabarovsk Territory, Penza oblast ("Tatarstan got ahead of Moscow by Innovative Development", 2016).

Regionalization is also observed in the countries with significant centralization level, such as South Korea or Kazakhstan. There are two reasons for an inclusion of a region's innovative responsiveness factors as a region's position criteria in the innovative development rating. Firstly, the accomplishment of regional technological development goals is proportional to the scale of industrial innovations. Secondly, the innovation commercialization is determinative innovative policy element that requires attention (Gusev, 2009). According to the results of the research carried out by the Institute of Statistical Research and Economy of the National Research University "Higher School of Economics", high level of a region's innovative development depends mainly on the quality of an innovative policy. It should be mentioned that it is a factor that can be improved within rather short term (Gokhberg, 2015). The innovative products ration in the total amount of shipping volume distributed among marketing outlets is demonstrated based on the example of Krasnoyarsk region in order to justify the key factors of the innovative development of a region as a Russian Federal subjects (Figure 2). The problem of innovative unresponsiveness of the Russian economy, which was earlier presented in a great deal of research, is proved by the share of Russia in the universal volume of innovative products manufacture and export (0.3-0.4 % in manufacture, excess on 1.2 % in export of consumption share in the domestic market). Innovative unresponsiveness is defined by low level of demand for innovative products. The data on regional cross-section

presented in Figure 2 shows a slightly different situation, which is proved by indicators of other regions of the Russian Federation. The consumption structure of innovative products on trade areas is defined by specificity of the region and its technological orientation.

Figure 2. Specific share of innovative products in the total amount of shipped innovative products in market outlets



Source: Statistical collected book No. 1.34.018: Krasnoyarskstat, Krasnoyarsk, 2014, 31 p.

Different information content of innovative product structure indicators in market outlets and innovative products share in the total amount of exported or consumed production in the market should be considered as well. The later piece of research presented by the National Research University "Higher School of Economics" shows that the share of the innovative products entering the domestic market did not exceed 4.4 % in 2009, and 6.7 % in 2012. The specific share of innovative products in the total amount of export increased more than twice in 2012 compared with 2010.

The consideration of regional economic systems' complex behaviour allowed to define some possibilities and threats to their development in regards to the development stability, the systems' ability for self-development and self-organizing (Romanova and Nelyubina, 2010). In terms of objectively developing processes and changes in economy, the innovative responsiveness at a regional level is both an ability and readiness for reindustrialization. The innovative responsiveness as an ability of economy to create and implement up-to-date technological solutions becomes a basis for modernization of a region's economy. The achievement of the set goals of a country's innovative development, the reindustrialization towards the increase in the hi-tech branches share in the economy's structure is possible only based on the project-based approach benefits (Lapin, 2012).

The innovative responsiveness of an economy depends on an objective possibility to introduce new technologies into existing production processes. Nowadays, many researchers define a number of factors that constrain innovative development in the regions. The first two factors are decrease in and optimization of financing scientific research determined by crisis phenomena in the world economy. The third factor is the drawbacks of innovative development infrastructure. The lack of personnel and information resources as well as that of coordination among support infrastructure elements can be added to the list. The final factor is the level of entrepreneurship development in the national economy (Starbuck, 1992).

We assume that the main factor constraining innovative development is a number of reasons for the innovative unresponsiveness of a regional economy, which can be divided into two groups based on the innovative cycle's basic phases: the reasons constraining generation of innovations and for their low implementation level. The first group defines a set of infrastructural, institutional, social and economic factors causing low level of entrepreneurial activity of the population and that of investments into scientific research and developments. The complex of the first group reasons is connected with the new knowledge reproduction, the level of investments into education, research and developments. The second group is formed by infrastructural factors of innovations commercialization.

The presented conclusions are confirmed by the European statistical research of the regional economic systems' innovative development. Education, professional training and

lifelong professional improvement are essential to build a region's ability for innovative development (Eurostat, 2016). Dynamic business environment has great importance for the promotion and distribution of innovations. The goal is to use R&D through business in order to implement new knowledge in competitive products and services. Therefore, in the context of knowledge generation, the measures directed to the promotion and concentration of knowledge (for example, by the creation of technological markets and licensing programmes) as well as to state order system have the same importance as investments. The analysis of the regional situation shows that innovation indicators improved in 155 of 190 EU regions within seven-year period from 2004 to 2010. In the other 35 regions located in 15 member-counties, the productivity of innovations worsened. The European innovative development strategy until 2020 aims at reaching a low of 3.00% EU's GDP for R&D investment. According to the numerous researches of the United Nations Organization (UNO), the R&D expenses in the Russian Federation do not exceed 2 % of GDP, while a minimum of 2.4 % of GDP has been stated as a target. China and Japan stand out by the number of sources for R&D financing. In these countries, the means of business sector make about 80 % of all expenses for R&D. In Russia this indicator makes not more than 30 % (Figure 1), which proves favourable environment for innovations and the level of innovative responsiveness (UNESCO, 2016). According to the report "Global Innovative Index 2015", Switzerland, the United Kingdom, Sweden, the Netherlands, and the United States of America are the leading innovator-countries in the world. It is notable that the group, which the report calls "dynamic innovators", consisting of states with higher results but similar GDP compared with other countries, has also included some developing countries with a low personal incomes and other economic indicators. These dynamic innovators reach better results in the field of innovations due to the improvement of their institutional basis, the formation of qualified labour, the support for enterprises, considering different progress level in the countries that belong to this group. Overall, the innovations in Europe remain at the high level. Many European countries are in the top-ten and large European countries, such as Germany, have improved their rating among 25 leading countries (The Global Innovation Index, 2015). In this connection, it is interesting to research regional systems' innovative responsiveness in order to define a system's ability for innovative development depending on its stability. The ratio of regional economic systems' stability degree to current global economic crisis defines a regional ability for innovative development. The presented results prove that the more unstable a regional economic system is, the more responsive to innovations it is (Gokhberg, 2015). This conclusion is confirmed by G.Mensch, the successor of innovative cycle theory by J.Schumpeter. An innovation, as a result of a novelty having been commercially applied, has special significance during recession phase (depression period) of the economy. According to G. Mensch, the economy is structurally ready for the introduction of the basic innovations during this period. In a crisis economy, entrepreneurship acts as a gatekeeper for innovations, since no alternative appears to be possible for their implementation in order to preserve market positions (Mensh, 1979).

In this respect, it is necessary to understand that the need for innovations, which defines innovative responsiveness of the economy, is especially important in the conditions of the global economic crisis, while the key administrative task is identification and effective application of factors increasing innovative responsiveness of the economy.

The reduction of expenses for R&D in the economic crisis and political tensions has strategic delayed negative effects. In terms of economic theory, this type of investments can be related to those in new knowledge and human capital. In the light of human capital theory, the labour power having creative and innovative potential is becoming an increasingly important factor for public production's and economic development of a country. According to G.Becker, the founder of this theory, human capital consists in the reserve of knowledge, skills and motivation of each individual. In the majority of countries, human capital exceeds the half of the accumulated national wealth. This reflects a high level of their advance. For example, Finland took the leading position by the level of human capital's development, according to the World Economic Forum in 2015 research (World Economic Forum, 2015; Becker 2003).

According to some estimation, the US investments share in the human capital is stated to amount to more than 15 % of GDP, which exceeds "pure" private capital gross investments in

plants, equipment, and warehouse. This makes it possible to assume that one of the world highest level of investments in human capital is directly connected with that of economic development. The Japanese experience of economic innovative development is necessary to mention. The post-war reforming of Japan's economy (1950-1960) and the so-called "Japanese miracle" phenomenon can serve as a striking example of the role of human capital in the country's economic development. By the late 1950s, the country has achieved significant success in the field of professional improvement of the labour force, the development of managers' creative abilities, which allowed easy and global introduction and application of modern foreign technological innovations. The example of electronic industry shows that this situation allowed to introduce Japan's own innovations and developments later. Post-war Japan annually raised labour productivity by 9.9 % (Shigeto, 1981). Substantial investments in developing education, science, and new knowledge converting into products are essential for making human capital a factor for a country's social and economic development. An increase in the business share in financing R&D is becoming a major priority.

Innovative process, which is inherently connected with project activity, is new knowledge the reproduction. Any innovative process has certain phases, duration, objective, and is realized proceeding from limited resources. Inherently innovative result is unique, which makes it similar to project activity (Heizer and Render, 1999). The project development mechanism at any level requires consecutive passing of several stages. The first one is an analytical stage when the problem-focused analysis of a situation is conducted. The second stage is conceptualization, i.e. forming the hierarchy of goals and objectives. The third stage is a selection of effective tools for activities within the scope of the project. The next stage implies the activity mechanism specification (up to the actions and their order (schedule)). These stages are followed by project budgeting and the determination of its implementation efficiency criteria, expected indicators, and evaluation methods. An innovative process is a complex of works directed to the creation and commercialization of new knowledge in the form of scientific and technical products. The innovative process can consist of several interconnected stages, such as fundamental and applied research, experimental developments (development works), introduction of products into market (introduction in manufacture), manufacture, and sale (Haas, 2006).

The project-based approach in the state and municipal management is a methodological basis for management of innovative activity, which ensures an increase in innovative responsiveness level of the economy. In domestic practice, project management is reflected in a wide-scale application of special-purpose programme involving the formation and performance of target complex programmes that comprise a set of interconnected actions directed to specific social and economic objectives achievement. The expanded system of projects and programmes is implemented in both scientific and innovative spheres. Innovative projects and their implementation programmes constitute an essential part of an emerging economic management mechanism of a country's scientific and technical development. The domestic practice of project implementation is characterized by the lack of project activity standards, an account of social effects of project implementation in a public administration system (Kadyshev, 2012). The introduction of the project-based approach into a regional management system and securing an economy's innovative responsiveness functionally include the formation of administrative and expert blocks as well as that carrying out monitoring and supervision, interaction with regions, territories, and their specific problems.

The innovative development programme is an integration of innovative projects. Considering the example of complex target programmes in the state administration system, it is a hierarchy of projects and programmes at various territorial and regional levels of a branch orientation.

We think that the project-based approach to secure a region's economy innovative responsiveness is integrated and implemented at two interconnected levels. The first level is a business system level, entrepreneurship development, which defines the natural market environment forming the need for innovations and a regional economy's responsiveness. The second level is executive bodies functioning, the introduction of project activity methodology

into the regional administration system at the level of mechanisms, procedures, institutional basis for the development of innovative activity in the region.

The purpose-oriented programmes are the key tools to implement the state innovative development policy and to influence the industrial, economic, and social processes within the commission of federal, regional, and local authorities. The expanded system of projects and programmes is implemented in both scientific and innovative spheres. For example, the Russian state programme "Economic Development and Innovative Economy" consists of sub-programmes, including federal purpose-oriented programmes (Russian State Programme, 2016). Under these conditions, the implementation of both social and economic development programmes and a country's innovative development strategy until 2020 (Russian State Programme, 2016) should be carried out with the help of mechanisms and modern project-based management approach.

In forming the innovative development programme as a set of real projects aimed at solving specific problems and interested in the proper project implementation in order to develop a certain territory, the project-based approach can serve as a technology that helps make social and economic problems urgent.

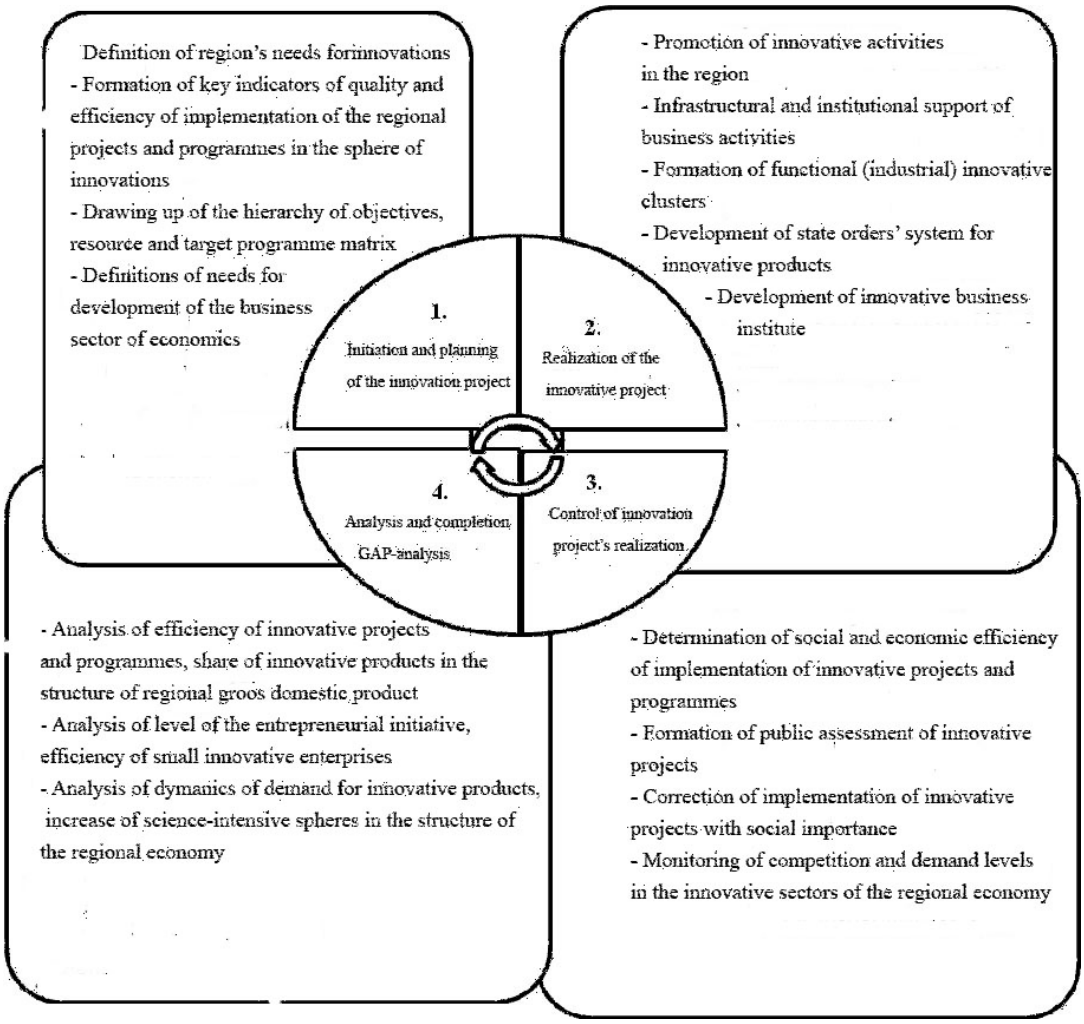
The project-based approach triggers innovative solutions, generates stakeholders to implement each project. Hence, the social and economic efficiency of managerial solutions in the regional administrative system increases, which is a paramount parameter of implementing any projects and programmes in the crisis economy. In the body of scientific literature, there are various approaches to the differentiation of innovative project's stages, taking innovative process stages by its content starting from the generation, conceptualization, optimization, and realization stages into account.

The majority of researchers define the following stages forming a project's cycle in the innovative activity (Meredith, 2000; Thomsett, 1993): initiation, planning, realization, monitoring and control, analysis, completion. An innovative process is a complex of works directed to the creation and commercialization of new knowledge in the form of scientific and technical products, the production technologies improvement, the new knowledge implementation in a product.

The mechanisms integrating the project-based approach into a region's innovative development system should be defined and reactivated in the organization of innovative business from seed to IPO (Initial Public Offering) stages. Each stage of the innovative process entails the selection of institutional and instrumental support for regional innovative activity (Figure 1).

At the level of business systems, the project-based approach allows to initiate and realize each entrepreneurial plan, and at the level of regional systems, this approach provides a corresponding infrastructure, tools, and processes. At the organization level, the efficiency of the project-based approach realization depends on its integration into the regional administration system, infrastructural and institutional support for business and innovative activities. An increase in the innovative activity productivity and a regional economy's innovative responsiveness is defined by the interrelation of the following: the indicators of innovative projects' realization at the business systems level and the integration of the project-based approach into the regional government system. The formation stages of a region's innovative responsiveness on the basis of the project-based approach are presented in Figure 3. Innovative business is the key factor and mechanism to increase the economy's innovative responsiveness, which is the only possible option in case of global economic crisis and lack of resources for an innovative system "completion" (Sumina and Badyukov, 2015).

Figure 3. Formation process of the innovative responsiveness of the region on the basis of project-based approach



At the second level (meso-level) the necessary infrastructural and institutional conditions for each stage of a project's implementation are defined. The priorities of the business initiative taking into account regional range of problems and social and economic effects should be formed at this stage. Therefore, each innovative project's implementation should be based on the balance of all stakeholders' purposes and interests. These goals are hardly achievable without an active role of contact groups in the system of organizational environment factors, i.e. without public at large, active civic position, and business culture. If only the second level of the innovative responsiveness formation is used, the infrastructure development can result in wasting budgetary funds and other resources along with the greater concentration of power and strengthening the state influence.

The entrepreneurial variant implements and boosts the importance of the innovative process stakeholders' inducements. In accordance with the innovative process implementation stages, the innovative activity support level in a region includes the determination of a region's need for innovations with due consideration of its specific features and social and economic problems. Besides, it includes the formation of new organizational forms, namely, innovative clusters, systems of state orders for innovative products, institutional and infrastructural basis for innovative business activities development in a region, which are the initiative taken at the grassroots (by consumers of innovations). The scale of these new organizational forms should be defined by the general need for innovations of the private sector and the state.

The first stage of the regional innovative responsiveness formation is connected with the first stage of the innovative project implementation including its initiation, generating new knowledge (products, new technologies, processes) at the business system level. Viewing from the position of particular regional executive bodies, the first stage includes the

determination of the region's need for innovations, the key indicators for selection of innovative business concepts consistent with the region's problems and branch priorities. This is the stage of planning and determination of resource and target architecture of a project's implementation into a regional development strategy.

The second stage, the innovative project realization, implies start-up and the transition to the early growth. The regional authorities should render assistance in resource support and elimination of administrative barriers for the innovative business development. The institutional and infrastructural business support in a region is very important at this stage. In the science-intensive sphere, this aspect is highly influenced by new organizational forms, innovative regional clusters, which allow to maximize economic and organizational efficiency of the project's implementation and to optimize the expense of resources. The emphasis should be laid as well on the development of the innovative business institute, natural market competitive conditions, the formation of the system of state orders for innovative products selected at the inception of business ideas, which enhances the possibilities of the innovative project's implementation.

The third stage of control and the innovative project implementation includes the assessment of intermediate project's results, application of the system of innovative business development target indicators. The target indicators should be determined based on the balance among the interests of society, business, and authorities. The creation of public institutes for control over innovative projects and programmes implementation and the systems of public assessment of the project are very important as well. The monitoring of the competitive environment and the dynamics of demand for innovative products in key industries of a region should be conducted. Correcting decisions concerning the further development of the innovative business and the innovative project should be made. The research potential and scientific and technical progress are the key prerequisites for the innovative business development that include regional possibilities, infrastructure, research, design and engineering organizations and higher educational establishments with top priority for the regional industrial policy. The scientific and technical progress can stimulate brand-new product models (product innovations, breakthrough innovations) and the formation of new market requirements. The choice of the most promising scientific and technical developments for modernization and recovery of the industry is defined by the market requirements confirmed by technological platforms in the territory of a particular subject of the Russian Federation. New objective need for solving social and environmental problems based on innovative business should be highlighted. The society's interests and social regional problems form the needs for innovative and technological solutions. The projection of the social element on the innovative entrepreneurship requires new tools, support and implementation mechanisms in order to satisfy stakeholders of the innovative project.

At the fourth, final stage, the assessment of economic and social efficiency of the project implementation is carried out, and further market potential of the project's implementation is drawn up. The renewal of a new cycle of regional innovative responsiveness formation requires constant information, administrative, resource, organizational support for innovative business initiatives. Active state participation at the regional level is required in completion and preservation of the reached level of innovative activity and infrastructure, institutes and support tools. The basic vector of the state participation should be defined according to support for the innovative entrepreneurship, which is direct organizational mechanism of a transfer, the introduction of new developments into manufacture, the commercialization of innovations by "research-manufacture" principle. This integration level assumes the creation of specialized and expert bodies, executive bodies functioning, their openness to other contact groups, the project management. The involvement of the whole stakeholders' system of projects' implementation at different levels defines the necessity to improve mechanisms of state and private partnership in the innovative sphere, development of innovative business sector of the economy.

5. Conclusions

The key result of the research is decomposition of the regional innovation responsiveness formation's levels and stages on the basis of the project-based approach, which will benefit

the innovation policy implementation at micro-level. It will allow to create a system of business search for and selection of innovative initiatives, to raise both the efficiency of organizational changes introduction and the level of organizational flexibility, and that of resource efficiency and provision, as well as to increase market potential of the products. At the regional level, the present interpretation of the innovative process will allow to create the necessary organizational conditions of innovative activity, taking into account features of each innovation process stage. The application of the project-based approach in this form will allow to accumulate the administrative resource at directions of the regional innovation development of the first priority and to reduce the risk level of their implementation. This fact can improve the innovation responsiveness level of regional economics. Decomposition and synchronisation of the innovation process implementation stages at all levels of social and economic systems will allow to improve the efficiency, to apply the mechanism for the determination of the regional innovation policy priorities based on a free entrepreneurial selection with an account and limit of social effects, and with the innovation initiatives implementation on the basis of active support by the public authorities.

Practical implementation and incorporation of the coordinated management of social and economic systems' innovative development are possible and essential for the Russian regions in order to involve business sector into innovative activities. The authors have made the following conclusions. The project-based approach provides the actualization of new factors of regional national economy growth and maximization of social and economic effects of the innovative initiatives. In the reindustrialization conditions at the level of the Russian Federation subjects, each having unique specificity and innovative potential, innovative entrepreneurship serves as deep reason for and a factors of innovative transformations of the economy which are initiated by natural market mechanisms and thus increase innovative responsiveness of the region. The scales of innovative transformations are determined by cumulative innovative need of the private sector and the state. As opposed to infrastructural, resource-demanding "completion", the project-based approach provides the main stages of new knowledge implementation at the level of business and authorities, initiating investments into human capital and thus forming the need for innovations of the region. The result of the research is decomposition of levels and stages of the regional innovative responsiveness formation process based on the project-based approach.

The authors confirmed the key role of innovative business in supporting the demand for innovative products of the regional economy and the innovative responsiveness growth respectively. The interrelations between the elements of business and regional systems were defined; the crucial part of the entrepreneurial initiative in securing the growth of demand for innovative products in the innovative areas was elucidated. The project-based approach is a very important methodological basis of the actualization of the human capital, the formation of the necessary conditions and the coordination among infrastructural elements in securing innovative responsiveness of the region. The investments into R&D should be provided by initiative and sources of the business sector. The most effective application of this factor can be achieved only based on the integration of the project-based approach and innovative activity in the region. The results of the research of the project-based approach possibilities for solving the key problem of the Russian economy, i.e. innovation unresponsiveness, have shown the possibilities of the project-based approach and developed theoretical provisions for its application in regional management. The problem of criteria and measurement of the regional systems' transition through the specific stages of regional innovative responsiveness formation has not been examined yet. The further research of the project-based approach in the innovative activity management can be devoted to the determination of the necessary conditions and prerequisites for initiation and realization of innovative projects and programmes.

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HOW TO DEVELOP AN EQUITABLE DISTRIBUTION OF URBAN GDP BY SMART CITY DEVELOPMENT IN INDIA

Sabyasachi TRIPATHI
Assistant Professor, Department of Economics Lovely Professional University, Phagwara, Punjab, India
sabya.tripathi@gmail.com

Abstract
The present paper tries to understand the causes behind the emergence of India's large agglomeration (or giant cities) and how these large agglomerations are linked with economic growth. In addition, the distribution of urban economic growth is measured by the estimation of poverty, inequality and pro-poorness. The paper suggests that the upcoming "Smart cities" in India will emerge as a greater platform for future development of urban India, only if these cities surely ensure smart distribution of the fruits of urban economic growth to the poorer section of urban dwellers.
Keywords: Agglomeration, Economic growth, Poverty, Inequality, Urban India
JEL classification: O18, R11, D63

1. Introduction

Creation of smart cities (about 100 in number) has been proposed as one of the planks for future urban development in India by the newly formed government under Hon'ble Prime Minister, Shri Narendra Modi. In simple terms, 'smart cities' means the cities have to be economically genial for healthier living, integrated with advanced information technology in order to increase efficiency, and supported by well thought out city plan or master plan for over all development of a city. In other words, we may call cities that are liveable, workable and sustainable as smart cities (Venkataramakrishnan, 2014). Therefore, this strategy can be considered as one of the best future strategies for reduction of urban congestion which now nullifies the benefits of urban agglomeration economies while increasing the potential contribution of urban economic growth to the national economy.

The current rate of urbanization in Indian is unprecedented. As per 2011 Census, for the first time since Independence, the absolute increase in population has been more in urban areas that in rural areas. Level of urbanization also increased from 27.81% (or 286 million) in 2001 Census to 31.16% (or 377 million) in 2011 Census. A McKinsey Global Institute study "India's Urban Awakening: Building inclusive cities, Sustaining Economic Growth" (MGI, 2010) projected that nearly 590 million Indians will be living in cities by 2030. The 2014 revision of the World Urbanisation Prospects shows that Delhi with a population about 25 million has become the world's second most populous city in 2014 after Tokyo which has an agglomeration of 38 million inhabitants (United Nation(UN), 2014). Mumbai is also projected to become the fourth largest city by 2030 with the population of 28 million, from the current 21 million. The study also predicts that seven Indian cities with 5 to 10 million inhabitants currently are projected to become mega cities by 2030. As per World Urbanization Prospects: 2011 Revision (UN, 2011), the number of large urban agglomerations with populations in excess of one million in the United States of America (or India) was 12 (or 5) in 1950. It increased to 44 (or 43) in 2010 and is projected to reach 56 (or 58) by 2025. This indicates that though agglomerations were mainly found in developed nations in the past, today many of them are found in developing countries. In fact, India, China, and Nigeria together are expected to account for 37 per cent of the projected growth of the world's urban population between 2014 and 2050 (UN, 2014).

The rapid urbanization in India is due mainly to the growth in population size and increase in the number of urban centres, along with expansion of geographical boundaries of urban centres. The growth in population is attributable to several factors, such as, natural growth rate, rural to urban migration, expansion of city boundaries, and reclassification of rural areas as urban. However, India's urbanization (i.e. increase in the share of urban population) is

mainly based on Class I cities, i.e. cities with over 100,000 population. The draft report of "Regional Plan 2021: National Capital Region" (GOI 2013) calculated that about 42.6% of India's urban population is concentrated in 53 metropolitan cities. The four major metropolitan cities in India, namely, Mumbai, Kolkata, Chennai and Delhi together account for 15.4% of the total urban population of India.

Urban India contributes over 50% of the national Gross Domestic Product (GDP). The share of urban economy in the total net domestic product (NDP) increased from 37.65% in 1970–1971 to 52.02% in 2004–2005. The growth rate of urban NDP at constant prices (1999–2000) was about 6.2 % from1970–1971 to 2004–2005, which is much higher than the growth rate of India's national NDP which about 4.87 % during the same period.[1] The Mid-Term Appraisal of the Eleventh Five Year Plan shows the urban share of GDP at about 63 per cent for 2009-10 and this share is projected to increase to 75 percent by 2030. A study by Indian Institute for Human Settlement (IIHS), "Urban India 2011: Evidence" (IIHS 2012) estimated that India's top 100 largest cities produced about 43% of the GDP, with 16 % of the population and just 0.24% of the land area.

Though growing cities are emerging as the main drivers of national economic growth, the distribution of the fruits of urban economic growth is still much below than the required level, as evidenced by the fact that large numbers of urban poor still live in slums and on the pavements in extremely bad conditions. Therefore, urban India is characterized by higher level of poverty and intra-urban inequalities. The India-Urban Poverty Report 2009 by Government of India (2009) finds that about 80 million people were estimated as poor in the cities and towns of India in 2007-08, and urban poverty in some of the larger states is higher than that of rural poverty, a phenomenon generally known as 'Urbanization of Poverty'. As per the Rangarajan Committee report (GOI 2014), urban poverty ratio has declined from 35.1 % (or 128.7 million people) in 2009-10 to 26.4 % (102.5 million people). These figures show that though poverty has declined, a large number of poor people still live in urban areas in abysmal poverty. The period also witnessed a steep increase urban inequality; it increased from 0.36 in 2004-05 to 0.38 in 2011-12. This scenario says volumes about the lack of direction in India's urban growth. For example, as of 2007, India alone accounted for 17 percent of the world's slum population (UN-HABITAT 2006). As per the recent Census data, roughly 1.37 crore households, or 17.4% of urban Indian households lived in slums in 2011.

In this background, the present paper addresses the following questions: First, how the emergence of India's giant cities (or large agglomerations) can be explained in terms of a standard economic model; second, what are the empirical evidences we have which links urban agglomeration with urban economic growth; third, what is the impact of higher urban economic growth on poverty and inequality; fourth, how can we quantify urban pro-poor growth; and finally, what are the main policies we should consider for the smart (or efficient) distribution of urban economic growth in India?

Urban agglomeration is defined as geographical concentration of urban population and related economic activities. This implies that urban agglomeration includes but is not equal to urbanization. The two methodological issues involved here are: choice of urban units of study and method to combine different indicators of population and related economic activities. Thus, urban agglomeration is defined in two ways in this study: First is population agglomeration where size of the city population is measured as units of analysis for urban agglomeration. Second is firm level agglomeration where number of firms operating in a particular city is considered for the measurement of urban agglomeration.

2. Explaining the reasons behind the formation of India's giant cities (or large agglomerations)

In this section we have tried to explain the standard economic model which explains the causes behind the emergence of giant cities. For this purpose, we mainly rely on the New

[1] A detailed explanation of urban economic growth in different periods of time can be available from Tripathi (2013a).

Economic Geography (NEG) models to explain this phenomenon. It may be noted that the primary motivation for the development of NEG models was to explain 'agglomeration economies' in a better way as this has never been explained convincingly in earlier location theories, starting from Thünen's (1826) "The Isolated State".[2]

NEG models (Krugman 1991; Fujita et al. 1999) enclosed the old location theories within a general equilibrium model based on the Dixit-Stiglitz model of monopolistic competition to explain the causes behind the formation of large agglomerations in countries across the world. It explains the two opposite forces. 'centripetal' forces (pure external economics, variety of market scale effects, and knowledge spill-overs) that tend to pull population and the production process towards agglomerations, and the 'centrifugal' forces (congestion and pollution, urban land rents, higher transportation costs, and competition) that tend to break up such agglomerations (Overman & Ioannides 2001; Tabuchi 1998). In this process the economy will end up with a core-periphery pattern in which one region will have concentration of all manufacturing units. However, this depends on forward (the incentive of workers to be close to the producers of consumer goods) and backward (the incentive for producers to concentrate where the market is larger) linkages to overcome the centrifugal forces. In other words, the real income of workers will increase if they purchase goods at a lower price in the city than in more distance places. The main assumptions behind the rise of real income of the worker are that city has to offer a large variety of consumer goods and worker has to love the test of variety (i.e., from love of variety approach). This process leads to migration of consumers (=workers) and increases the demand of goods in the city. Therefore, more specialized firms will emerge and produce large variety goods in the city due to home market effect (i.e., the benefits of locating near a large market). Hence, through the forward linkages (the supply of greater variety of goods increases the workers' real income) and backward linkages (a greater number of consumers attract more firms) the concentration of firms and the workers in the city occurs, which in turn leads to the emergence of large agglomeration in this world. Finally, through these linkages, pecuniary externalities occur (i.e., reduction the cost of inputs for firms due to their location in close proximity), scale economies at the firm level emerge due to sharing the fixed cost by the firm which reduces the production costs and increasing returns occur at the city level (see for more details explanation in Fujita 2007, 2010). No other location theory evolved in last two decades or so has been more successful than NEG model explaining the reasons behind the formation of large agglomeration. In fact, this was the one of the seminal works for which Paul Krugman received the 2008 Nobel Prize in Economics.

Although, there are some international studies that tried to measure empirically the significance of NEG models in explaining the causes behind the formation of large agglomeration, studies in the Indian context are very few. This could be due to scarcity of relevant data on urban India.

While explaining the determinants of city population growth, Mathur (2005) found that post‐liberalization urban growth was driven by the substantial growth of the urban population and changes in the share of employment in the manufacturing and service sectors. Sridhar (2010) estimated the determinants of city growth and output both at the district and city levels and found that factors such as proximity to a large city and the process of moving from agriculture to manufacturing, determines the size of a city.

However, using the NEG model, Tripathi (2013b) studied exhaustedly the factors behind concentration of population in the 59 large cities in India. The study found that the market size control variables, cities located on a riverbank, degree of state trade openness, per capita income of a state, percentage of state's urban population, percentage of workers engaged in non‐agricultural activity in a state, state capital dummy and city-wise sanctioned cost under JNNURM positively and significantly affect the large city urban agglomeration that is

[2] An excellent review of past location theories could be found in Fujita (2010) and Ottaviano and Thisse (2005).

measured by size of city population (or growth rate of city population). In contrast, negative factors like distance from larger cities, state government expenditure on transport, city vehicle density, state size, city population coverage per primary school, city road length per 1000 population etc. negatively affect population agglomeration of the large cities. But other variables that do not have a strong impact on urban agglomeration include city crime rate, city temperature differences, and the dummy of the seaport city.

On the other hand, for measuring firm level agglomeration, Chakravorty et al. (2005) used the disaggregated industry location and size data for cities like Mumbai, Kolkata, and Chennai to analyze eight industrial sectors. Their indicative results suggest that general urbanization economies are more important than localization economies for firm's location decisions. Lall and Mengistae (2005) find that both the local business environment and agglomeration economies significantly influence business location choices across Indian cities. Lall et al. (2003) find that generalized urbanization economies (manifested in local economic diversity) provide the agglomeration externalities that lead to industrial clustering in metropolitan and other India's urban areas. Chakravorty's (2003) findings provide evidence both of inter-regional divergence and intra-regional convergence, and suggest that 'concentrated decentralization' is the appropriate framework for understanding industrial location in post-reform India. Lall and Chakravorty (2005) examine the contribution of economic geography factors to the cost structure of firms in eight industry sectors and show that local industrial diversity is an important factor with significant and substantial cost-reducing effects. Ghani et al. (2012a) find that urban district level local education levels, physical infrastructure quality play in promoting entry of a plant. The strict labor regulations discourage formal sector entry, and better household banking environments encourage entry in the unorganized sector.

3. Empirical evidence of urban agglomeration and economic growth in India

Now the question arises whether the large agglomerations have any impact on economic growth or not? We expect large urban agglomeration to have a strong positive effect on urban economic growth, because larger cities have higher productivity, wages, and capital per worker (i.e. higher economies of agglomeration), and, therefore, greater efficiency benefits (Duraton 2008), as empirically supported by the World Bank (2004) and Narayana's (2009) study. In addition, major factors behind the existence of urban increasing returns, include sharing (e.g. local infrastructure), matching (e.g. employers and employees), and learning (e.g. new technologies) (Duraton & Puga 2004).

The recent theoretical model together with the framework of NEG (Krugman 1991; Venables 1996) establishes the link between agglomeration and growth combining elements from the endogenous growth model of Romer (1990) and Grossman and Helpman (1991). Most importantly, Fujita and Thisse (2002, p. 391) and finds that "growth and agglomeration go hand‐in‐hand". The empirical literature, such as Glaeseret al. (1995), Henderson (2003), Brülhart and Sbergami (2009), and Leitão (2013) also find a positive link between agglomeration and growth.

However, in the Indian context, there very few studies which link agglomeration with economic growth if we were to consider only size of city population. Mitra and Mehta (2011) estimated that cities' contribution to total gross state domestic product while revisiting the issue of cities as the engine of growth. The paper used the proportion of urban workers to total workers and then adjusted it for productivity differentials between rural and urban areas to arrive at the estimate of urban (city) domestic product. The study found that states with a higher share of urban state domestic product have witnessed higher growth in per capita income and lower incidence of poverty. The study has also found that per capita income is not necessarily high in all large cities that have been listed under the special urban renewal mission. The nature of activities conducted in a city is an important determinant of its per capita income.

Sridhar (2010) found that the literacy rate and ratio of employment in manufacturing to that in services has a positive impact on the city economic growth. However, a direct positive link between urban agglomerations by considering agglomeration variables endogenously (or exogenously) on urban economic growth has been studied in Tripathi (2013b). The results

showed that distance to a seaport city plays a more important role in India's urban economic growth than distance to the state capital and to a large city.

However, industrial agglomeration and linking with economic growth in terms of increasing industrial output has been studied extensively in Chakravorty and Lall (2007). The main finding is that manufacturing sectors that are operating in urban areas produce goods/services at decreasing returns to scale. Earlier, Lall et al. (2004) had also made a similar observation and concluded that benefits of locating in dense urban areas did not appear to offset associated costs. A more recent study by Tripathi (2014) finds a similar pattern in inefficiency of urban industries. The study considers not only location specific (all India – 'total urban', 52 large cities and 'rest of urban' areas) but also different industry specific variables to capture how inter-industry differences in technology affect the estimates of scale economies. The paper tries to measure the social over head capital which is the source of externalities for agglomeration economies at firm level and concludes that that India's firm level urban agglomeration is associated with negative external economies of scale that do not enhance productivity and also do not drive urban growth and development. However, all the studies we have reviewed here have considered the NEG framework to measure the industrial agglomerations.

Though there have been varying explanations and debates through various studies in India, a series of studies by Ezaz Ghani and others have now provided more insights in to this matter. The studies have given convincing explanation as to why manufacturing sector is moving away from dense cities and also on the trade-off between agglomeration economies and congestion cost, and many other related questions. For example, Desmet et al. (2012) found that this is because of the opportunity of high level of employment in service sector, particularly, high-tech service industries (computer and business service) in large cities than in the industrial sector. Ghani et al. (2012b) finds that while the organized sector is becoming less urbanized, the unorganized sector is becoming more urbanized. Ghani and Kanbur (2013) found that cities provided the ecosystem and generated agglomeration economies in the informal sector.

Therefore, the plausible conclusion is that industrial agglomeration is very much unpredictable in the case of India. In fact, NEG model which was more successful in explaining industrial agglomeration in China fail to explain India's industry-led urban agglomeration. This is may be because the main driving force behind India's urban (or national) economic growth comes mainly from service sector. On the other hand, it could be also due to the failure of India's policy makers to choose the best policy to usher in industry led economic development in India. However, this debate is beyond the scope of the present paper.

In summary, our brief review of current literature suggests that though industrial agglomeration has a negative (or no) effect on urban economic growth, population agglomeration has a very strong positive effect on urban (or national) economic growth. As reported by Tripathi (2013b) in particular, a 10% increase in urban agglomeration (measured by growth rate of city population) results in an average increase in urban economic growth of 26%.

4. Measurement of Poverty and Inequality in Urban India

Having considered the empirical evidence on the positive link between urban agglomerations and economic growth in the previous section, our goal in this Section is to see how the gains of urban economic growth has been distributed among the city dwellers over the different period of time. In the Indian context, there is an enormous body of literature that measures levels of poverty and inequality across rural and urban sectors at national and state levels, from 1990 onwards. In general, these studies (Deaton and Kozel 2005; Sen and Himanshu 2004; Sundaram and Tendulkar 2003, Jha, 2002) provide evidence to show that while inequality between urban and rural sectors is increasing, poverty ratio is declining in both the sectors though the rate of decline in urban sector is much higher than in rural Sector. Certain other studies (Mazumdar and Son 2002; Bhanumurthy and Mitra 2004) have decomposed poverty changes in terms of growth effect and inequality effect. Their finding is

that that rural-to-urban migration contributed to poverty reduction in rural areas by 2.6 per cent between 1983 and 1993-94.

However, there are very few detailed studies that have attempted to measure poverty and inequality in inter and intra urban (or agglomeration) dimensions which could be due to limitation of data availability in the public domain.

Coming to city level inequality in India, Kundu (2006) found that as of 1999-2000, the per capita monthly consumption expenditure of million plus cities was Rs. 1070, about 53 per cent higher than that of small towns. The Urban Poverty Report by the Government of India (2009) found that across the Indian states, poverty is negatively correlated with the level of urbanization, and that large and medium cities have a lower incidence of poverty than small cities in India. Other studies (World Bank 2010; Gangopadhyay et al. 2010) have also found that the poverty level in large cities is much lower than that in the small towns, though their method of analysis was different from earlier researchers. In contrast, Tripathi's (2013c) analysis of 2004-05 unit level data of National Sample Survey consumption expenditure using the new theoretical framework proposed by Araar and Timothy (2006) reveals that in urban areas the marginalized group (or other group) has a lower level of inequality (or a higher level of inequality) and higher level of poverty (or lower level of poverty). The decomposition of the Gini index by the six Indian geographical urban zones shows that 'within' group inequality contributes higher than 'between' group inequality to total urban inequality. The OLS regression results suggest that large city population agglomeration, the growth rate of the city output, the district level Upper Primary Gross Enrollment Ratio (UPGER) and the city poverty rate, all have a strong positive effect on city inequality. Besides this, the level and growth rate of the city output, the large city population agglomeration, and the UPGER also have a significant negative effect on the city poverty rate.

Based on this brief review of literature, we can now consider more recent data pertaining different aspects, as and where available, to gain more insights into the different dimensions of urban inequality. Inequality is measured by the familiar Gini coefficient, while poverty is measured by the Poverty Headcount Ratio (PHR), the Poverty Gap Ratio (PGR), and the Squared Poverty Gap ratio (SPGR). The importance of using these three poverty indices is elaborately discussed in the Hand-Book of Poverty and Inequality (specifically in Chapter 4) by Haughton and Khandker (2009).

Due to non-availability of income data at the individual level, the urban monthly per capita consumer expenditure (MPCE) data from respectively the 61st and 68th Round of the National Sample Survey (NSS) are used for the years 2004-05 and 2011-12. Following the Expert Group's (Tendulkar committee) suggestion, the MRP (Mixed Reference Period) based inequality and poverty estimation is considered.[3]

Table 1 presents the calculated poverty indices for 'total urban' areas, 57 large cities and 'rest of urban' areas by considering different attributes.[4] The main reason behind

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[3] MRP-based estimates capture the household consumption expenditure of the poor households on low frequency items of purchase more satisfactorily than the URP (Uniform Recall Period). However, recently Rangarajan committee has used the MMRP (Modified Mixed Recall Period) to work out the new poverty line. As MMRP based MPCE data are not available for the year 2004-05, poverty ratio for 2004-05 based on Rangarajan methodology cannot be directly estimated. Therefore, we use Tendulkar committee's recommended poverty line to compare poverty and inequality situation from 2004-05 to 2011-12. On the other hand, 66th Round of NNS in 2009-10 consumption expenditure data are not used here as 2009-10 was not a normal year because of severe drought and hence NSSO repeated the consumption expenditure survey in 2001-12. So a comparison between 2009-10 and other years may not give useful results.

[4] World Population Prospects: The 2011 Revision provides projected population figure for 58 urban agglomerations with 750,000 inhabitants or more as of 2011 in India, for the period of 1950-2025. Coimbatore and Tiruppur cities belong to Coimbatore district, hence Coimbatore city is considered as a representative of Coimbatore district. Tiruppur city district was carved out of the Coimbatore and

consideration of the different attributes is that it helps us to know the poverty situation among different sections of population in Urban India, which in turn helps to prescribe accurate policy measures. The calculated results show that the PHR is lowest for 57 large cities in India than 'total urban' area and 'rest of urban' areas. The PHR was 8.25 for 57 large cities in India in 2011-12 which is much lower than the 'total urban' PHR (i.e., 13.69) and PHR for 'rest of urban' areas (i.e., 17.8). Most importantly, the 'rest of urban' areas have a higher PHR than 'total urban' India as also 57 large cities. In general, the calculated values of PHR, PGR, and SPGR show "Other Religious Group" i.e. sum total of Islam, Christianity, Sikhism, Jainism, Buddhism, Zoroastrianism and others except Hinduism, "Backward Caste" i.e. sum total of Scheduled Tribe, Schedule Caste, Other Backward Class, and "Children" i.e. those below than 18 years of old as having a higher poverty head count ratio.[5] On the other hand, "Upper Middle Class" educated people i.e., those who have passed secondary/higher secondary/diploma course/graduate/post graduate or above, families having at least one "Regular Salary Earner", and people belonging to "General Caste" have the lowest poverty rate, irrespective of all size classes of urban areas. In contrast, the calculated values of SPGR in 2011-12 are higher for "Females" those live in 57 large cities in India.

Table 1: Measurement of Poverty across Different Size Classes of Cities by Different attributes

Different attributes		2004-05								
		Total Urban Areas			*57 Large Cities*			*Rest of Urban Areas*		
		HPR	PGR	SPGR	HPR	PGR	SPGR	HPR	PGR	SPGR
Overall	Urban	25.79	6.09	2.05	17.20	3.73	1.20	31.98	7.79	2.67
Religion	Hindu	23.09	5.36	1.80	15.24	3.30	1.06	28.79	6.85	2.33
	Others	35.19	8.65	2.95	24.17	5.26	1.70	42.94	11.03	3.82
Social Group	Backward	34.15	8.38	2.90	24.45	5.65	1.89	40.21	10.09	3.53
	General	15.87	3.37	1.05	10.01	1.83	0.52	20.84	4.69	1.50
Land owners	Yes	27.88	6.69	2.26	18.86	4.19	1.34	33.76	8.33	2.86
	No	19.77	4.36	1.46	13.32	2.66	0.88	25.94	5.99	2.00
Salary earners	Yes	15.16	2.93	0.83	11.55	2.13	0.57	18.35	3.64	1.05
	No	33.77	8.46	2.97	22.41	5.21	1.78	40.78	10.48	3.71
Ration card holders	Yes	26.26	6.15	2.06	17.43	3.64	1.14	32.48	7.92	2.70
	No	24.46	5.91	2.04	16.60	3.96	1.36	30.50	7.42	2.56
Sex	Male	24.67	5.77	1.93	16.25	3.49	1.12	30.86	7.45	2.53
	Female	27.02	6.44	2.19	18.27	4.00	1.29	33.18	8.16	2.82
Marital status	Widow	26.91	6.28	2.09	18.10	4.02	1.30	33.14	7.88	2.65
	Non-widow	25.73	6.08	2.05	17.15	3.71	1.20	31.92	7.79	2.67

Erode districts in 2009, but as we have used 61st Round NSS data in 2004-05, we consider Tiruppur city a part of Coimbatore district.

[5] The United Nations Convention on the Rights of the Child (CRC) defines child as "a human being below the age of 18 years unless under the law applicable to the child, majority is attained earlier". However, according to Indian laws the definition of 'child' remains ambiguous. See for more details; http://infochangeindia.org/agenda/child-rights-in-india/who-is-a-child.html. Therefore, we consider the definition of child as it is defined by CRC to make a universal comparison.

Education level	Up to middle	27.79	6.31	2.06	19.28	4.03	1.27	33.72	7.89	2.61
	Upper middle	7.66	1.41	0.39	4.49	0.76	0.21	10.52	1.99	0.56
Age	Child	34.02	8.57	3.02	24.28	5.62	1.91	40.31	10.47	3.74
	Adult	21.43	4.78	1.54	13.80	2.82	0.86	27.25	6.27	2.06

Different attributes		**2011-12**								
		Total Urban Areas			***57 Large cities***			***Rest of Urban Areas***		
		HPR	PGR	SPGR	HPR	PGR	SPGR	HPR	PGR	SPGR
Overall	Urban	13.69	2.70	0.80	8.25	1.44	0.41	17.80	3.66	1.09
Religion	Hindu	12.18	2.43	0.73	7.33	1.35	0.40	15.90	3.26	0.98
	Others	18.82	3.64	1.03	11.49	1.77	0.43	24.08	4.98	1.46
Social Group	Backward	17.95	3.63	1.09	11.73	2.13	0.61	22.21	4.66	1.42
	General	7.38	1.34	0.36	3.75	0.56	0.14	10.55	2.01	0.55
Land owners	Yes	15.47	3.06	0.91	9.10	1.54	0.43	19.91	4.12	1.24
	No	8.41	1.65	0.47	6.14	1.21	0.35	10.58	2.06	0.58
Salary earners	Yes	6.64	1.13	0.30	4.61	0.69	0.17	8.59	1.56	0.43
	No	19.32	3.96	1.19	11.96	2.21	0.65	23.90	5.05	1.53
Ration card holders	Yes	14.47	2.91	0.87	5.65	0.96	0.27	18.65	3.89	1.17
	No	11.36	2.08	0.58	6.41	1.09	0.30	14.73	2.83	0.81
Sex	Male	13.27	2.63	0.77	7.82	1.36	0.37	17.47	3.61	1.08
	Female	14.14	2.79	0.82	8.73	1.54	0.44	18.15	3.71	1.10
Marital status	Widow	13.63	2.67	0.77	7.81	1.44	0.42	17.94	3.58	1.04
	Non-widow	13.69	2.71	0.80	8.27	1.44	0.41	17.79	3.66	1.09
Education level	Up to middle	16.16	3.15	0.92	10.32	1.73	0.47	20.27	4.15	1.24
	Upper middle	4.86	0.84	0.23	2.32	0.35	0.09	7.09	1.27	0.35
Age	Child	18.50	3.76	1.13	12.04	2.20	0.64	23.15	4.88	1.49
	Adult	11.50	2.23	0.64	6.60	1.12	0.30	15.29	3.08	0.90

Source: Author's calculation using the NSS 61st Round in 2004-05 and 68st Round in 2011-12 in consumer expenditure.

What is presented in Table 2 is the percentage decline of poverty rate from 2004-05 to 2011-12. The percentage decline of PHR is highest for 57 large cities in India than the 'total urban' area and 'rest of urban' areas. The results show that those who are not "land owners" (i.e., homestead only/ homestead and other land/ other land only), "salary earners", "not ration card holders (i.e., those not holding any ration card belong to Antodaya/ BPL/ others)

Table 2: Decline of Poverty Rate across Different Size Classes of Cities by Different attributes

Different attributes		% decline of poverty ratios from 2004-05 to 2011-12								
		Total Urban Areas			*57 Large Cities*			*Rest of Urban Areas*		
		HPR	PGR	SPGR	HPR	PGR	SPGR	HPR	PGR	SPGR
Overall	Urban	46.93	55.61	61.21	52.05	61.28	66.17	44.34	53.07	59.08
Religion	Hindu	47.26	54.64	59.47	51.89	59.02	62.32	44.77	52.46	57.94
	Others	46.53	57.94	65.12	52.46	66.32	74.74	43.92	54.87	61.84
Social Group	Backward	47.45	56.72	62.38	52.04	62.31	67.46	44.78	53.87	59.86
	General	53.50	60.42	65.84	62.54	69.37	73.80	49.39	57.08	63.13
Land owners	Yes	44.53	54.25	59.91	51.79	63.27	67.96	41.03	50.49	56.69
	No	57.49	62.28	67.79	53.88	54.49	60.25	59.21	65.56	70.86
Salary earners	Yes	56.20	61.34	63.48	60.07	67.53	70.80	53.19	57.20	59.07
	No	42.80	53.20	59.93	46.64	57.48	63.52	41.40	51.81	58.79
Ration card holders	Yes	44.92	52.68	57.87	67.59	73.55	76.23	42.59	50.96	56.80
	No	53.57	64.83	71.48	61.37	72.42	77.77	51.71	61.81	68.14
Sex	Male	46.19	54.41	59.98	51.88	60.98	66.73	43.39	51.57	57.30
	Female	47.66	56.77	62.37	52.22	61.56	65.74	45.29	54.56	60.80
Marital status	Widow	49.33	57.45	63.00	56.86	64.19	68.03	45.86	54.50	60.81
	Non-widow	46.80	55.50	61.12	51.80	61.12	66.11	44.26	53.01	58.98
Education level	Up to middle class	41.85	50.08	55.34	46.47	57.07	62.99	39.89	47.40	52.49
	Upper middle class	36.62	40.43	42.05	48.24	54.08	57.14	32.61	36.03	38.39
Age	Child	45.61	56.17	62.44	50.41	60.91	66.53	42.57	53.44	60.13
	Adult	46.34	53.40	58.31	52.21	60.44	64.69	43.88	50.81	56.07

Source: Same as Table 1.

and "general castes" experienced higher percentage decline of poverty rate, irrespective of all the size classes of urban areas.[6] On the other hand, "Upper Middle Class" educated people experienced lowest percentage decline in poverty rate. In addition, those who have education up to "Middle Class", families that have no "Regular Salary Earner" and "Land Owners" experienced the lowest percentage decline in poverty rate. In contrast, the calculated values of SPGR for 'rest of urban' areas show that the category "Adult" experienced lower decline in poverty rate. The "Ration Card" holders in 57 large cities in India experienced the highest decline of PHR during the period.

[6] In India ration card is used for drawing subsidized food and fuel (LPG and kerosene). Therefore, it is an important document for the poor people for subsistence, identity and to remain connected with the government database. It has become the proof of their existence. It works for their identity, eligibility and entitlement of entire public system (PDS).

Table 3: Measurement of Inequality across Different Size Classes of Cities by Different attributes

Different attributes in Urban India		2004-05			2011-12			% increase from 2004-05 to 2011-12		
		Total Urban areas	*57 Large cities*	*Rest of Urban areas*	*Total Urban*	*57 Large cities*	*Rest of Urban areas*	*Total Urban areas*	*57 Large cities*	*Rest of Urban areas*
Overall	Urban	0.364	0.369	0.345	0.377	0.380	0.360	3.40	2.85	4.25
Religion	Hindu	0.359	0.364	0.341	0.375	0.379	0.355	4.27	4.08	3.96
	Others	0.376	0.383	0.348	0.374	0.367	0.370	-0.56	-4.23	6.08
Social Group	Backward	0.323	0.321	0.316	0.339	0.342	0.327	5.11	6.45	3.55
	General	0.366	0.367	0.347	0.385	0.381	0.372	5.13	3.89	7.30
Land owners	Yes	0.369	0.376	0.349	0.380	0.391	0.355	3.14	4.03	1.77
	No	0.350	0.353	0.331	0.360	0.349	0.363	2.75	-1.10	9.77
Salary earners	Yes	0.341	0.347	0.324	0.358	0.361	0.345	5.09	4.16	6.59
	No	0.371	0.383	0.344	0.376	0.389	0.351	1.51	1.57	1.93
Ration card holders	Yes	0.355	0.355	0.342	0.360	0.361	0.346	1.40	1.61	1.03
	No	0.386	0.397	0.353	0.405	0.409	0.389	4.96	2.89	10.37
Sex	Male	0.363	0.367	0.345	0.377	0.377	0.360	3.69	2.95	4.55
	Female	0.366	0.372	0.345	0.377	0.382	0.359	3.07	2.69	3.94
Marital status	Widow	0.370	0.373	0.351	0.372	0.388	0.342	0.58	3.97	-2.81
	Non-widow	0.364	0.369	0.345	0.377	0.379	0.361	3.54	2.79	4.61
Education level	Up to middle	0.315	0.318	0.304	0.329	0.328	0.320	4.44	3.14	5.26
	Upper middle	0.348	0.347	0.333	0.371	0.369	0.357	6.60	6.42	7.31
Age	Child	0.340	0.349	0.322	0.355	0.357	0.344	4.36	2.26	6.56
	Adult	0.367	0.369	0.349	0.379	0.381	0.362	3.34	3.20	3.62

Source: Same as Table 1.

Table 3 presents the calculated inequality indices (i.e., the Gini coefficients) for 'total urban' area, 57 large cities and 'rest of urban' areas by considering different attributes. The calculated results show that inequality is highest in 57 large cities in India than 'total urban' area and 'rest of urban' areas. Inequalities are higher among groups like "Not Ration Card holders", "Others Religion Group", "Not Salary Earners" and "Widow". On the other hand, "Backward Caste", up to "Middle Class educated" group, "Child", and "Salary Earners" showed lower level of inequality in 2004-05. "Upper Middle Class" educated people also showed lower level of inequality in 57 large cities in India in 2004-05. In 'rest of urban' areas "Adult" group showed the higher level of inequality in India in 2004-05, but in 2011-12, it was "Not Ration card" holders "General Caste", "Land Owners", and "Adult" that experienced higher level of inequality.

As can be seen from Table 3, "Upper Middle Class" educated group and "General Caste" experienced higher percentage increase in level of inequality in the period 2004-05 to 2011-12. On the other hand "Other Religion" group those live in 'total urban' (or 57 large cities) and "Up to Middle Class" educated people those live in 'rest of urban' areas experienced negative percentage increase in level of inequality during the same period which indicate that inequality level for these groups has declined. In addition, while it was an increase in the level of inequality for "backward caste", it was a decrease in inequality level for "Not Land Owners" in 57 large cities in India during the period 2004-05 to 1011-12. In the 'rest of

urban' areas "No Ration card" holders and "Not Land Owners" experienced a higher percentage increase in level of inequality during the same times span.

5. Measurement of Pro-Poor Growth in Urban India

Having given a detailed account of poverty and inequality situation in urban India as seen through different perspectives in section 4, let us now proceed to measure the pro-poor growth in urban India. For empirically measuring the pro-poorness of Indian urban economic growth, we have used the framework developed by Duclos (2009) and also followed the methodological approach of Araar et al. (2007, 2009) and Araar (2012). In Indian context, a similar approach is used by Motiram and Naraparaju (2014) by extending the framework to include the entire population, historical disadvantaged caste groups, the occupations at lower ranges of the rural (e.g. labourers, marginal and small farmers) and urban economy (casual labourers and self employed) in the analysis. However, in this paper we further extend this framework by specifically considering various aspects of urban India.

Duclos (2009) presents an axiomatic formulation of the two different approaches i.e., relative and absolute measurements of poverty. In the relative approach, we label a growth process pro-poor if the growth rate of the poor exceeds some standard (usually the average growth rate of the median or the mean), e.g., are the poor growing at 5 percent? In the absolute approach, we label growth as pro-poor if the absolute incomes of the poor increase by at least some standard, e.g., have the incomes of the poor increased by Rs. 100 or not? Araar et al. (2009) illustrate how we can statistically ascertain for pro-poor growth. There are two approaches, First Order and Second Order. In the First Order approach, we postulate that all the poor grows at least at the standard rate imposed, whereas in the second order, (which is by definition weaker than First Order approach, we allow for pro-poorness even if some poor do not grow at the standard, provided that even those poor are growing at higher than the standard rate. The first order (or second order) approach is equivalent to checking for first order (or second order) stochastic dominance of the distribution of the poor in the first period by the normalized (using the standard) distribution of the poor in the second period.[7] The novelty of using this framework is that it is based on a new theoretical paradigm and analyzes pro-poor growth in a dynamic manner, and therefore it has rigorous statistical rationale. In fact, this model uses a range of poverty lines to assess the pro-poor growth which helps to measure pro-poor growth without applying a specific poverty line in India.[8]

Table 4: Measurement of Pro-Poor Growth across Different Size Classes of Cities by Different attributes

Srl. No.	Different Categories	Sub group of different categories	Total Urban areas	57 large Cities	Rest of Urban areas	Total Urban areas	57 large Cities	Rest of Urban areas
			Has economic growth in urban India been Pro-Poor between 2004-05 and 2011-12?					
			Absolute approach			***Relative approach***		
1	Overall	Urban	Yes	Yes	Yes	No	No	No
2	Religion	Hindu	Yes	Yes	Yes	No	No	No
		Others	Yes	Yes	Yes	No	No	No
3	Social	Backward class	Yes	Yes	Yes	No	No	No
	Group	General caste	Yes	Yes	Yes	No	No	No
4	Land	Yes	Yes	Yes	Yes	No	No	No

[7] A detailed explanation of this theoretical model is given in Araar et al. (2007, 2009). In Indian context, the appropriateness of using this model and the conceptual problems in using this methodology for studying long periods of time are nicely explained in Motiram and Naraparaju (2014).

[8] The construction of poverty line in India is very much controversial. A detailed debate on India's poverty line can be found in Ray and Sinha (2014).

	owners	No	Yes	Yes	Yes	No	No	No
5	Salary	Yes	Yes	Yes	Yes	No	No	No
	earners	No	Yes	Yes	Yes	No	No	No
6	Ration card	Yes	Yes	Yes	Yes	No	No	No
	holders	No	Yes	Yes	Yes	No	No	No
7	Sex	Male	Yes	Yes	Yes	No	No	No
		Female	Yes	Yes	Yes	No	No	No
8	Marital	Widow	Yes	Yes	Yes	No	No	No
	status	Non-widow	Yes	Yes	Yes	No	No	No
9	Education	Up to middle class	Yes	Yes	Yes	No	No	No
	level	Upper middle class	Yes	Yes	Yes	No	No	No
10	Age	Child	Yes	Yes	Yes	No	No	No
		Adult	Yes	Yes	Yes	No	No	No

Source: Author's calculation using DASP software and the NSS 61st Round in 2004-05 and 68st Round in 2011-12 in consumer expenditure.

The entire empirical analysis is done using the Distributive Analysis Stata Package (DASP) software package (Araar and Duclos, 2007). Here, we again use MRP data for the entire calculation exercise. However, though we have used the poverty line as formulated by Tendulkar Committee, for the calculation of poverty rate in section 4, here we use the poverty line as formulated by Tendulkar and Rangarajan committee to compare whether the urban economic growth is absolutely and relatively pro-poor or not.[9]

We calculate the real MPCE by using the deflator with base 1987-88 (=100). In urban India there was higher growth in real MPCE from Rs. 326.80 in 2004-05 to Rs. 413.53 in 2011-12 - an increase of 27% in the 7-year period under review.

The results as estimated are summarized in Table 4. The results indicate that, by comparing the situation between 2004-05 and 2011-12, the change in distribution was absolutely pro-poor for all the attributes of urban India. In contrast, comparing the situation between 2004-05 and 2011-12, the change of distribution was not relatively pro-poor for all the attributes of urban India which are considered for the analysis. These estimations were carried out by considering first order and second order statistical test. Therefore, our results are robust in terms of statistical measurements and from different attributes or perspective specific to different size classes of urban India. Finally, we could find evidence for statistically anti-relative pro-poorness in urban economic growth between 2004-05 and 2011-12. However, in line with the findings of Motiram and Naraparaju (2014), we also suggest that our findings may be sensitive to the method that we have used. Yet, our results are more robust as we have measured pro-poorness of urban economic growth from different perspectives of urban India unlike the limited number of indicators used by Motiram and Naraparaju (2014). [10]

6. Conclusions and Policy Implications

The main conclusions from this paper are the following: First, urbanization in India is taking place at an unprecedented rate not only through increasing the percentage of urban population but also by the formation large agglomerations. Second, though industry-led urban agglomeration does not have any significant effect on economic growth, increasing

[9] It is important to note here that Official Planning Commission urban poverty line for 2011-12, based on the Expert Group (Tendulkar) was Rs. 1000/ per capita per month, whereas, based on Expert Group (Rangarajan) was Rs. 1407/ per capita per month.

[10] There are some other notable work also are done for the measurement of inclusion of economic growth in India, such as, Suryanarayana (2009) and Jayaraj and Subramaniam (2012) for all India level by considering rural and urban distinction. The large city specific inclusiveness is measured by Tripathi (2013d). Although, all the studies including Motiram and Naraparaju (2014) have used different methodology but the results suggest that actually the Indian poor marginally benefited from higher economic growth.

concentration of urban population does make Indian cities engine of economic growth. Third: though the contribution of urban India to the overall national economic growth is quite high, a large number of urban dwellers are still unable to benefit from it.

Now coming to policy implications, it is very important to note that the newly formed government in India intends to create 100 smart cities which might shift attention from the extant policy perspective of overall development of urban India. MGI report (MGI, 2010) already mentioned that "The speed of urbanisation poses an unprecedented managerial and policy challenge – yet India has barely engaged in a national discussion about how to handle the seismic shift in the makeup of the nation." In fact, India's urbanization is mainly guided by Todaro's model. The model suggests that urban area increases job opportunity which attracts greater migration from rural to urban areas, which would in turn, paradoxically increase their unemployment rate. Indian urban development policies have implicitly been guided by such a model for a long time. This is discernible from the fact that our policies have always tried to 'prevent' migration from rural to urban areas as it is discussed in Sridhar (2014). Therefore, the creation of 100 smart cities may reverse the situation and increase the speed of urbanization in India by creating more employment opportunities. In addition, this strategy will be one of the potential successors to JNNURM (Guha, 2014).

The paper suggests that the roadmap for creation of 100 smart cities should be formulated in such a way that it factor in the pressing need for augmenting the wellbeing of poorer sections of urban dwellers. In this context, World Development Report 2009: Reshaping Economic Geography (World Bank, 2009), can be profitably used learn lessons about the early experience of developed countries in this regard and draw up practical implications of urbanization policies in today's developing countries, such as India. In case of India, challenges of urbanization from the view point of planning, infrastructure, sustainability, finance and governance and inclusions of governance are well discussed in Ahluwalia et al. (2014). Many case studies which reveal the provision of public services in Indian cities can be found in Ahluwalia (2014).

It is quite understandable that smart cities will have smart infrastructure – roads, water, solid-waste management, drainage network, etc. But it is also obvious that private sector will necessarily play a major role through investment in the smart cities. But the question arises what fraction of advantage from this large investment would be available to the poorer sections in the smart cities because the "markets are neither efficient nor stable and tend to accumulate money in the hands of few rather than engender competition which produces slower growth and lower GDP" (Stiglitz, 2012). Finally, we suggest that government decisive role to play not only in creating 100 smart cities but also in ensuring equitable distribution of urban GDP to all sections, particularly the poorer section of urban dwellers.

It would be very appropriate to compare it with the "East Asian miracle" which is all about the remarkable success achieved by the economies of the eight East Asian countries (i.e., Hong Kong, Indonesia, Japan, the Republic of Korea, Malaysia, Singapore, Taiwan (China), and Thailand). One of the most important factors behind this success was that the benefits of higher economic growth were spread widely among the population. The government policies that promoted greater degree of equality were accompanied by years of higher economic growth. Urban India has to emulate this example for higher and sustainable economic growth in India.

In addition to that, the centre and state Government need to design specific formats to generate (or improve) the urban data base on major urban growth variables (such as, income, infrastructure, business, finance, education, etc.) for better management of urban India. Further, collection of information on the basic socio-economic status and development trend of various cities is essential to enable the various government departments to formulate appropriate urban development strategies at sub national levels. This would help to raise the standard of urban management practices and for monitoring the implementation of various urban policies.

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ESTIMATION OF FACTORS FOR SOCIAL AND ECONOMIC INEQUALITY OF RUSSIA'S TOWNS

Inna MANAEVA
World Economy Chair –Belgorod State National Research University, Russia, http://www.bsu.edu.ru, In.manaeva@yandex.ru

Alexandra KANISHTEVA
World Economy Chair –Belgorod State National Research University, Russia, http://www.bsu.edu.ru, black_shadow13@mail.ru

Abstract

At the present-day stage of economics development the issue of productive power arrangement over the Russia's territory is being intensively researched due to ever growing differentiation of social and economic state of towns. The goal is to identify factors and estimate their impact on the social and economic inequality of Russia's towns. The key factors under consideration include the size of engaged population, investment in a town budget, population density, density of hard-surface roads, distance along motor roads to the town center. The factor model is constructed by a least-square method. The authors made use of the data from the Federal State Statistics Service as of 2003, 2009, 2014, the research covered the populated areas having a town status with the population size over 100 thous. people.

It has been proven empirically that positive impact on the social and economic inequality of Russia's towns is the most significant from volume of investments in a town budget and level of transport infrastructure development. Such factor as geographic arrangement of the towns has a noticeable negative influence on the social and economic inequality of towns. However, in the Siberian Federal district, a factor of distance along motor roads to the nearest major town correlates with the industrial output, thus demonstrating that trade in the towns of this Federal District is aimed at the foreign market. In Southern, North Caucasian, Ural, Siberian and Far Eastern Federal Districts the inflow of labor resources to a town exceeds demand thereof, thus confirming migration of engaged population to big towns. Research outcomes may be utilized in creation of procedural aids for development of mechanisms to level out interregional inequalities, social and economic development programs of a town.

Keywords: town, social and economic inequality, inequality factors, interregional differentiation, production output, engaged population, investment, salary, density population, least-square method.

JEL classification:

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1. Introduction

Russia holds the first line in the territory size and the 181th line in population density in the world, which determines its unique pattern of towns and economic activity distribution over the territory and differences between the regions that pose a number of problems at the current stage of development. High income differences, concentration of competitive advantages in some areas and deficiency thereof in others are worsened by social inequality. Issues of unequal access to the labour market, education, health service are aggravating, thus threatening the state integrity and politico-social stability. Various mechanisms of levelling out differences between the regions are actually used: budget transfers between regions, support of "advanced development areas", implementation of one-factory town renewal programs. In taking the above measures, high emphasis is put on understanding the processes of concentration of resources, population, enterprises in towns as economic growth sources.

An issue of production power arrangement over the Russia's territory at the current stage of economics development is a subject of systematic and dynamic research, which is caused by ever growing differences between the towns: maximum production output per capita in

2003 was noted in Norilsk, equalling to 823 thous. RUB, minimum one in Gorno-Altaysk, equaling to 2 thous. RUB (411 times as low), maximum one in 2009 – in Achinsk, equaling to 1,570 thous. RUB, minimum one – in Nazran, equaling to 2.17 thous. RUB (723 times as low), maximum one in 2014 – Almetyevsk, equaling to 2,831 thous. RUB, minimum one – in Nazran, equaling to 11.5 thous. RUB (246 times as low) . Maximum population density in 2003 was noted in Lubertsy, equaling to 12,320 people per km2 , minimum one – in Ukhta, equaling to 9.6 people per km2 (1,283 times as low); maximum one in 2009 – in Lubertsy, equaling to 12,354 people per km2 , minimum one – in Ukhta, equaling to 9.5 people per km2 (1,300 times as low); maximum one in 2014 – in Odintsovo, equaling to 7,163.3 people per km2 , minimum one – in Yelets, equaling to 1.49 people per km2 (4,800 times as low).

The goal of research, which outcomes are presented here, is to identify factors and estimate their impact on social and economic inequality of Russia's tows.

2. Review of the research

Spatial distribution of towns and development of social and economic inequality among them are impacted by numerous factors. A theory of changing over from one spatial pattern of country development to another one is supported by a concept of spatial equilibrium plurality, which has a theoretical justification in agglomeration economics [1]. While studying specific features of territorial distribution of towns by an example of France, P.-P. Combe et al. identified factors of spatial inequality: size of a local market; localization effects; urbanization effects; market potential [2].

R. Arenda uses political, institutional, structural and geographical characteristics to explain differences in growth rates of country regions [3]. Researchers emphasize significance of the town size (size of population) in formation of urban stability and population's quality of life, thus providing economic reasons for town dynamics. Urban stability correlates with size of a town, with change in house price in future periods depending on demographic data [4]. The research cannot ignore the role of geography of markets and neighbours in hierarchy of towns. A growth rate of neighbouring towns has a direct influence on a town [5]. Socio-economic activity in a town is determined not only by internal production factors but also by effects generated by neighbouring towns and territories. S. Harris used market potential for measurement of territory accessibility in domestic markets. Market potential of a region is measured as distance of weighted total of economic activities in other territories [6].

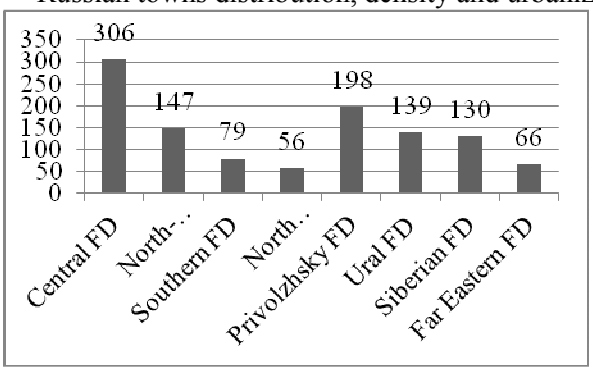
A role of geographic factors ("primary factors") in estimation of urban inequality needs to be determined. Within a territory, distribution of town sizes follows the Pareto distribution with index equalling to one [7]. Zipf's law as applied to towns is an example of agglomeration law that expresses the most precise relationship in economics. Demographic distribution of individuals over the Earth's surface with sharp peaks of population concentration in towns alternating with relatively long spans where population density is much lower follows a power law of standard dynamics typical of complicated systems [8]. Zipf's law must be used as background for the local-wise town growth law [9]. According to the research, distribution of town sizes requires considering impact of international relationships on the economic growth process [10].

Specific features of town start and end were considered by L. Dobkins, U. Ioannidis, A. Anas and others [11, 12].

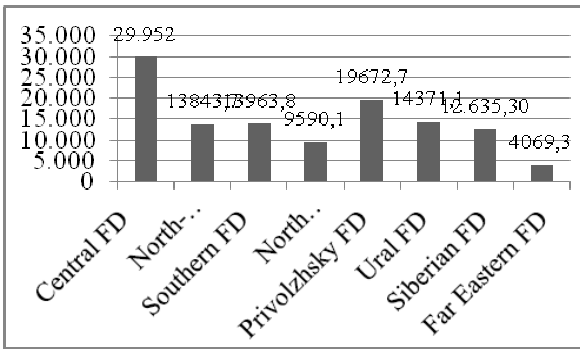
Though issues of urban inequality are mostly dealt with by foreign scientists, some aspects have been studied in Russian papers as well. Certain fields were studied by: A. Aleksandrova, Ye. Grishina (estimation of intraregional inequality) [10], O. S. Balash (spatial modeling of towns) [11], A. N. Bufetova (trends in "center-periphery" system development) [12], K. P. Glushchenko (estimation of interregional inequality) [13], Zh. Zayonchkovskaya, N. Nozdrina (migration flows, attractiveness radius of cities on the basis of social studies) [14]; N. V. Zubarevich (regional and urban inequality) [15], E.A. Kolomak (spatial development inequality, town agglomerations) [16], M. Yu. Malkina (inequality of regional income) [17], A. Treyvish, T. Nefedova (state estimation of country's towns, forecast of their response to financial crisis) [18]; I. E. Trubekhina (spatial inequality of Russia's regions) [19]; A. Yu. Shevyakov (social inequality and economic growth) [20].

3. Specific features of socio-economic inequality of Russia's towns

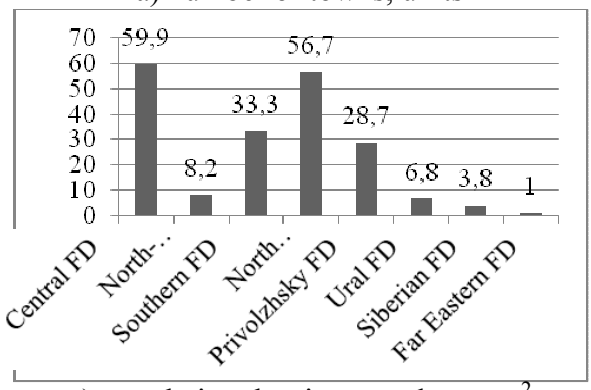
The territory of Russia accommodates fifteen million-plus cities: in the Central Federal District: Moscow and Voronezh; North-Western Federal District - Saint Petersburg; Southern Federal District - Rostov-on-Don, Volgograd; Privolzhsky Federal District - Ufa, Kazan, Perm, Nizhni Novgorod, Samara; Ural Federal District - Ekaterinburg, Chelyabinsk; Siberian Federal District - Krasnoyarsk, Novosibirsk, Omsk. North Caucasian and Far Eastern Federal Districts do not have towns with million-plus population. Figure 1 shows results of analysis of Russian towns distribution, density and urbanization level within a federal district.



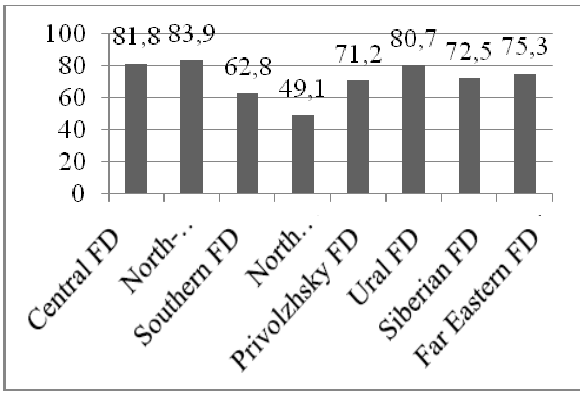
a) number of towns, units



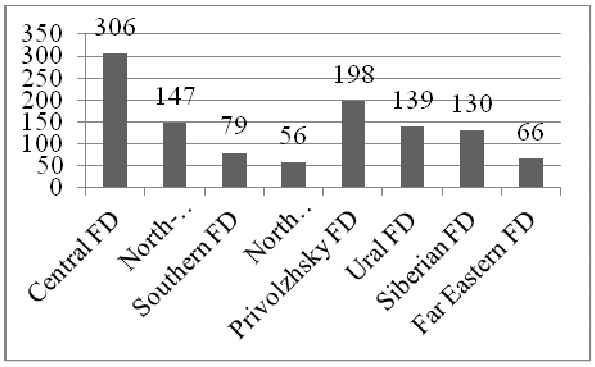
b) size of town population, thous. people



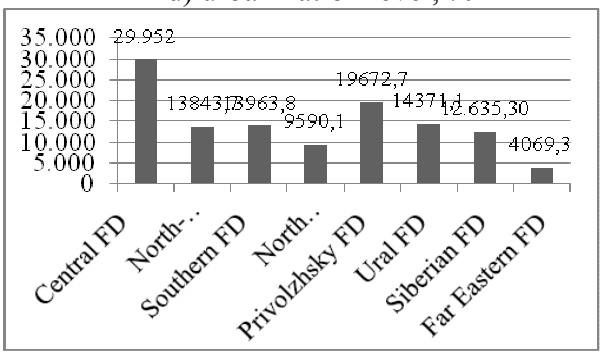
c) population density, people per m^2



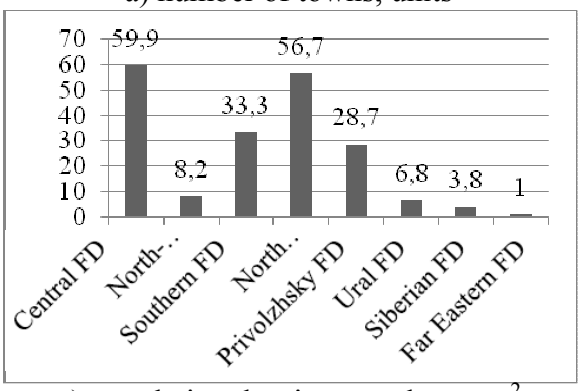
d) urbanization level, %



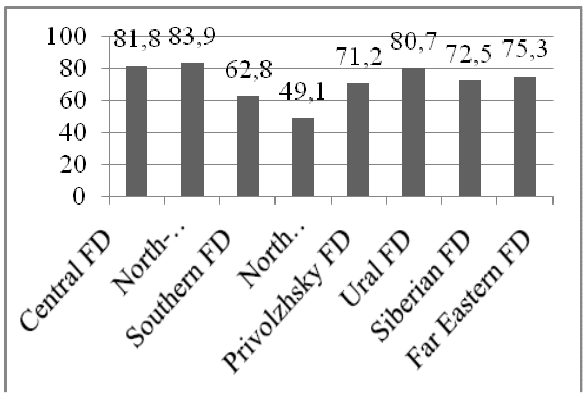
a) number of towns, units



b) size of town population, thous. people



c) population density, people per m^2

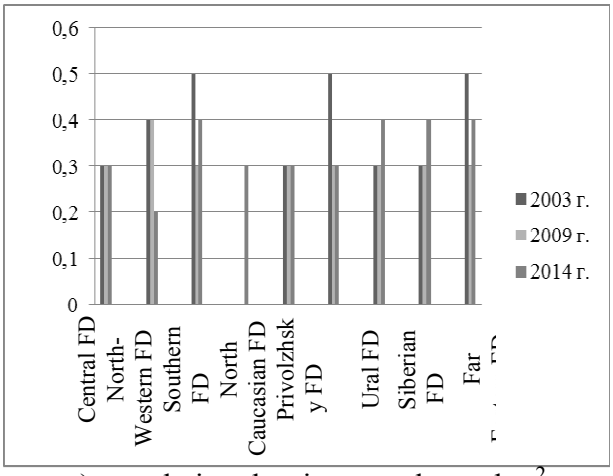


d) urbanization level, %

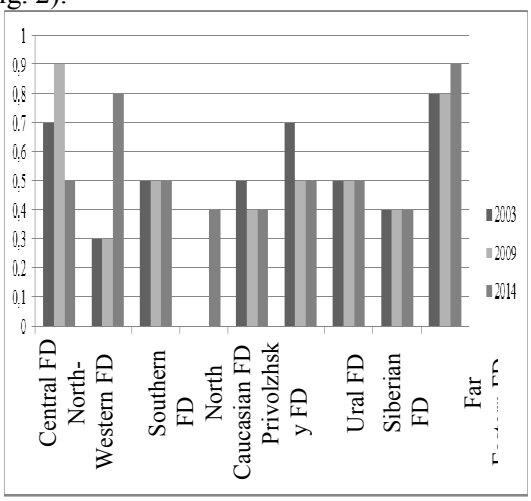
Fig. 1 Distribution of towns over the territory of Russia in 2014 [123].

The Central Federal District is a leader in number of towns and urban population size. It should be noted that Moscow population size equals to 12,108 thous. people, with 17,844 thous. people living in 305 towns. The same situation is observed in the North-Western Federal District: population size of Saint Petersburg is 5,132 thous. people, with 8.711.7 thous. people living in the rest 146 towns. Population concentration in Moscow and Saint Petersburg determines the high inequality level of the towns in terms of population size. Low figures of the population size parameter in towns of North-Western, Ural, Siberian and Far Eastern Federal Districts result from climatic conditions of these areas.

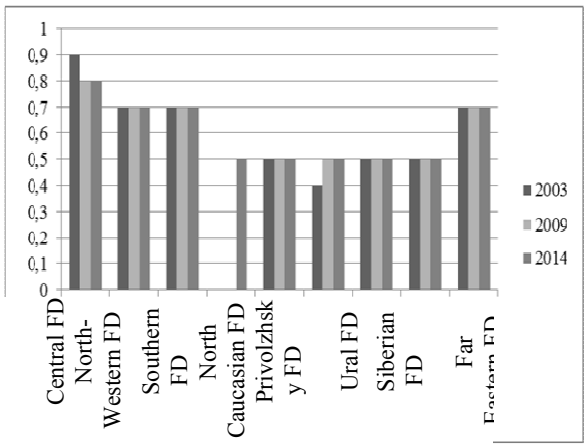
To analyse the socio-economic inequality of towns in Russia, we find it necessary to calculate the Gini coefficient for such parameters as size of engaged population, population density, volume of investment in the town budget (Fig. 2).



a) population density, people per km^2



b) size of engaged population, thous. people



c) volume of investment in the town budget

Calculated from data: [1,14, 15]

Fig. 2 Dynamics of Gini coefficient in the towns of Russia in 2003-2014[456].

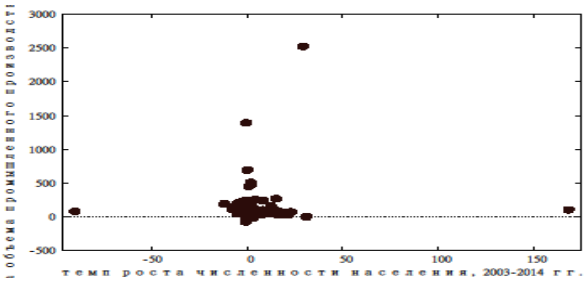
Population density. During the period from 2003 to 2014, along with high values of the coefficient, its negative growth takes place in North-Western, Southern, Ural Federal Districts and over Russia as a whole, which is a result of decrease in population size of small towns. In Central and Privolzhsky Federal Districts the Gini coefficient as applied to the parameter has not changed, moreover its value (0.3) proves a low level on inequality for the parameter under analysis.

Size of engaged population. As for the given parameter, the high level of inequality can be seen in towns of the Central Federal District in 2009 while its negative growth suggests dispersion of engaged population. Positive growth of the Gini coefficient is present in the North-Western Federal District, which means concentration of engaged population in big towns. No changes occurred during the analyzed period in Southern, Siberian and Far Eastern Federal Districts.

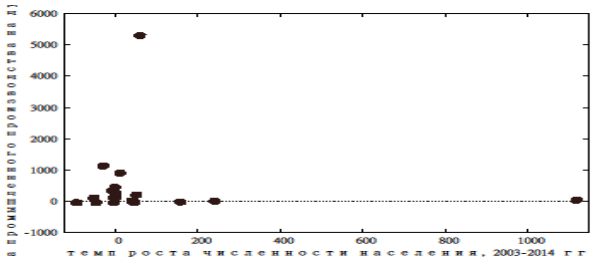
High inequality of towns as far as volume of fixed capital expenditure is concerned can be seen in the Central Federal District (exceeding the overall Russian level), thus emphasizing the high level of inequality between Central Federal District towns. For example, in 2003 the volume of investments in Moscow's budget amounted to 263,797 mln RUB, in that of Orekhovo-Zuevo (minimum values in the District) – to 136.3 mln RUB. A steadily low Gini coefficient is typical for Privolzhsky, Ural, Siberian and Far Eastern Federal Districts.

Another by no means unimportant factor contributing to inequality of Russian towns is the level of transport infrastructure development, access of this or that market participant to sale markets. It should be noted that the traffic infrastructure is better developed in Saint Petersburg (2,156 km of roads per 1,000 sq m of territory), Moscow (2,114 km of roads per 1,000 sq m of territory), Moscow Region (695 km of roads per 1,000 sq m of territory), Republic of North Ossetia – Alaniya (633 km of roads per 1,000 sq m of territory), Belgorod Region (600 km of roads per 1,000 sq m of territory), and Republic of Adygeya (526 km of roads per 1,000 sq m of territory). The lowest values of this parameter are exhibited by the Chukotka Autonomous District (0.9 km of roads per 1,000 sq m of territory), Republic of Sakha (Yakutia) (3.3 km of roads per 1,000 sq m of territory), Kamchatka Region (3.9 km of roads per 1,000 sq m of territory), Magadan Region (5.3 km of roads per 1,000 sq m of territory), Khabarovsk Region (8 km of roads per 1,000 sq m of territory), and Krasnoyarsk Region (11 km of roads per 1,000 sq m of territory).

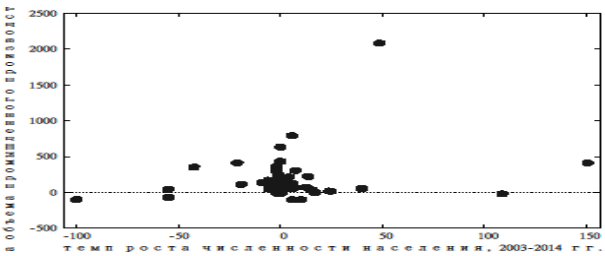
An indicator of town's economic inequality is industrial output per capita. Since positive growth rate of this parameter may be caused by decrease of population size in a town, let's analyze any relationship between growth rate of urban population and growth rates of industrial output per capita, with a breakdown into Federal Districts (Fig. 3).



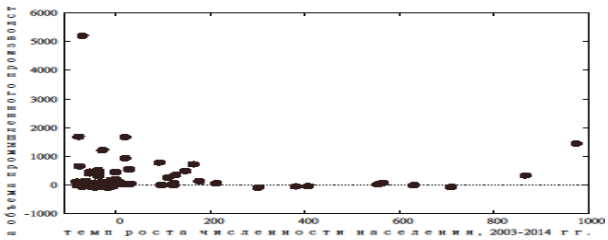
a) Central Federal District



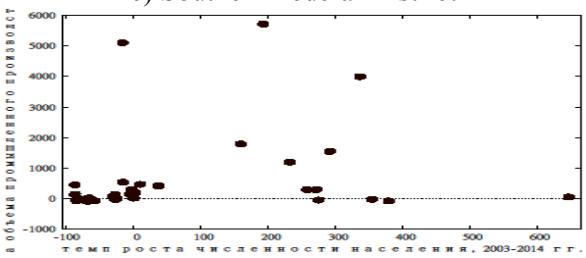
b) North-Western Federal District



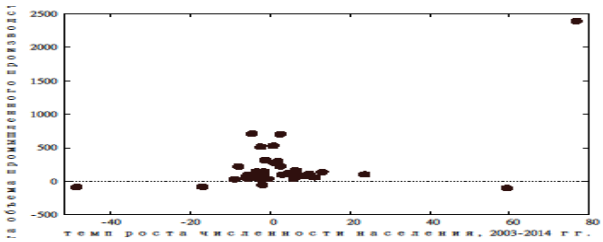
c) Southern Federal District



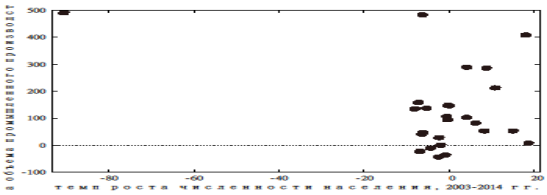
d) Privolzhsky Federal District



e) Ural Federal District



f) Siberian Federal District



g) Far Eastern Federal District

Calculated from data: [1, 14,15]

Fig. 3 Relationship of population size growth rate and growth of industrial output per capita in the towns of Russia , 2003-2014[7].

The derived plots show mixed and inhomogeneous situation, which means that the "population reduction effect" is not determinant for growth of industrial output per capita in the towns of Russia.

An important criterion of social inequality between towns is salary level. According to some researchers [16;17], high contrast of salaries in towns is caused by influence of labour resources skill level. The higher the share of low-skilled employees is, the less significant is the difference in salaries between a major town and surrounding territory. A quality of life indicator is minimum cost of living vs. average monthly salary (Table 3).

Table 3 Analysis of salaries in the towns of Russia, 2014[8910].

Federal District	Average monthly salary, RUB			Share of minimum cost of living in average monthly salary, %		
	Max	Min	Gini coef.	Max	Min	Gini coef.
Central FD	55,485 Moscow	20,085 Elets	0.5	36 Murom	17 Khimki	0.15
North-Western FD	46,350 Murmansk	22,979 Petrozavodsk	0.05	31 Pskov	22 Cherepovets	0.1
Southern FD	36,311 Sochi	17,580 Novoshakhtinsk	0.1	42 Novoshakhtinsk	21 Sochi	0.1
North Caucasian FD	26,835 Stavropol	16,111 Derbent	0.08	44 Derbent	26 Stavropol, Pyatigorsk	0.07
Privolzhsky FD	32,801 Perm	20,077 Orsk	0.07	38 Syzran	21 Ufa	0.08
Ural FD	79,466 Novy Urengoy	21,693 Zlatoust	0.12	34 Zlatoust	16 Novy Urengoy	0.2
Siberian	66,584 Norilsk	18,918 Rubtsovsk	0.1	37 Rubtsovsk	13 Norilsk	0.1
Far Eastern FD	81,533 Anadyr	31,435 Birobidjan	0.01	32 Komsomosk-on-Amur	18 Yuzhno-Sakhalinsk	0.2
Russia	81,533 Anadyr	16,111 Derbent	0.1	44 Derbent	17 Khimki	0.2

Maximum values (Anadyr) of the parameter under analysis are 5 times as high as minimum ones (Derbent). Within the Federal Districts, the highest difference can be seen in Ural and Siberian Federal Districts. The derived Gini coefficient allows to conclude the following: the highest difference between the towns is exhibited by the Central Federal District, because salaries exceeding the average level are concentrated in the Moscow Region. However, Gini coefficient of the parameter, the share of minimum cost of living in the average monthly salary, is low in the Central Federal District. It is worth noting that difference between towns in other Federal Districts and Russian Federation as a whole is low.

4. Constructing a model.

Lets' assume the following factors as the key ones influencing the level of socio-economic inequality of Russian towns:

1. Size of engaged population of a town (engaged¬_prod) – this parameter reflects influence of "human capital assets" factor. An important role in estimation of labour resources

measure shall be played by employees' skill level but lack of statistical data for Russian towns prevent it from including into a model.

2. Investment in the town budget (fdi). We believe that volume of investments in the town budget correlates with parameters of socio-economic inequality of the town.

3. Population density (population density). It is supposed that industrial output per capita be higher in densely populated towns.

4. Density of hard-surfaced public roads in a town (road). Including the variable in a model results from provisions of neoclassical theory of growth. The parameter is treated as physical infrastructure. We believe that the transport infrastructure development level is quite an important factor adding to socio-economic inequality of towns.

5. Distance along motor roads to the center (dist) – the factor of geographic arrangement of towns. Considering its vast territory, we applied to Russia the distance to the nearest big town with population size above 1 mln of people, which we assumed to be an economically isolated industrial center.

As a resulting parameter of urban economic inequality, the industrial output per capita (vip) was determined, of social inequality – salary level (msl).

To construct a model of influence on socio-economic inequality of towns from the factors, let's use panel data of 186 towns (with population sixe over 100 thous. people) in 2003-2014. Calculation will be made by a combined least-square method.

5. Analysis results.

$Ln_{i,t}(vip) = 1.12 + 0.1Ln_{i,t}(engaged_prod) + 0.5\ Ln_{i,t}(fdi) + 0.01\ Ln_{i,t}(population\ density) + 0.09\ Ln_{i,t}(road) - 0.2\ Ln_{i,t}(dist) + \varepsilon;$

$R^2 = 0.54$

$Ln_{i,t}(msl) = 6.9 - 0.1Ln_{i,t}(engaged_prod) + 0.4\ Ln_{i,t}(fdi) - 0.03\ Ln_{i,t}(population\ density) + 0.05\ Ln_{i,t}(road) - 0.1\ Ln_{i,t}(dist) + \varepsilon;$

$R^2 = 0.67$

where

i– town;

t– year;

ε– mean-square error of the model.

Thus, a system of models describing influence of the factors on the socio-economic inequality that was constructed for Russian towns allows making some conclusions.

Size of engaged population (0.1) and density of hard-surfaced motor roads (0.09) have virtually equal positive influence on economic inequality of a town. The derived coefficient of the model (0.5) shows that increase of investments in a town's budget gives a significant impetus to the industrial output.

Growth of engaged population has a negative influence on an average monthly salary in Russian towns (-0.1). We may suggest that inflow of labour resources to a town grows faster than demand thereof, thus contributing to reduction of a relative salary. We believe that it is reasonable to research these results additionally.

Growth of investments to a town's budget (0.4) and density of motor roads (0.05) are directly correlated with salary growth in Russia's towns.

More densely populated towns do not exhibit apparent advantage in terms of socio-economical efficiency. Distance to the nearest major town has a negative influence on economic (-0.2) and social (-0.1) state. We believe the obtained results to be consistent because a factor of geographic arrangement of a town plays a key role in this case. The farther the town from major markets is, the lower is the probability of positive correlation between the relative industrial output and an average monthly salary.

Determination coefficients 0.54 and 0.67 point to a number of factors ignored in this system of the model.

For the purpose of a more detailed analysis, the developed model describing influence of the factors on socio-economic inequality of towns was constructed for each Federal District (Tables 3, 4).

Table 4 Coefficients of the model describing influence of the factors on economic state of towns within Federal Districts of Russia 2003-2014

Factor	Central FD	North-Western FD	Southern FD	North Caucasian FD	Privolzhsky FD	Ural FD	Siberian	Far Eastern FD
Constant	1.14	–1.5	1.5	16	2.9	0.9	-1.6	-0.5
Size of engaged population in town (*engaged-_prod)*	0.12 **	-0.02	-0.04	0.01	0.01	-0.1	0.3*	-0.1
Investment in the town budget (*fdi)*	0.35 ***	1.2***	0.4***	0.07	0.4***	0.6***	0.7***	0.7***
Population density (*population density*)	0.01	-0.2	0.2	-0.2	-0.06	0.1	0.1	-0.04
Density of hard-surfaced public roads in a town (*road)*	0.2**	0.09*	0.1	0.08	0.2*	0.08	0.09*	0.06
Distance along motor roads to the nearest major town *(dist)*	-0.3	-0.5**	-0.33***	-1.9**	-0.2***	-0.2	0.2	-0.1
Mean-square error of the model	0.73	0.77	0.91	1.4	0.8	1	1	0.6
Determination coefficient	0.51	0.73	0.45	0.38	0.52	0.54	0.62	0.72
Number of observations	**133**	**39**	**54**	**45**	**96**	**57**	**69**	**38**

Table 5 Coefficients of the model describing influence of the factors on social state of towns within Federal Districts of Russia 2003-2014

Factor	Central FD	North-Western FD	Southern FD	North Caucasian FD	Privolzhsky FD	Ural FD	Siberian	Far Eastern FD
Constant	7.6	5.6	7.8	2.4	6.8	8	7.7	7.2
Size of engaged population in town (*engaged_prod)*	0.21***	-0.04	-0.6***	-0.5***	0.1***	-0.5***	-0.8***	-0.2**
Investment in the town budget (*fdi)*	0.3***	0.5***	0.5***	0.7***	0.4***	0.4***	0.6***	0.6***
Population density (*population density*)	0.03	-0.1	0.1	0.1	-0.1	0.01	-0.1	-0.3**
Density of hard-surfaced public roads in	0.1**	0.07**	0.09	0.04	0.1*	0.06*	0.04	0.03

a town (*road)*								
Distance along motor roads to the nearest major town *(dist)*	-0.4***	0.02	-0.1*	0.4	-0.12*	0.1	0.02	0.03
Mean-square error of the model	0.5	0.5	0.4	0.5	0.4	0.5	0.4	0.5
Determination coefficient	0.72	0.59	0.85	0.80	0.76	0.82	0.85	0.79
Number of observations	133	39	54	45	96	57	69	38

Prepared by the authors.

*** – significance level mistake of error - 1%; **– significance level mistake of error – 5%; * – significance level mistake of error – 10%

Growth of engaged population has a significant positive influence on economic inequality in towns of the Central and Siberian Federal Districts. Impact of this factor is noticeable on social state throughout the territory of Russia, the exception being the North Caucasian Federal District. In Southern (-0.6), North Caucasian (-0.5), Ural (-0.5), Siberian (-0.8) and Far Eastern (-0.2) Federal Districts the inflow of labour resources grows faster than demand thereof. We may suggest that migration of engaged population to major towns happens in these Federal Districts.

Consistent results were obtained for such parameters as volume of investments in the town's budget - throughout the territory of Russia this parameter correlates well with an average monthly salary and industrial output in a town (an exception being the North Caucasian Federal District).

As we can see, population density is not a probably significant factor of urban socio-economic inequality in Russia. The Far Eastern Federal District (-0.3) is worth distinguishing since this parameter has a negative impact on an average monthly salary here, which is also explained by the inflow of labour resources to major towns.

The transport infrastructure development level has a positive influence on the socio-economic state of a town, being noticeable in Central, North-Western, Privolzhsky, Ural and Siberian Federal Districts.

Uncertain results are suggested by estimation of geographical arrangement of a town (distance to the nearest major town). Significant negative influence of this factor takes place in the territory of the North-Western (-0.5), Southern, North Caucasian (-1.9), Privolzhsky (-0.2) Federal Districts. The derived results suggest that trade development in towns of these Federal Districts is mainly directed towards domestic markets. An opposite situation can be observed in the Siberian Federal District: such parameter as distance along motor roads to the nearest major town correlates with industrial output. Thus, trade development in towns of the Siberian Federal District is aimed at the foreign market.

Significant negative influence of distance along motor roads to the nearest major town is exercised on the social state of towns in Central (-0.4), Southern (-0.1), and Privolzhsky (-0.12) Federal Districts. It is worth noting that the high coefficient was obtained for towns of the Central Federal District, which is explained by high difference in salaries between Moscow and peripheral towns. For example, in 2003 an average monthly salary in Moscow equaled to 8,511.6 RUB, in Belgorod (the most distant town from the center in the Central Federal District) –5,239.5 RUB (61 %), in 2009 in Moscow – 23,623.3 RUB, in Belgorod– 12,734.5 RUB (54 %), in 2014 in Moscow –55,485 RUB, in Belgorod – 26,423.9 RUB (47 %) [14].

It should be emphasized that determination coefficients in all models are quite high. It is beneficial for the derived system of models

6. Conclusion.

Estimation of factors of socio-economic inequality of Russia's towns allows making the following conclusions.

1. While implementing the regional policy, it is important to understand that towns behave as individual parties to economic relations, being competitors in most cases due to limited production factors.

2. Modelling the influence of factors on the social-economic inequality of towns has shown that the most significant influence is exercised by volume of investments in a budget and level of transport infrastructure development.
3. Population density is not a probably significant factor of urban socio-economic inequality in Russia.
4. Such factor as geographic arrangement of towns has a noticeable negative influence on the social and economic state of towns. However, in the Siberian Federal district, a factor of distance along motor roads to the nearest major town correlates with the industrial output, thus demonstrating that trade in the towns of this Federal District is aimed at the foreign market.
5. In Southern, North Caucasian, Ural, Siberian and Far Eastern Federal Districts the inflow of labour resources grows faster than demand thereof. Migration of engaged population to major towns happens in these Federal Districts.
6. The calculations made within the Federal Districts allowed supplementing the available conclusions.
7. Theoretical significance of the research performed is in supplementing fundamental procedures of estimating factors of socio-economic inequality on Russia's towns.
8. From practical point of view, the results derived may be used in activities of regional and municipal authorities and will enable scientific justification for programs and strategies of social and economic development of towns in Russia.

7. Links

2, 5, 8, 9,12 – Regions of Russia. Basic social and economic indices of cities 2014 // Federal State Statistics Service. [Electronic resource] URL:http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1138631758656 (accessed date 07.06.2017).

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REGIONAL EMPLOYMENT IN PORTUGAL: DIFFERENCES AND CYCLICAL SYNCHRONISATION

Leonida CORREIA
Assistant Professor Department of Economy, Sociology and Management (DESG), Centre for Transdisciplinary Development Studies (CETRAD), University of Trás-os-Montes and Alto Douro (UTAD) Quinta de Prados, 5000-801 Vila Real, Portugal. Tel: +351 259 350699; lcorreia@utad.pt

Marina ALVES
Master's degree in Economic and Management Sciences in UTAD
alves2_marina@hotmail.com

Abstract

This paper analyses the specificities of employment in Portuguese regions at a disaggregated level of NUTS III, comparing the differences of several indicators between the last two censuses. It also examines the synchronisation of regional employment cycles over the 2000-2014 period, using the information provided for the new nomenclature of NUTS. The comparison of several employment's characteristics (total and by sex, age group, sector of activity and main occupation) across the 7 regions and 25 sub-regions allowed us to conclude that Portugal is marked by substantial regional specificities. The analysis of the evolution of employment 'cycles highlight the substantial reduction in the employment rate since the beginning of the 2000s, with particular intensity in the period of the recent crisis, and considerable differences across regions and at the intraregional level. The results from the synchronisation reveal a great heterogeneity in the degree of correlation between the sub-national cycles and the national cycle. Additionally, they suggest that, in general, the cyclical pattern of the sub-regions is more closely related to the regions that they belong to than that of the Portuguese cycle. The paper concludes that this heterogeneity should be addressed in the context of policy making, by means to construct appropriate responses to counteract the regional differences.

Keywords: employment, disparities, cycles, Portuguese regions
JEL classification: E32, J21, R11, R12

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1. Introduction

The Portuguese labour market has experienced substantial changes since the beginning of this century. One of the most distinctive features has been the significant reduction in employment, such that in 2014 the number of persons employed was substantially below those registered in 2000 (about 11%).

This negative evolution of employment follows recent behaviour in the European Union (EU) where, since the onset of the recent crisis, much of the progress made in terms of employment convergence between European Member States has been reversed. Indeed, while economic output and employment have both experienced signs of recovery in 2014, they remain below the pre-crisis levels and the economic recovery remains fragile (European Commission, 2015). According to data from Eurostat, in 2014 the employment rate in the EU-28 was 52%, 23 percentage points (p.p.) below the objective of the Europe 2020 strategy (75%). Looking at the current situation and considering the slight expected increase in employment in the coming years, that objective will barely be achieved in EU. Considering

the figure of 51% for the employment rate in 2014 it is also very unlikely that Portugal will be able to achieve the desired goal.

The great crisis that affected Europe from 2008 onward had extremely adverse consequences for European labour markets. Of all EU State members, the southern European countries were most affected by the crisis (Gutiérrez, 2014). In Portugal, there had been a deterioration of conditions in the labour market since the beginning of this century. Many companies went bankrupt in the 2000s, there were low growth rates and two recessions, factors that are associated with the destruction/low creation of jobs and an increase in the level and duration of unemployment (Correia, 2016). The recent crisis and the larger package of austerity measures agreed between Portuguese authorities and Troika, in the context of Economic and Financial Assistance Programme (2011-2014), worsened the problems in labour market.

The situation at national level does not necessarily reflect the situation of all Portuguese regions and sub-regions. In fact, substantial literature claims that despite being a small country, Portugal is characterized by large regional disparities. Several authors (e.g. Guerreiro and Caleiro, 2005; Correia and Gouveia, 2013), applying different concepts and methodologies, recognise the great heterogeneity in the territory, namely in terms of economic context.

An analysis of the distribution of employment in Portuguese territory is justified by its substantial impact on the income and purchasing power of regions, influencing the well-being of population. In particular, employment may be responsible for the geographical distribution of the population in the territory. A better understanding of the regional evolution of employment could, among other effects, support the adoption of more appropriate employment policies and then promote the development and cohesion of territories.

In this context, our study aims to improve knowledge about the regional specificities of employment in Portugal, taking into account aspects such as the distribution of employment by sex, age group, sector of activity and main occupation. To achieve this goal, we examine the differences in these indicators across the Portuguese territories taking the most recent information after the beginning of this century, which is provided by the last two censuses (2001 and 2011).

Another important issue to explore is the cyclical synchronisation of regional employment. The business cycle synchronisation has been examined in the literature, mainly at national level. Specifically, as regards the Portuguese case, studies of synchronisation at regional level are scarce, a noteworthy example being the analysis conducted by Correia and Gouveia (2013) for the product per capita of the Portuguese regions, over the period 1988-2010. They found considerable regional asymmetries in the amplitude and degree of association of regional business cycles and concluded the existence of a regional border effect.

In section three we focus specifically on the association between the cycles of regional employment for the 2000-2014 period. Data availability is according to the new version of the Nomenclature of Territorial Units for Statistical Purposes (NUTS), available after 2015. This new regional division (NUTS 2013), compared to the previous version, translates into significant changes in the number and municipal composition of NUTS III, from 30 to 25 territorial units, now designated "administrative units". In this context, in addition to the relevance of the problem analysed in this paper, another interesting contribution of this study builds on an exploration of the dataset recently published by National Statistics Office (INE) concerning the new classification of Portuguese NUTS that, as far we known, has not yet been examined in earlier studies.

This paper is organised as follows. The second section presents and compares some facts that characterised the evolution of regional employment between the censuses of 2001 and 2011. The third section reports on a study of the synchronisation of regional employment cycles since the beginning of the 2000s. The fourth section concludes the paper, presenting the main results and policy recommendations.

2. Characterisation of regional employment: some indicators

The new regional division (NUTS 2013) groups the 308 Portuguese municipalities into 3 NUTS I, 7 NUTS II and 25 NUTS III (Table 1).

Table 1. Nomenclature of Territorial Units for Statistical Purposes – 2013 version (NUTS 2013)

NUTS 2013	NUTS I	NUTS II	NUTS III
Portugal	Continente	Norte	Alto Minho
			Cávado
			Ave
			Área Metropolitana do Porto
			Alto Tâmega
			Tâmega e Sousa
			Douro
			Terras de Trás-os-Montes
		Centro	Região de Aveiro
			Região de Coimbra
			Região de Leiria
			Viseu Dão Lafões
			Beiras e Serra da Estrela
			Beira Baixa
			Oeste
			Médio Tejo
		Área Metropolitana de Lisboa	Área Metropolitana de Lisboa
		Alentejo	Alentejo Litoral
			Alto Alentejo
			Alentejo Central
			Baixo Alentejo
			Lezíria do Tejo
		Algarve	Algarve
	Região Autónoma dos Açores	Região Autónoma dos Açores	Região Autónoma dos Açores
	Região Autónoma da Madeira	Região Autónoma da Madeira	Região Autónoma da Madeira

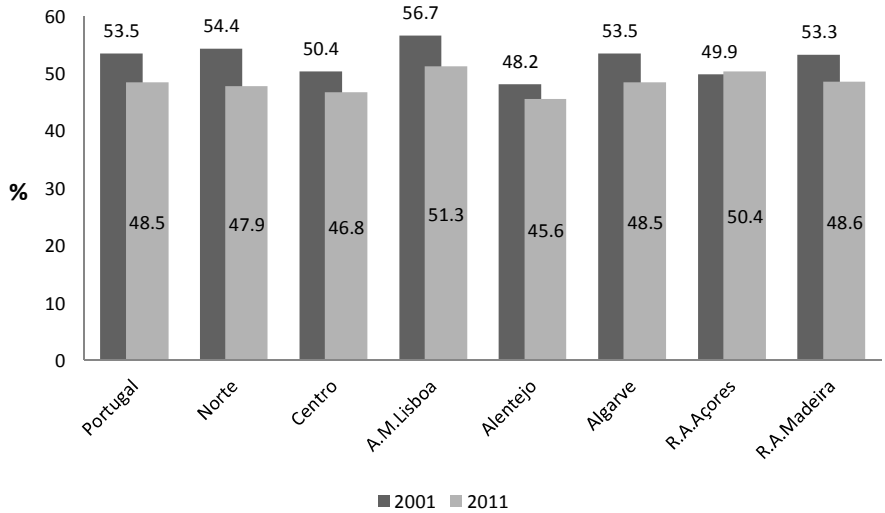
Source: INE (2015)

The remaining of this section contains a synthetic characterisation of registered employment in these Portuguese regions, disaggregated to the NUTS III level, looking at the evolution of employment rate: in total and by sex, by age group, by economic sector and by occupational status. The original source of these indicators is INE and they are available on the Database of Contemporary Portugal (PORDATA) site (www.pordata.pt). Our analysis focuses on the years 2001 and 2011, the two censuses of the twenty-first century.

2.1. Employment total and by sex

A substantial decrease in employment in the Portuguese labour market is clearly visible in Figure 1.

Figure 1: Employment rate in Portugal and NUTS II, total, 2001 and 2011 (%)



Source of data: PORDATA

The Portuguese rate of employment fell 5 p.p. between the two censuses, corresponding to a decrease of approximately 290,000 persons employed. This behaviour is also seen in the NUTS II regions, with the exception of Açores where the rate of employment grew slightly. Norte had the highest decrease (6.5 p.p.). Comparing employment across regions, Lisboa stands out with the highest value, clearly above the average, while Alentejo is in the latest position. In 2011, there was a differential of 5.7 p.p. in the rate of employment in these two regions.

The Portuguese labour market is characterised by substantial gender inequality, the employment rate for men being considerably higher than for women (Figure 2).

Figure 2: Employment rate in Portugal and NUTS II, by sex, 2001 and 2011 (%)

(a) Male

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(b) Female

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Source of data: PORDATA

This discrepancy has been narrowing, however, because the male employment rate has decreased more than that for females, which has been important in some regions. In 2011, no region had male employment rates above that registered in Açores, and Lisboa had the highest female employment rate; the first region had a greater difference between the two genders (15 p.p.) and the second region a lesser difference (5.8 p.p.).

Gender inequality in the employment rate is seen in several other countries of the EU. As documented by Tavora (2012), the participation of women in the labour market is particularly low in the southern European countries, with the exception of Portugal, especially in the case of women with low education levels.

It should also be noted that the recent crisis seems to have affected more men than women. This seems to be related to the fact that, in general, women are concentrated in jobs in the

public and administrative sector and in services that have showed a smaller decrease (Bettio et al., 2012; Signorelli et al., 2012; Cho and Newhouse, 2013), while men are focused more in sectors that have fallen further, in particular construction and manufacturing (Bettio et al., 2012; Bank of Portugal, 2014).

From the analysis of the evolution of employment rates at the intra-regional level (Table 2) we conclude that the sub-regions experienced a decrease in the total employment rate, Alentejo Litoral being the exception. The Norte sub-regions present the greatest average and, simultaneously, higher heterogeneity in terms of variation in the employment rate.

Table 2. Employment rate of NUTS III, total and by sex, 2001 and 2011 (%; p.p.)

NUTS	Total			Male			Female		
	2001	2011	Δ	2001	2011	Δ	2001	2011	Δ
Norte									
Alto Minho	45.6	43.2	-2.4	57.1	50.5	-6.6	35.9	37.0	1.1
Cávado	57.5	51.8	-5.7	66.4	58.0	-8.5	49.4	46.3	-3.1
Ave	59.3	50.0	-9.3	66.9	55.2	-11.7	52.2	45.2	-7.0
Á. Metropolitana do Porto	57.4	49.2	-8.2	66.1	54.7	-11.5	49.4	44.3	-5.1
Alto Tâmega	38.6	35.7	-2.9	51.6	43.9	-7.7	26.4	28.4	2.0
Tâmega e Sousa	54.8	48.2	-6.6	68.9	57.7	-11.3	41.3	39.4	-1.9
Douro	42.9	41.8	-1.0	n.d.	49.7	n.d.	n.d.	34.8	n.d.
Terras de Trás-os-Montes	40.4	39.4	-1.0	51.6	45.6	-6.0	29.8	33.7	3.8
Mean	**49.6**	**44.9**	**-4.6**	**61.2**	**51.9**	**-9.0**	**40.6**	**38.6**	**-1.5**
Standard deviation	**8.0**	**5.4**	**3.2**	**7.0**	**5.0**	**2.4**	**9.5**	**5.9**	**3.9**
Centro									
Oeste	53.3	49.5	-3.8	63.8	55.2	-8.6	43.3	44.2	0.9
Região de Aveiro	55.9	50.6	-5.3	65.5	56.5	-9.0	47.1	45.3	-1.8
Região de Coimbra	50.1	47.1	-3.0	59.0	51.8	-7.1	42.3	43.0	0.8
Região de Leiria	53.9	49.5	-4.4	64.2	55.4	-8.8	44.4	44.2	-0.3
Viseu Dão Lafões	46.5	43.9	-2.6	58.2	50.8	-7.4	36.0	37.8	1.9
Beira Baixa	43.3	40.9	-2.4	52.9	46.0	-6.8	34.6	36.4	1.7
Médio Tejo	47.7	44.6	-3.0	58.1	50.6	-7.6	38.1	39.4	1.2
Beiras e Serra da Estrela	45.4	40.9	-4.5	n.d.	46.6	n.d.	n.d.	35.9	n.d.
Mean	**49.5**	**45.9**	**-3.6**	**60.2**	**51.6**	**-7.9**	**40.8**	**40.8**	**0.6**
Standard deviation	**4.5**	**3.9**	**1.0**	**4.5**	**4.0**	**0.9**	**4.7**	**3.8**	**1.3**
Alentejo									
Alentejo Litoral	47.1	47.1	0.0	56.9	53.3	-3.6	37.4	41.0	3.6
Baixo Alentejo	43.5	43.0	-0.5	54.4	49.2	-5.2	33.1	37.2	4.1
Lezíria do Tejo	51.4	47.7	-3.8	61.3	52.6	-8.7	42.3	43.2	0.8
Alto Alentejo	44.8	41.2	-3.6	54.0	45.9	-8.2	36.3	37.0	0.6
Alentejo Central	50.6	47.0	-3.6	59.9	52.1	-7.8	42.0	42.4	0.4
Mean	**47.5**	**45.2**	**-2.3**	**57.3**	**50.6**	**-6.7**	**38.2**	**40.2**	**1.9**
Standard deviation	**3.5**	**2.9**	**1.9**	**3.2**	**3.1**	**2.2**	**3.9**	**2.9**	**1.8**

Source of data: PORDATA Note: n.d. = no data available

Across the *Norte* subregions, *Ave* had the highest reduction, contrasting with the lowest variations presented by *Douro* and *Terras de Trás-os-Montes*. In 2011, *Cávado* reported the best figure, closely followed by *Ave* and *Área Metropolitana do Porto. Tâmega* and *Terras de*

Trás-os-Montes were the most distant sub-regions from the average. In the *Centro*, the *Região de Aveiro* stands out with the highest employment rate, and is also the sub-region with the greatest decrease. *Beira Baixa* and *Beiras e Serra da Estrela* are in the opposite position, and in 2011 had a differential of 9.7 p.p. from *Aveiro*. The sub-regions of *Alentejo* exhibit the lowest average decrease, *Lezíria do Tejo* being the sub-region with the best situation; however, in 2011, its employment rate was only 48%.

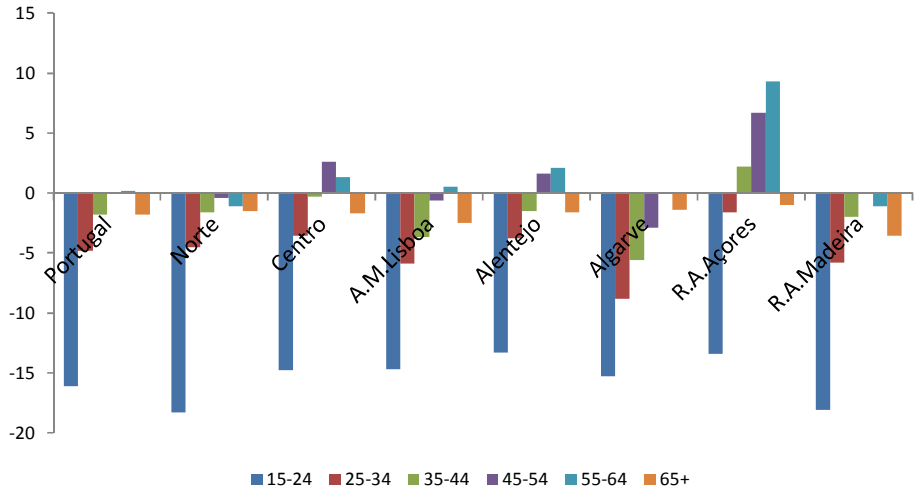
Gender inequality is visible in all sub-regions. As male employment decreased, however, the differential between the rate of employment for men and women also diminished between the two censuses. In 2011, the sub-regions of *Norte* showed, on average, the great difference and the sub-regions all had differentials in the two employment rates above 10 p.p. (*Ave*) and lower than 18.3 p.p. (*Tâmega e Sousa*). In the *Centro* sub-regions, the discrepancy varied between 8.8 p.p. (*Região de Coimbra*) and 13 p.p. (*Viseu Dão Lafões*). In the *Alentejo* sub-regions, employment rates for men and women were, on average, similar to those in *Centro*, with variation between 8.9 p.p. (*Alto Alentejo*) and 12.3 p.p. (*Alentejo Litoral*).

2.2. Employment by age group

An analysis of the employment rate by age reveals that, overall, the highest figures are found for ages between 25 and 54 years. The 65+ age group is, unsurprisingly, the most insignificant, reflecting the approach to retirement age. The changing employment rate over the 2001-2011 period (Figure 3), shows that youth were the most affected by worsening employment levels.

The employment rate for the 15-24 age group fell sharply in Portugal (16.1 p.p.) and in all regions, ranging between 13.3 p.p. in Alentejo and 18.3 p.p. in Norte. In the 25-34 age group there was also a decrease at national and regional levels, but this was less pronounced (a mean of 4.9 p.p.). The decrease, on average, was similar in the 35-44 and 65+ age groups (1.8 p.p. and 19.p.p, respectively). On average, the 45-54 years and 55-64 age groups had slight variations. The exception was Açores, which demonstrated significant growth in these two age groups (6.7 p.p. and 9.3 p.p., respectively).

Figure 3. Variation in employment rates by age, Portugal and NUTS II, 2001-2011 (p.p.)



Source of data: PORDATA

Concerning sub-regions (Table 3), we can also conclude that, in general, youth between 15 and 24 years were the more affected by the decrease in employment. The biggest decreases were in *Tâmega e Sousa*, *Cávado* and *Ave* (above 20 p.p.) in the *Norte*, in *Oeste*, *Região de Leiria* and *Região de Aveiro* (above 15 p.p.) in the *Centro* and in *Alto Alentejo, Lezíria do Tejo* and *Alentejo Central* (about 15 p.p.) in *Alentejo*.

All sub-regions saw a decrease in employment in the 25-34 age group but with much less intensity; on average, the figures vary between -1.9 p.p. and -3.4 p.p. in the sub-regions of *Norte* and *Alentejo,* respectively. There was also a decrease in the last group (65+) for all sub-

regions, relatively homogeneously across them. The 35-44 age group registered more oscillations across sub-regions. Almost the sub-regions exhibited a growth in employment in the two groups between 45 and 64 years.

Table 3. Variation in employment rate by age, NUTS III, 2001-2011 (p.p.)

NUTS III	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65+ years
Norte						
Alto Minho	-14.1	-0.3	3.2	4.6	1.5	-1.5
Cávado	-20.7	-4.3	-0.6	2.3	1.3	-1.0
Ave	-21.8	-5.8	-3.4	-2.5	-3.1	-1.4
Área Metropolitana do Porto	-18.4	-6.5	-3.7	-2.2	-3.2	-1.6
Alto Tâmega	-10.4	1.3	4.5	1.7	0.4	-2.0
Tâmega e Sousa	-23.0	-1.9	0.3	1.3	0.2	-1.4
Douro	-11.9	1.2	3.7	3.7	3.5	-1.3
Terras de Trás-os-Montes	-7.1	0.9	3.0	3.1	5.4	-2.1
Mean	**-15.9**	**-1.9**	**0.9**	**1.5**	**0.8**	**-1.5**
Standard deviation	**5.9**	**3.2**	**3.2**	**2.6**	**2.9**	**0.4**
Centro						
Oeste	-18.1	-3.9	-0.1	2.4	0.4	-1.3
Região de Aveiro	-15.8	-4.7	-1.5	1.1	-0.2	-1.7
Região de Coimbra	-12.8	-3.7	-0.2	3.8	2.4	-1.9
Região de Leiria	-17.2	-3.4	0.0	2.4	1.2	-1.2
Viseu Dão Lafões	-14.0	-0.2	3.7	3.6	-0.4	-1.9
Beira Baixa	-10.5	-1.9	-2.1	1.7	0.4	-2.6
Médio Tejo	-13.7	-2.8	-0.3	3.1	3.1	-1.8
Beiras e Serra da Estrela	-14.2	-6.1	-3.3	1.5	2.5	-1.5
Mean	**-14.5**	**-3.3**	**-0.5**	**2.5**	**1.2**	**-1.7**
Standard deviation	**2.4**	**1.8**	**2.1**	**1.0**	**1.3**	**0.4**
Alentejo						
Alentejo Litoral	-8.7	1.3	2.0	2.6	6.3	-1.7
Baixo Alentejo	-11.4	-1.5	-1.6	4.0	5.5	-0.8
Lezíria do Tejo	-14.7	-3.9	-0.9	1.2	-1.3	-1.8
Alto Alentejo	-14.8	-7.7	-4.0	0.4	1.5	-1.9
Alentejo Central	-14.6	-5.4	-3.3	0.6	2.0	-1.8
Mean	**-12.8**	**-3.4**	**-1.6**	**1.8**	**2.8**	**-1.6**
Standard deviation	**2.7**	**3.5**	**2.4**	**1.5**	**3.1**	**0.5**

Source of data: PORDATA

The greater decrease in employment for younger age groups than for older age groups (45+) could be partly explained by the coexistence of different contracts and protections in (un)employment for different groups of workers. A segmentation of the Portuguese labour market is seen in the growing incidence of fixed-term contracts, which mostly apply to youth and less experienced workers and, at the other end, by permanent jobs for more skilled and experienced workers (Centeno and Novo, 2012). Long term (permanent) jobs grew in the first decades after the establishment of the democratic regime (1974), whereas fixed-term contracts were introduced to Portugal in the 1980s. The rules for using fixed term contracts were made more flexible in the 1990s, contrasting with the protection afforded to permanent jobs, which hardly changed (Bank of Portugal, 2015).

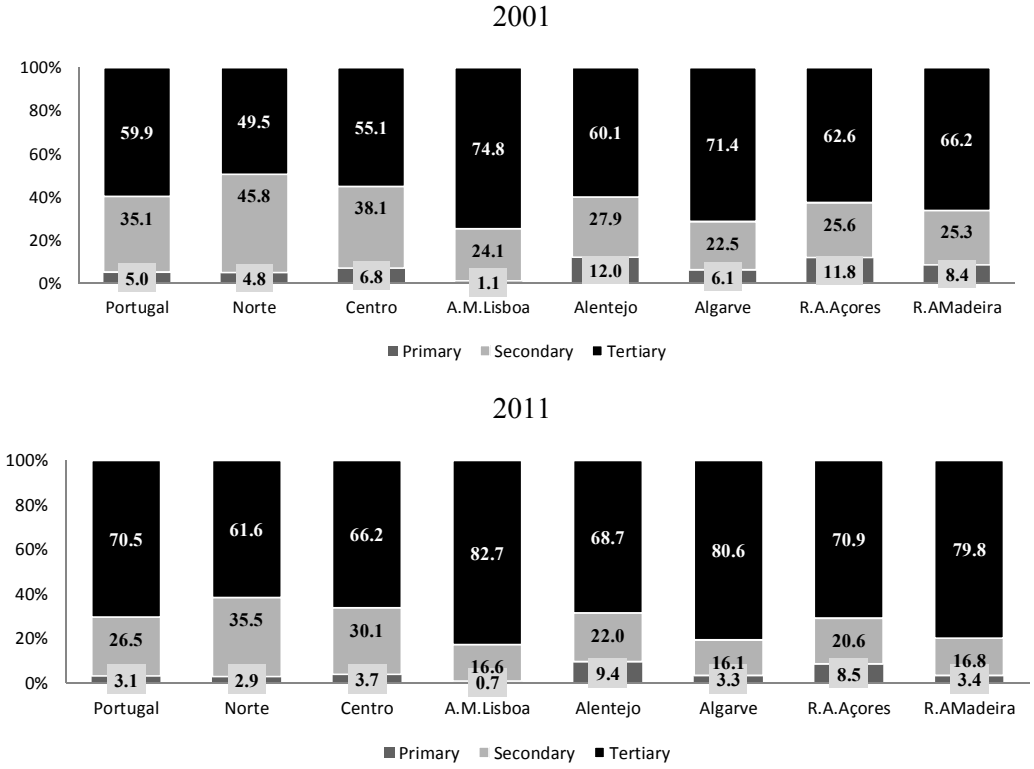
Another explanation is that the young have more difficulty accessing the labour market because their productivity is still difficult to assess, as they have little or no professional experience which implies a higher risk of incompatibility with an employer (Kahn, 2007; Dieckhoff and Steiber, 2012). Such reasons can explain, at least in part, why young people were the most affected by job losses during the recent economic crisis (European Commission, 2013).

2.3. Employment by sector of economic activity

The tertiary sector dominated employment in Portugal and its regions and was the only sector that grew from 2011 to 2011 (Figure 4). In both years, Lisboa presented the higher proportion of employment in the tertiary sector in contrast with the lowest percentage of Norte. The Região Autónoma da Madeira exhibited the greatest increase (13.6 p.p.).

The Norte, the more industrialized region, suffered the greatest decrease (10.3 p.p.) in the employment in the secondary sector. Almost all the regions have a small proportion of employment in the primary sector (below 12% and 9% registered by Alentejo in 2001 and 2011, respectively). The reduction experienced by the proportion of employment in this sector (below the 5 p.p. of Região Autónoma da Madeira) was, overall, lower than in the secondary sector.

Figure 4. Employment by sector of economic activity, Portugal and NUTS II, 2001-2011 (%)



Source of data: PORDATA

At the sub-regional level (Table 4) we can also conclude that the tertiary sector was the more important in terms of employment and the only sector where employment increased in the 2001-2011 period At the other extreme, the primary sector had the lowest proportion of employment in all sub-regions, but in some sub-regions of Norte (Alto Tâmega, Douro, Terras de Trás-os-Montes) and Alentejo (Alentejo Litoral and Baixo Alentejo) the figures were above 10% in 2011. It should also be noted that the reduction of employment in the primary sector was below that experienced by the secondary sector across most sub-regions.

Table 4. Employment by sector of economic activity, NUTS III, 2001 and 2011 (%; p.p.)

NUTS	Primary			Secondary			Tertiary		
	2001	2011	Δ	2001	2011	Δ	2001	2011	Δ
Norte									
Alto Minho	9.5	3.9	-5.6	40.7	34.8	-5.9	49.8	61.3	11.5
Cávado	4.0	2.4	-1.6	49.8	39.4	-10.4	46.2	58.2	12.0
Ave	2.7	1.5	-1.2	62.4	49.7	-12.7	34.8	48.8	14.0
Á. Metropolitana do Porto	1.8	1.3	-0.5	42.5	30.7	-11.8	55.7	68.0	12.3
Alto Tâmega	20.3	12.5	-7.8	26.0	22.0	-4.0	53.7	65.6	11.9
Tâmega e Sousa	5.0	2.5	-2.5	59.9	51.1	-8.8	35.2	46.5	11.3
Douro	21.0	14.2	-6.8	23.1	19.6	-3.5	55.9	66.3	10.4
Terras de Trás-os-Montes	19.2	10.8	-8.4	21.3	18.8	-2.5	59.6	70.4	10.8
Mean	**10.4**	**6.1**	**-4.3**	**40.7**	**33.3**	**-7.5**	**48.9**	**60.6**	**11.8**
Standard deviation	**8.4**	**5.4**	**3.2**	**16.2**	**12.9**	**4.0**	**9.5**	**8.9**	**1.1**
Centro									
Oeste	9.2	6.2	-3.0	36.7	27.1	-9.6	54.1	66.7	12.6
Região de Aveiro	4.6	2.6	-2.0	47.2	38.0	-9.2	48.2	59.4	11.2
Região de Coimbra	5.4	2.8	-2.6	31.5	24.9	-6.6	63.0	72.3	9.3
Região de Leiria	4.1	2.1	-2.0	45.8	37.6	-8.2	50.2	60.3	10.1
Viseu Dão Lafões	11.0	4.7	-6.3	34.7	28.9	-5.8	54.3	66.4	12.1
Beira Baixa	11.0	4.8	-6.2	32.2	25.5	-6.7	56.8	69.7	12.9
Médio Tejo	4.8	2.6	-2.2	34.9	28.5	-6.4	60.3	68.9	8.6
Beiras e Serra da Estrela	9.2	5.4	-3.8	37.3	26.1	-11.2	53.5	68.6	15.1
Mean	**7.4**	**3.9**	**-3.5**	**37.5**	**29.6**	**-8.0**	**55.1**	**66.5**	**11.5**
Standard deviation	**3.0**	**1.6**	**1.8**	**5.9**	**5.3**	**1.9**	**4.9**	**4.5**	**2.1**
Alentejo									
Alentejo Litoral	14.7	11.7	-3.0	27.8	24.8	-3.0	57.6	63.5	5.9
Baixo Alentejo	14.9	12.3	-2.6	22.7	18.8	-3.9	62.4	68.9	6.5
Lezíria do Tejo	10.0	7.3	-2.7	31.8	24.2	-7.6	58.2	68.5	10.3
Alto Alentejo	11.1	9.2	-1.9	25.2	18.5	-6.7	63.7	72.3	8.6
Alentejo Central	11.9	9.3	-2.6	27.9	21.3	-6.6	60.1	69.4	9.3
Mean	**12.5**	**10.0**	**-2.6**	**27.1**	**21.5**	**-5.6**	**60.4**	**68.5**	**8.1**
Standard deviation	**2.2**	**2.0**	**0.4**	**3.4**	**2.9**	**2.0**	**2.6**	**3.2**	**1.9**

Source of data: PORDATA Note: n.d. = no data available

An analysis across the *Norte* sub-regions demonstrates the higher dispersion of employment in the secondary sector and in its variation in the 2001-2011 period. In 2011, *Tâmega e Sousa* and *Ave* had a percentage of employment in the secondary sector above 50%, contrasting with the figure below 20% of *Douro and Terras de Trás-os-Montes*, diverging substantially from the average (33%). The tertiary sector, as mentioned earlier, is the principal sector in all sub-regions but there is also a substantial dispersion between them. The noteworthy increase registered in the employment in this sector (a mean of 11.8 p.p.) was relatively homogeneous across regions (a standard deviation of 1.1 p.p.). The primary sector has a residual proportion of employment in almost all the sub-regions.

The primary sector was also of little importance in the employment of all the *Centro* sub-regions and the decreases didn't have pronounced oscillations across the sub-regions, being relatively low (a mean of 3.5 p.p.). Conversely, the weight of employment in the secondary sector decreased heavily in all sub-regions (8 p.p. on average). In 2011, only the *Região de Aveiro* and *the Região de Leiria* (about 38%) surpassed the mean of 30% employment in this sector. The tertiary sector was also dominant in terms of employment in all sub-regions, oscillating between 59% (*Região de Aveiro*) and 72% (*Região de Coimbra*) in 2011; from 2001 to 2011 there was a great increase across all sub-regions (a mean of 11.5 p.p.).

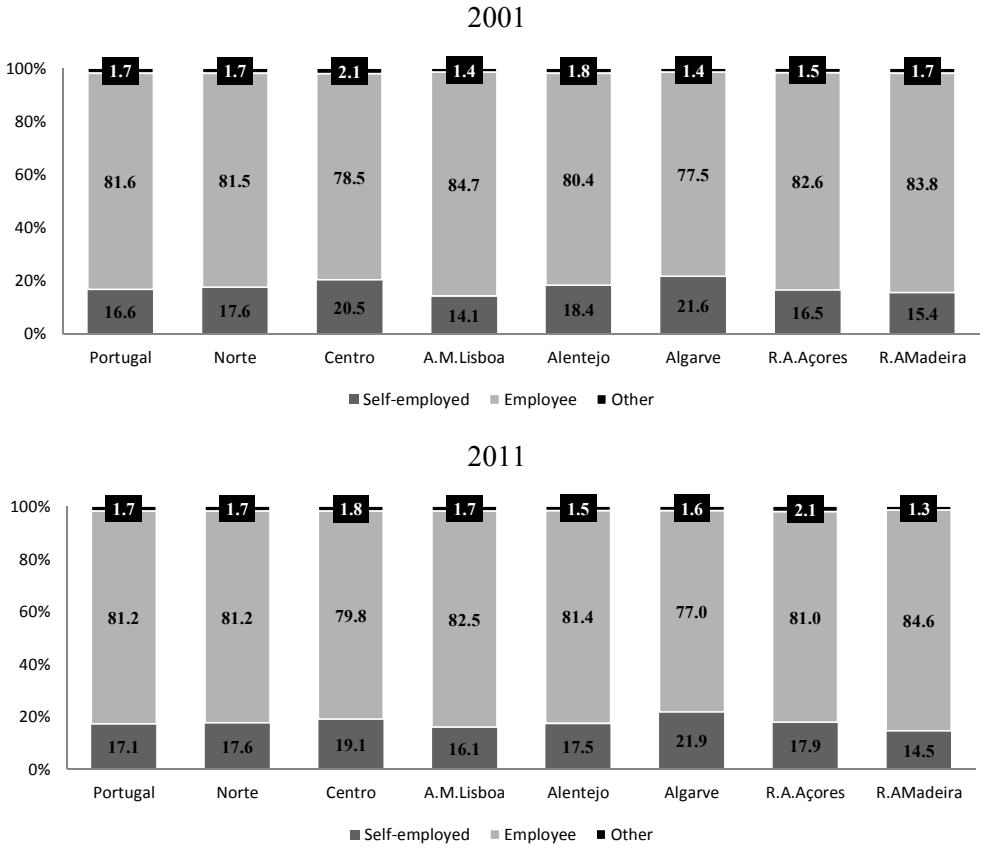
The sub-regions of *Alentejo* stand out by keeping figures of employment in the primary sector with some expression (a mean of 10% in 2011) and by the generalised relatively slight variation from 2001 to 2011. The proportion of employment in the secondary sector is, in general, less preponderant than in the other sub-regions of Portugal, with an average of only 22% in 2011. The great percentage of employment was concentrated in the tertiary sector, and varied between 66% (*Alentejo Litoral*) and 72% (*Alto Alentejo*), in 2011. Additionally, the variations in employment in this sector are, on average, not as pronounced as in other Portuguese sub-regions.

The tendency to a decline in employment in the primary sector and the growing importance of the tertiary sector has been noted in several studies (e.g. Fernández-Macías and Hurley, 2008) as being transversal to the countries and regions of Europe. Despite the losses in the primary sector, however, in some less developed regions of southern Europe it still have a substantial proportion of employment (Garibaldi and Mauro, 2002), as we have identified for some territories of Norte and Alentejo (above 10%).

2.4. Employment by situation in main occupation

An analysis of the proportion of employment by main occupation in Portugal and its respective regions, according to the last two censuses (Figure 5), reveals that the vast majority of workers are employees. In 2011, the Algarve registered the lowest and the Região Autónoma da Madeira the highest figures for the proportion of employees. These regions are the same that displayed the greatest and lowest figures for the percentage of self-employed workers.

Figure 5: Employment by situation in main occupation, Portugal and NUTS II, 2001-2011 (%)



Source of data: PORDATA

At the NUTS III level (Table 5) remains the relative homogeneity across sub-regions as concerns to the repartition of employment by situations as self-employed and employee, especially across the *Centro* and *Alentejo* sub-regions. In the *Norte* there was more dispersion: in 2011, the proportion of self-employed varied between 15% in *Ave* and 27% in *Alto Tâmega*, the sub-regions that also displayed the extreme figures for the situation of employee (69% and 84% in *Alto Tâmega* and *Ave*, respectively). In general, there were slight variations

between 2001 and 2011 for most sub-regions: the proportion of self-employment decreased about 1 p.p., and the percentage of employees grew about 1 p.p. to 2 p.p., on average.

Table 5. Employment by situation in main occupation, NUTS III, 2001 and 2011 (%; p.p.)

NUTS	Self-employed			Employee			Other situations		
	2001	2011	Δ	2001	2011	Δ	2001	2011	Δ
Norte									
Alto Minho	22.2	20.1	-2.1	74.7	77.6	2.9	3.1	2.3	-0.8
Cávado	17.5	17.7	0.2	80.6	80.4	-0.2	1.9	1.9	0.0
Ave	15.0	15.1	0.1	83.8	83.7	-0.1	1.2	1.2	0.0
Á. Metropolitana do Porto	15.1	16.2	1.1	83.5	82.2	-1.3	1.4	1.6	0.2
Alto Tâmega	30.5	27.2	-3.3	64.7	69.1	4.4	4.8	3.7	-1.1
Tâmega e Sousa	15.7	15.5	-0.2	82.9	83.1	0.2	1.4	1.4	0.0
Douro	20.9	19.6	-1.3	76.3	77.7	1.4	2.8	2.7	-0.1
Terras de Trás-os-Montes	27.5	24.3	-3.2	67.3	72.7	5.4	5.2	3.0	-2.2
Mean	**20.6**	**19.5**	**-1.1**	**76.7**	**78.3**	**1.6**	**2.7**	**2.2**	**-0.5**
Standard deviation	**5.9**	**4.3**	**1.7**	**7.4**	**5.2**	**2.4**	**1.6**	**0.9**	**0.8**
Centro									
Oeste	21.5	20.5	-1.0	76.7	77.7	1.0	1.8	1.8	0.0
Região de Aveiro	17.8	17.8	0.0	80.5	80.5	0.0	1.7	1.7	0.0
Região de Coimbra	18.1	17.0	-1.1	79.5	81.0	1.5	2.4	2.0	-0.4
Região de Leiria	19.7	20.0	0.3	78.2	78.4	0.2	2.1	1.6	-0.5
Viseu Dão Lafões	20.3	17.5	-2.8	76.6	80.4	3.8	3.1	2.1	-1.0
Beira Baixa	20.2	17.7	-2.5	77.6	80.8	3.2	2.2	1.5	-0.7
Médio Tejo	17.7	17.3	-0.4	80.3	81.1	0.8	2.0	1.6	-0.4
Beiras e Serra da Estrela	20.2	19.4	-0.8	76.9	78.6	1.7	2.9	2.0	-0.9
Mean	**19.4**	**18.4**	**-1.0**	**78.3**	**79.8**	**1.5**	**2.3**	**1.8**	**-0.5**
Standard deviation	**1.4**	**1.4**	**1.1**	**1.6**	**1.4**	**1.4**	**0.5**	**0.2**	**0.4**
Alentejo									
Alentejo Litoral	19.7	18.0	-1.7	78.3	80.3	2.0	2.0	1.7	-0.3
Baixo Alentejo	19.6	18.5	-1.1	78.3	80.0	1.7	2.1	1.5	-0.6
Lezíria do Tejo	17.2	16.5	-0.7	81.1	82.0	0.9	1.7	1.5	-0.2
Alto Alentejo	16.8	17.0	0.2	80.6	81.3	0.7	2.6	1.7	-0.9
Alentejo Central	16.2	16.3	0.1	81.8	82.1	0.3	2.0	1.6	-0.4
Mean	**17.9**	**17.3**	**-0.6**	**80.0**	**81.1**	**1.1**	**2.1**	**1.6**	**-0.5**
Standard deviation	**1.6**	**1.0**	**0.8**	**1.6**	**1.0**	**0.7**	**0.3**	**0.1**	**0.3**

Source of data: PORDATA Note: n.d. = no data available

To conclude, the substantial proportion of self-employment at the national and subnational level (between 17% and 20%) should be noted. This characteristic supports the view that self-employment is higher in countries where labour market conditions are worse, because entrepreneurship is often a way out of a situation of unemployment. In this sense, in countries such Bulgaria, Cyprus, Greece, Italy and Portugal, which have high unemployment, self-employment is more common than in the EU-27 (European Commission, 2010). Entrepreneurship could thus be seen as important factor for providing employment. Baptista et al. (2008) concluded that there are positive indirect effects of the creation of new businesses on employment growth at the regional level in Portugal.

3. Synchronisation of regional employment

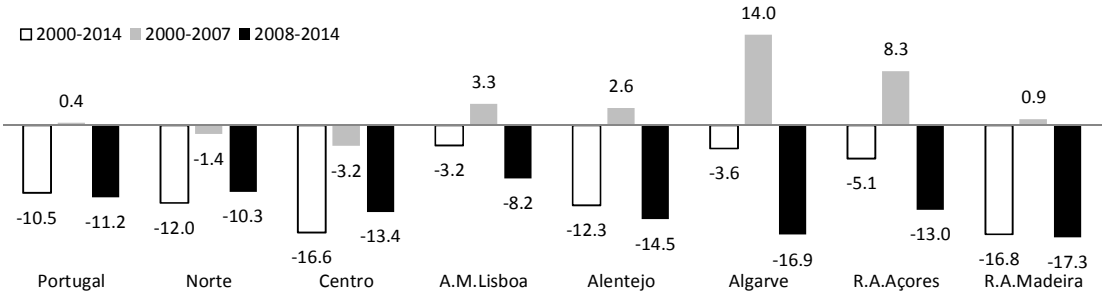
In this section, we focus on the degree of synchronisation across the Portuguese regions, disaggregated to the NUTSIII level over the 2000-2014 period.

3.1. Data

The variable considered in this section is the annual time series of employment, in thousands of individuals, and the main source was the INE database (www.ine.pt). The sample period was constrained by the unavailability of annual data for the regions, at the NUTSIII level, for the new nomenclature (NUTS 2013), for earlier periods. The Figures 6 and 7 give us a picture of the changes for the whole period (2000-2014), the period before (2000-2007) and after the beginning of the recent crisis (2008-2014).

In the whole sample, the *Centro* and the *Região Autónoma da Madeira* saw the highest decreases in employment (17%), followed by *Alentejo* and *Norte* (12%), above the national total (11%). In contrast, the *Área Metropolitana de Lisboa*, the *Algarve* and the *Região Autónoma dos Açores* had the lowest decreases (below 5%). The strong negative impact of the crisis can be seen. In fact, although the variations were positive for most regions (the exceptions are the moderate decrease in *Norte* and *Centro*) in the period 2000-2007, the situation worsened from 2008, with the reduction in employment affecting all regions, ranging between 8% (*Área Metropolitana de Lisboa*) and 17% (*Algarve* and *Região Autónoma da Madeira*).

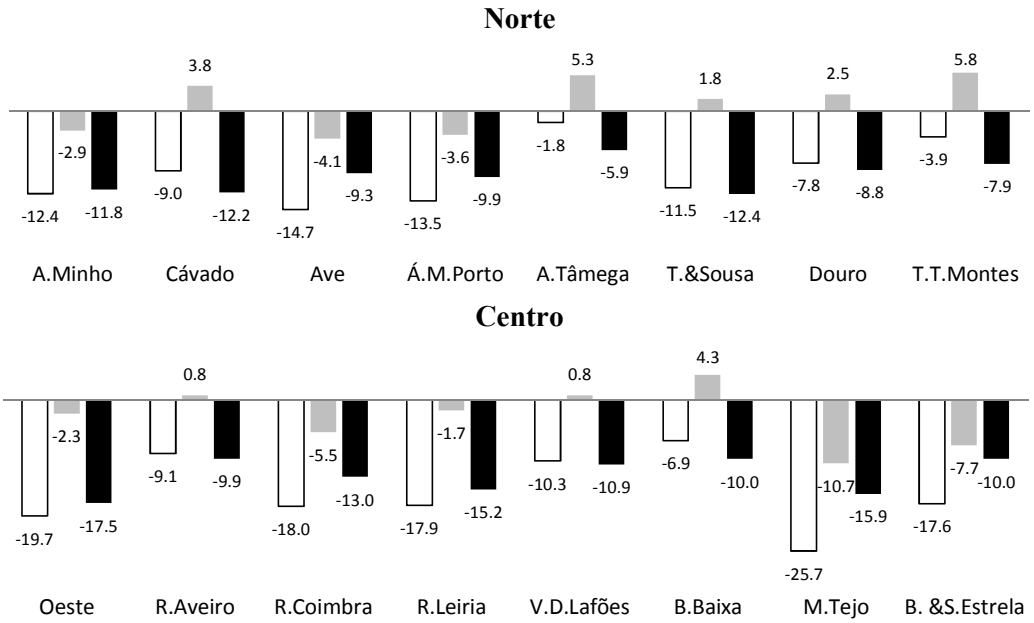
Figure 6: Employment variation, whole period, before and during the crisis, NUTS I and II (%)

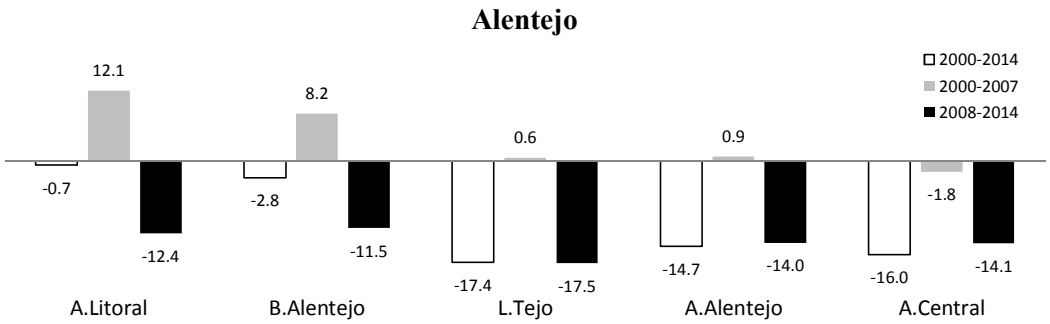


Source: Author's calculations

At the intra-regional level, Figure 7 suggests the same conclusions: a general decrease in employment in the 2000-2014 period, with particular intensity in the crisis period. Marked differences can also be seen across the sub-regions. Over the whole period, *Médio Tejo* stands out as suffering the greatest decrease (27%) and *Alentejo Litoral* as having the smallest negative variation (about 1%); these sub-regions are the same that displayed the greatest reduction (11%) and increase (12%), respectively, in the period before the crisis. Figure 7 also shows that *Oeste* and Alto *Tâmega* were the sub-regions where employment was most and least negatively affected by crisis (18% and 6%, respectively).

Figure 7: Employment variation, whole period, before and during the crisis, NUTS III (%)





Source: author's calculations

3.2. Methods

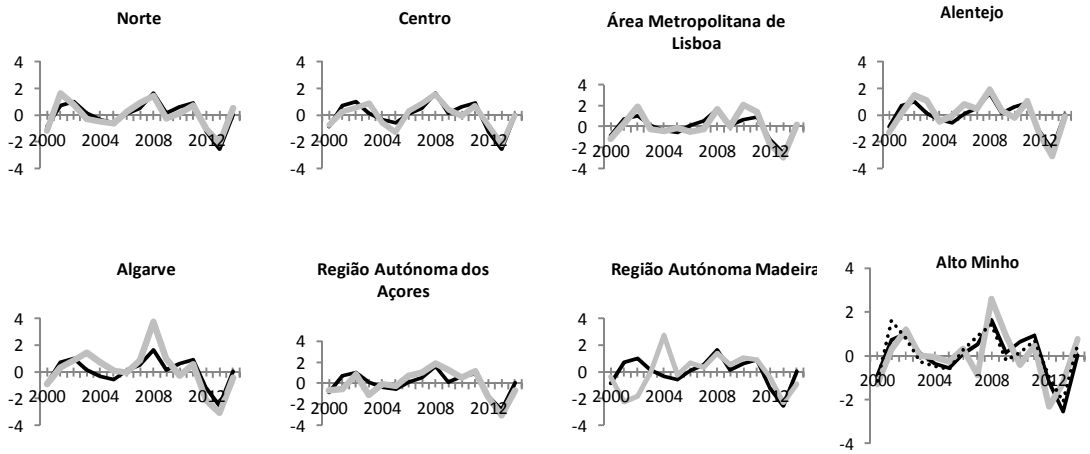
To obtain the cyclical components of the (log) employment series, and in order to make our results robust, we used two of the most widely applied techniques: the Hodrick-Prescott (HP) filter (Hodrick and Prescott, 1997) and the Baxter-King band-pass (BK) filter (Baxter and King, 1999). The results obtained are qualitatively similar. For this reason, and because the BK filter is preferable from a theoretical point of view (Stock and Watson, 1998), for the sake of brevity, we present only the output obtained by applying the BK filter.[1]

After filtering the series, we calculated the standard deviations so as to measure the evolution of the cyclical volatility of the employment data, as well as the Spearman's rank correlation coefficients between the cycles. First, we obtained the contemporary correlation coefficients between each of the seven NUTSII regions cycles and the national cycle, and then calculated the correlations between each NUTSIII sub-region and the respective NUTS II region, and the national aggregate cycles.

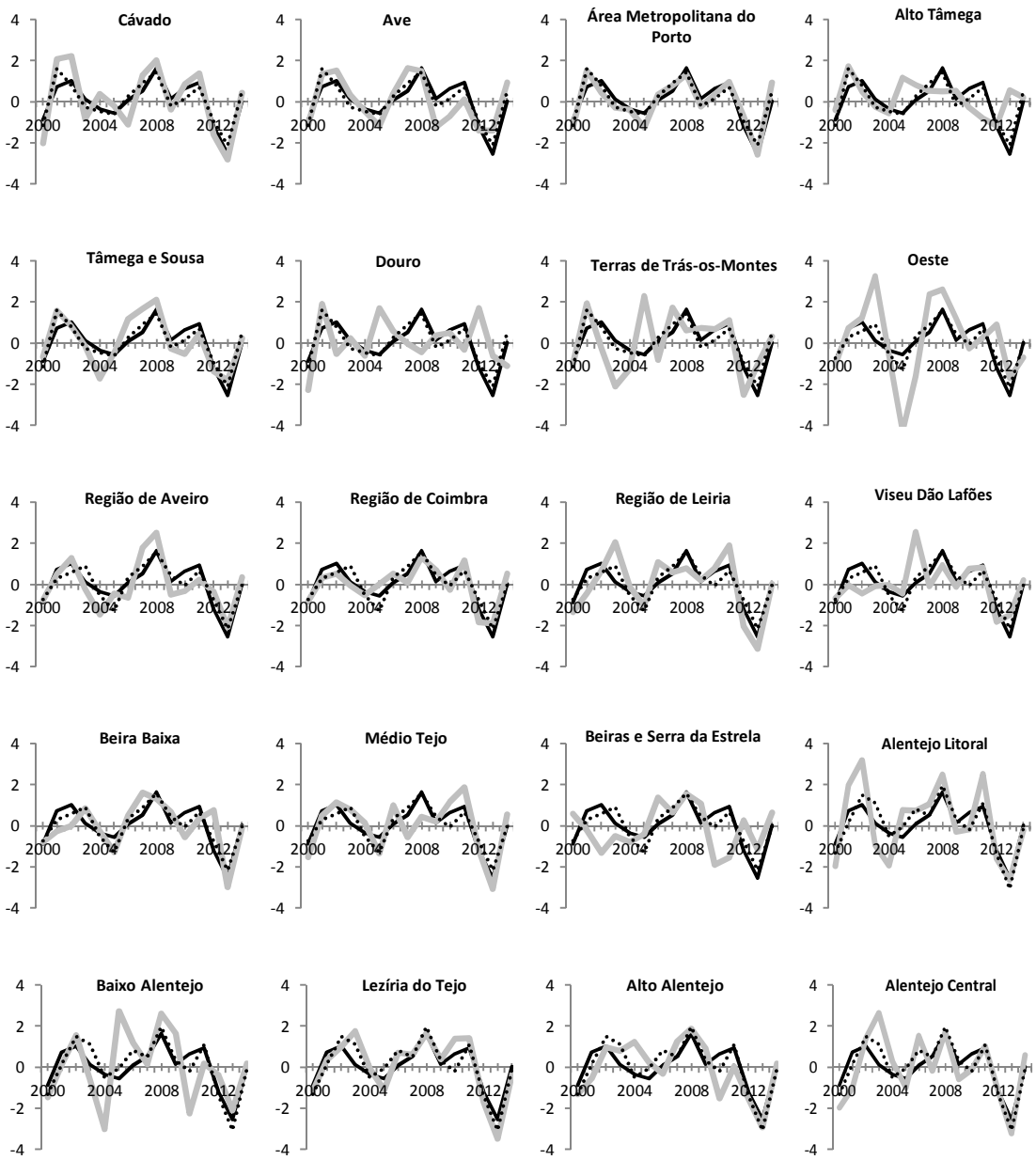
3.3. Results

A visual inspection of the graphs with the cyclical components of employment (Figure 8) and of the Tables 6 and 7, containing the statistics of standard deviation and contemporary correlation coefficients, reveals the diversity of situations in terms of volatility and synchronisation.

Figure 8: Cycles of the employment series, BK Filter, 2000-2014 (%)



[1] In particular, we configured the BK filter to extract fluctuations lasting between 1.5 and 8 years. We set $\lambda = 6.25$ for the HP filter, which is the customary value for annual data (Ravn and Uhlig, 2002). The results obtained from the application of HP filter are available upon request.



Cycle of region or sub-region - Cycle of Portugal - Cycle of respective NUTS II Source: author's calculations

It is noteworthy the significant negative fluctuations of employment occurred for most of the territories in the period after the two economic crisis of the 2000s, the negative deviations around the trend in the years of 2012 and 2013 being of particular prominence.

Table 6. NUTS II: Volatility and cyclical correlations with national cycle, 2000-2014

NUTS II	Standard deviation (%)	Correlations with national cycle
Norte	1.02	0.88***
Centro	0.97	0.81***
A.M.Lisboa	1.36	0.86***
Alentejo	1.27	0.81***
Algarve	1.57	0.69***
R.A.Açores	1.28	0.75***
R.A.Madeira	1.39	0.33

Source: Author's calculations - Note: *** denotes significance at the 1% level

From an analysis of the volatility and the coefficients of correlation (Table 6) we conclude that almost all regions demonstrate a high association (0.7-0.9) with the Portuguese employment cycle. As expected, given their strongest weight in the national aggregate (on average, 34% and 28% respectively), the *Norte* and *Área Metropolitana de Lisboa* are the most synchronised regions. The exception is the *Região Autónoma da Madeira* which is decoupled from the national cycle. The dispersion of regional cycles does not differ substantially, ranging between 1% (*Norte* and *Centro*) and 1.6% (*Algarve*).

Table 7. NUTS III: Volatility and correlation with national and regional cycles, 2000-2014

NUTS III	Standard deviation (%)	Correlations with	
		Portugal	NUTS II
Norte			
Alto Minho	1.18	0.72***	0.66***
Cávado	1.57	0.88***	0.88***
Ave	1.17	0.72***	0.87***
Área Metropolitana do Porto	1.12	0.84***	0.96***
Alto Tâmega	0.78	0.09	0.25
Tâmega e Sousa	1.23	0.78***	0.91***
Douro	1.13	0.12	0.16
Terras de Trás-os-Montes	1.46	0.49*	0.56**
Centro			
Oeste	1.95	0.63**	0.80***
Região de Aveiro	1.19	0.78***	0.71***
Região de Coimbra	0.95	0.74***	0.72***
Região de Leiria	1.42	0.69***	0.80***
Viseu Dão Lafões	1.04	0.59**	0.53**
Beira Baixa	1.14	0.45*	0.79***
Médio Tejo	1.31	0.72***	0.58**
Beiras e Serra da Estrela	1.09	-0.04	0.25
Alentejo			
Alentejo Litoral	1.82	0.85***	0.77***
Baixo Alentejo	1.74	0.41	0.63**
Lezíria do Tejo	1.45	0.83***	0.85***
Alto Alentejo	1.33	0.51**	0.67***
Alentejo Central	1.56	0.61**	0.81***

Source: author's calculations - Note: * ,** and *** denote significance at the 10%, 5% and 1% levels, respectively.

At the intra-regional level (Table 7) there is more heterogeneity. The figures of standard deviation reveals that, on average, the cycles of employment exhibit high dispersion in the sub-regions of *Alentejo*. Comparing the regions we observe that volatility was highest in *Cávado* in the *Norte*; *Oeste* in the *Centro*; *Alentejo Litoral* and *Baixo Alentejo* in *Alentejo*. In these sub-regions, the figures exceeded 1.5% and nearly doubled the range of the sub-regions with the smoothest fluctuations: *Alto Tâmega* (0.8%) and *Região de Coimbra* (1%).

Almost all the sub-regions display a positive and statistically significant coefficient of correlation, *Alto Tâmega*, *Douro*, *Beiras e Serra da Estrela* and *Baixo Alentejo* being the exceptions. The highest degree of synchronisation with the national cycle (between 0.8 and 0.9) was in *Cávado*, *Área Metropolitana do Douro*, *Tâmega e Sousa*, *Região de Aveiro* and *Alentejo Litoral* and *Lezíria do Tejo*. In contrast, *Terras de Trás-os-Montes*, *Beira Baixa* and *Baixo Alentejo* have correlation coefficients below 0.5. In the last case, the coefficient is not statistically significant indicating that the employment cycle of *Baixo Alentejo* is not associated with the national cycle.

With regard to correlations between the cycles of the respective regions, we note that:

(i) Half the *Norte* sub-regions show a very high level of synchronisation (0.9-1.0) with the regional cycle. The correlation is particularly elevated in the case of *Área Metropolitana do Porto.* This is not surprising since employment in this sub-region represents, on

average, 48% of the regional total. Conversely, the *Alto Tâmega* and *Douro* seems to have a decoupled cycle of the region what they belongs;

(ii) The *Centro* sub-regions demonstrate, on average, lower correlations than those of the *Norte* and *Alentejo*; five sub-regions had values between 0.7 and 0.8, the cycle of *Beiras e Serra da Estrela* not being associated with the *Centro* region;

(iii) The *Alentejo* sub-regions present relatively more homogeneity, with correlation coefficients varying between 0.6 and 0.9. As expected, since it has the highest proportion of employment in the *Alentejo* (32% on average), *Lezíria do Tejo* is the most closely synchronised with the *Alentejo* region.

Finally, another central feature of the correlation data is the difference in the degree of synchronisation between the NUTS III cycle and the regional (NUTS II) and national cycles. In fact, in general, the cyclical pattern of the sub-regions is more closely related to the regions that they belong to than that of the Portuguese cycle (there are only five sub-regions where the cyclical correlations decreased). In particular, the positive differences are greater (0.2-0.3) in the cases of *Ave* in the *Norte*, *Oeste* and *Beira Baixa* in the *Centro* and *Baixo Alentejo*, *Alentejo Central* and *Alto Alentejo* in the *Alentejo*. This could indicate the existence of a regional border effect specific to the region in terms of employment. The reduced period of our sample makes the calculation of correlation coefficients for several rolling periods infeasible, however, and does not allow us to extract robust conclusions about the existence of such an effect.

4. Conclusions

In this paper we focused on the differences of employment across Portuguese regions and their respective sub-regions, and evaluated the degree of cyclical synchronisation since the beginning of 2000s, exploring regional information according the new version of NUTS.

The comparison of several indicators between the last two censuses allowed us to conclude that there was a substantial reduction in the employment rate and that Portugal is characterised by substantial regional disparities. The following features were clearly discernible: (i) there is inequality in terms of gender, the employment rate being higher for males than females, although the gap is closing as male employment decreases more quickly; (ii) higher employment prevails in the age groups between 25 and 54, it being the group of young people (15-24 years) who experienced the largest decrease in employment; (iii) the last years were marked by an increase in the tertiary sector share of total employment and a decrease in other sectors; and (iv) the number of employees has increased slightly, in contrast to a slight decrease in the number of self-employed.

On the other hand, the analysis of volatility and correlation coefficients has highlighted four main results. First, at regional level, the dispersion of employment cycles does not differ substantially and there has been, in general, a strong association with the aggregated Portuguese employment cycle, the coast regions of Norte and the Área Metropolitana de Lisboa being the most synchronised; conversely, the cycle of the inland Madeira region is not associated with the national cycle. Second, there is more heterogeneity across the sub-regions. There is great diversity in correlation with the national cycle, with some sub-regions demonstrating a strong association, others presenting moderate or non-significant correlation coefficients. Third, the sub-regions are more closely related with regional cycles of employment than with the national cycle of employment. The situations vary considerably, with the Alentejo sub-regions presenting relatively more homogeneity than the sub-regions of the Norte and the Centro.

The findings of the research reported in this paper have important policy implications. It's extremely important that policy makers understand the unequal distribution of employment in the Portuguese territory. This will help to design the best development policies and construct appropriate responses to counteract the regional differences. In this context, measures focusing on job creation should be particularly directed to regions with historically low employment rates (e.g. inland areas and low density territories) and for the segments and social groups who find it more difficult to access labour markets (e.g. women and youth). The Europe 2020 Strategy (smart, green and inclusive growth), which aims to boost employment and economic growth in Europe, constitutes an opportunity to narrow the employment disparities in Portuguese regions.

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PECULIARITIES OF SOCIAL PSYCHOLOGIKAL AND ECONOMIC ADAPTATION OF PUPILS FROM THE MIGRANTE FAMILIES IN THE CITY OF KRASNOYARSK IN SIBERIAN REGION

Tatiana PETROVNA GRASS
Candidate of pedagogical science, an associate professor; Krasnoyarsk pedagogical university named after V.P. Astafiev – 89-Ada Lebedeva Str., Krasnoyarsk,660049

Vladimir INNOKENTIEVICH PETRISHCHEV
doctor of pedagogical sciences, professor; Krasnoyarsk pedagogical university named after V.P. Astafiev – 89-Ada Lebedeva Str., Krasnoyarsk, 660049

Natalia OLEGOVNA LEFLER
candidate of philological sciences, an associate professor; Krasnoyarsk pedagogical university named after V.P. Astafiev – 89-Ada Lebedeva Str., Krasnoyarsk, 660049

Abstract
The paper considers the peculiarities in social psychological and economic adaptation of pupils in Siberian region. Sociocultural and psychological adaptation of the migrant pupils is analyzed, the positive attitude of the aboriginal pupils and the authorities is identified. The most relevant results of the research connected with the migrant pupils integration into a new society being a complex comprehensive process with both the internal psychological mechanisms and child's potential and external mechanisms connected with its interaction with a number of social institutes are described.
Keywords: migrant pupils, school, teacher, adaptation
JEL classification:

1. Introduction

1.1. Topicality

At the end of the XXth and the beginning of the XXIst centuries the migration flows in Krasnoyarsk Krai turned out to be of large scale. Looking for better life the migrants move to the places with safer and more stable social economic situation. It is quite natural that when coming to a new community the migrants bring their own culture which is not appropriately perceived by the majority of the residents.

The Report on the Children's Place in Krasnoyarsk Krai in 2015 states that 6,816 underaged foreign citizens and underaged people with no citizenship equaling to 1.2% of the pupils in the general education schools in Krai (2.8% from the overall number of the pupils in the educational institutions in the city of Krasnoyarsk; about 3% in the educational institutions in the city of Norilsk) are registered at the place of stay. The fact that a typical school is charactered by a multinational nature is determined by a geographical factor: Leninskii district has the city largest Asian market "KrasTETs". Here one can buy anything, cheap shoes, clothes, underwear, kitchen utensils, fruits and vegetables are offered as well. The market is controlled by the Chinese, Azerbaijanians, Tajiks who work there from dawn till dusk. T.I. Yatsenko says that in the city of Krasnoyarsk a number of school are characterized by the so called problem of inofon-children (for them the Russian language is not their native language) overcrowding. In Leninskii district in the city of Krasnoyarsk the school #16 has more than 55 per cent of migrant children, while in some forms of this school this figure reaches 80%, the school #47 teaches 35% of pupils from this category, for the school #50 the percentage is 37, for the school #13 it is 20%, while the school #65 has 21% of migrants. We shouldn't forget that a number of European countries (Germany, France, etc.) faced some cases when the number of the pupils from the migrant families reaches 60%, and they experienced huge problems in the forms since the destabilized quantitative ethnic

balance among the pupils resulted in the interpersonal conflicts between the aboriginal pupils and the migrants.

The economy development in the east of the country triggered the increase in the number of the foreign migrants in Siberia. The city of Krasnoyarsk and Krasnoyarsk Krai became a strategic region in the development of science and country's economy. The analysis of the statistical data made us conclude about the quantitative characteristics of the migrant population of Krasnoyarsk Krai: the main category of the migrants is the CIS countries inhabitants being grown up and educated in their mother tongue, having the understanding and being acquainted with Russian culture and traditions within the educational policy adopted in their states. In 2016 the main sources of the arriving migrants were the CIS countries: Azerbaijan, Armenia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Ukraine.

Considering the fact that migration is one of the factors having an impact on the political cultural composition of the population in the region, it is also one of the key factors to shape and to develop the political educational space with this process determined by a quantitative increase among the visitors arriving to work and wishing to stay in the region together with their children of the foreign citizens and by the qualitative characteristics of the labor migrants.

Thus, it is reasonable to say that children and migrant teems are potentially the main group of the migrant population shaping the political cultural educational space in Krasnoyarsk Krai.

2. Method

In 2016 we surveyed 500 pupils of 12-15 years of age from the migrant families in a number of schools in Krasnoyarsk. The research was based on mixed methods: large-scale questionnaires in schools and the collection of the qualitative data. The purpose of the questionnaire was to get the quantitative data about the children, their academic achievements and plans, entrepreneurial behavior, standards and values, as well as ethnic, language and social economic characteristics of their families.

This questionnaire allowed us to find out that migrant children being taught in the Russian general education schools in Siberian region did not experience any expressed hostile attitude from the Russian speaking population. Parents and the migrant children themselves evidenced that the attitude towards them in schools was quite friendly (that was the answer from about 80% of the surveyed migrants). It means that the Russian pupils have positive attitude to their migrant peers more than the Russian society to the adult migrants on the whole. Still, a question "Do you feel a hostile attitude from your peers in your school?" was answered by 22% in the affirmative, by 64% in the negative, while 14% from 500 migrant children said that they did still experience this attitude. Thus, we see that more than 60% of migrants confirm that there is tolerant environment in the schools. A.V. Guslyakova notes that personal tolerance can be explained with the general attitude of a person toward the environment, towards other people. This evidences good work from the school staff where the migrants are taught.

3. Results

Let us give some examples from our survey. For instance, a question "What do you like in Russians?" revealed the main answers, such as openness, ease at communication and diligence. A question "What do you dislike in Russians?" had the following answers: rudeness, cruelty, low conduct, impudence, laziness. It should be noted that the migrant pupils were very accurate at identifying the national features of the Russian teenagers. A question "Do you accept the culture and language of Russia?" had the following answers. 68% answered in the affirmative, 17% answered probably, 15% answered in the negative. On the whole, one can say that migrants still have to accept the Russian language and culture since they live in our society. If we recall our school time, it should be noted that typically children play tricks on each other during the breaks or after the lessons. The same is true towards the migrant children. The migrants, however, can not sometimes get the essence of the jokes and understand them. This unmalicious leg-pulling from the aboriginal peers can often hurt them. In the schools the Russian speaking peers usually unmaliciously laugh at the language

mistakes, sometimes at the appearances which are totally different from the socially accepted ones. For example, 25 % of pupils said that they were always pulled leg, 7% of the migrants noted that this was a rare case for them, while 68% said that they did not pay attention to leg-pulling. It was important for us to identify the attitude towards the peers, to schooling and the general values of the ethnic minority children.

The analysis of the academic achievements showed that in case the migrant pupils were born in a Russian speaking society in Siberian region or moved to the region when they were seven, then they were equally successful with the aboriginal peers with no regard to their ethnic background. But those who moved to the region when they were 10-14, their performance was worse than the one of their Russian speaking peers. Still it may happen that the children of the aboriginal population have worse educational performance than the inoethnic children. It was mentioned above that this could be explained with the difficulties of the move and the language acquisition in an awkward age. The analysis of these results for the migrant youth in the Western English speaking countries shows and we believe that motivation and a desire to integrate into the accepting society are relevant in successful studies since the migrant youth must achieve the success by the skin of their teeth in comparison with the peers from the Russian speaking society. Our research revealed one peculiarity in all schools with the migrant pupils, the schools try to integrate them in different extracurricular activities for better socialization which contributes into friendlier connections with other children. This aspect - attitude in a form - was analyzed giving the following conclusions:

1. The choice of a teenager of the same gender has the strongest effect, with the boys being more vividly expressed than with girls.
2. The ethnic majority children do not have any preferences in nationality when choosing friends. Ethnic minorities prefer to have friends among the representatives of the same nationality. D.A. Aleksandrov thinks that ethnic majority children do not pay attention to ethnicity in their choice of friends, it means they do not care about the national background of their friends and where they come from. In contrast, in case of having an opportunity the migrant children try to communicate with other migrants since they have similar background and problems, at the same time the migrant children communicate with the majority.
3. The preference in similar attitude to studies (A-students have friends with A-students, C-students - with C-students), as well as in similar anti-school attitudes and future plans for higher education is revealed.
4. Social economic status of the family does not play any significant role in the choice of friends.

As we can see, social psychological and cultural adaptation of migrant pupil's personality to a new society is a complex comprehensive process with both the internal psychological mechanisms and child's potential and external mechanisms connected with its interaction with a number of social institutes. To identify the peculiarities of the social psychological adaptation of children in the city of Krasnoyarsk with its properties reflecting the specificity of this phenomenon the research was carried out in 2015 in a Municipal Budgetary General Education Institution, Secondary School # 16, Leninskii district in the city of Krasnoyarsk. The respondents included 57 upper-form pupils (9-11 forms), representatives of the Armenian, Georgian, Tajik, Kyrgyz, Uzbek, Azerbaijanian nationalities.

The surveyed upper-form pupils have a sufficient command of the Russian language and live in Russia for about one year up to ten years. The empirical research used the personal details (schooling time in a Russian speaking school) and diagnostic methodologies: social-psychological adaptation questionnaire by C. Rogers and R. Diamond (social-psychological adaptation diagnostics in bipolar indicators of adaptation, accepting oneself and others, emotional comfort, control locus, dominating); communicative organizational capability questionnaire by B. A. Fedorshin (assessment of development level of communicative and organizational capacities); questionnaire "Identifying the ways to regulate the conflicts" by K. Tomas.

Quantitative-qualitative analysis of the obtained diagnostic data showed that 25% of the surveyed migrants had low level of communicative capacity development, while 70% of them had low level of organizational capacity development. In the conflict situations the respondents typically apply the strategy of compromise and adjustment and use the

competition, cooperation and avoidance two-three times less. It is evident that the upper-form migrant pupils lack the leadership qualities and confidence. Majority of the upper-form migrant pupils (73-97%) show the indicators of adaptation, self-acceptance and acceptance of others, emotional comfort, control locus, domineering in the zone of uncertainty, which evidences both middle level of manifestation of these characteristics and their instability, insufficient development.

To reveal the trends hidden from the direct observation and assessment the obtained empirical data underwent the mathematical statistical analysis. The interconnections between the indicators were examined with a method of cluster analysis and Ch. Spearman's rank correlation method (statistical software Statgraphics Plus v.2.1.), with the relevant ($p \leq 0,05$) and highly relevant ($p \leq 0,01$) interconnections being under analysis.

First of all, the correlational connections were found inside these methods, for instance, the inverse (negative) correlational dependence between the K. Tomas's questionnaire figures was revealed: the choice of strategy of compromise and adjustment in solving the conflicts excludes the usage of the competition strategy, while the choice of the avoidance strategy excludes the cooperation respectively. The figures of social-psychological adaptation are also closely intertwined with each other. The adaptation among the upper-form migrant pupils is directly connected with self-acceptance and acceptance of others, with emotional comfort, inner control and domineering. In contrast, disadaptation is directly connected with self-non-acceptance and non-acceptance of others, with emotional discomfort, external control, being led and escapism.

Secondly, the relations between the figures from different methods, including the schooling period in a Russian speaking school, are inversely connected with the indicators of adaptation, self-acceptance and acceptance of others: the longer the upper-form pupils study at school, the lower these indicators are. This trend is rather disappointing: we can assume that, on the one hand, children master Russian language and culture better and integrate into society better, while, on the other hand, they lose their ethnic identity. This brings some disbalance into I-concept which impacts on self-acceptance and acceptance of others.

High level of communicative ability development is combined with low level of disadaptation, while high level of organizational abilities – with the application of cooperation strategy in conflicts (and with non-use of avoidance strategy), self-acceptance and acceptance of others, domineering. The application of cooperation strategy in conflicts is directly combined with the high level of external control locus, while frequent application of compromise strategy is connected with low figures for disadaptation, self-acceptance and emotional discomfort. Avoidance strategy is preferred due to low level of self-acceptance and emotional comfort, while adjustment strategy – due to disadaptation, emotional discomfort, being led and escapism.

Thus, upper-form migrant pupils with middle and higher level of communicative and organizational ability development are appropriately adapted, accept themselves and others, have leadership qualities, prefer to solve the conflicts through cooperation and compromise. Disadapted upper-from migrant pupils, on the contrary, do not accept themselves, have rather low level of communicative and organizational ability development, experience emotional discomfort, are led, solve conflicts through avoidance or adjustment.

Cluster analysis allowed us to find the additional interconnections of the indicators forming close bonds (clusters) (Fig. 1).

Figure 1 – Dendrogram of cluster analysis (OX axis indicates the numbers for methods' indicators, OY axis shows the distance between the indicators in conventional units)

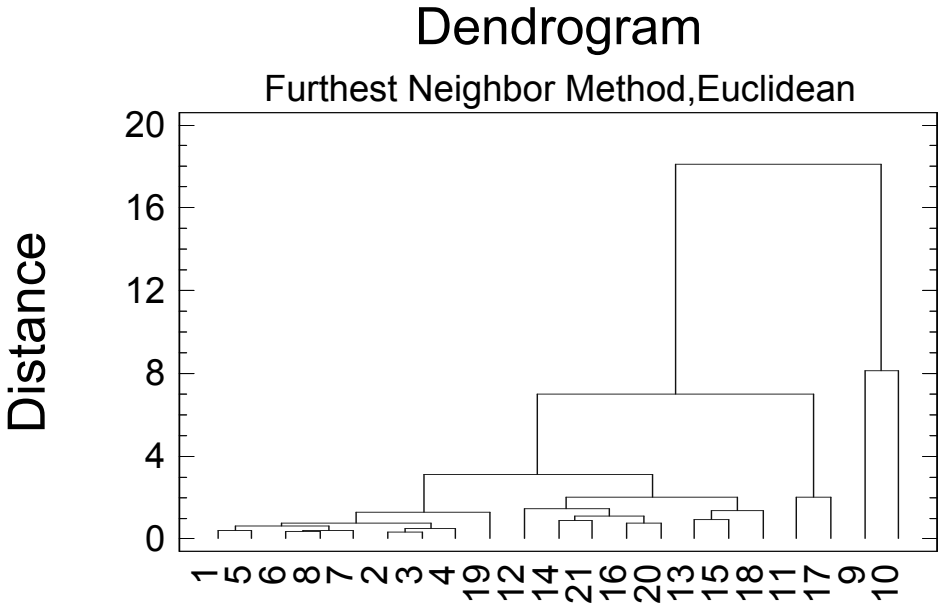


Figure 1 illustrates that the 1st cluster includes the indicators № 1, 2, 3, 4, 5, 6, 7, 8, 19 (schooling period, communicative and organizational abilities, behavior strategies in conflicts, domineering). The indicators show the socialization, communicative and conflict competence, organizational abilities, leadership. We believe that the cluster can conventionally be named "Competence in interpersonal relations" or "Social mental capacity".

The 2nd cluster comprises the indicators № 12, 13, 14, 15, 16, 18, 20, 21 (self-non-acceptance, acceptance and non-acceptance of others, emotional comfort and discomfort, external control, being led, escapism). Here the emotional state and health, external surrounding orientation, dependence are combined. This cluster can conventionally be named "Emotional dependence from society".

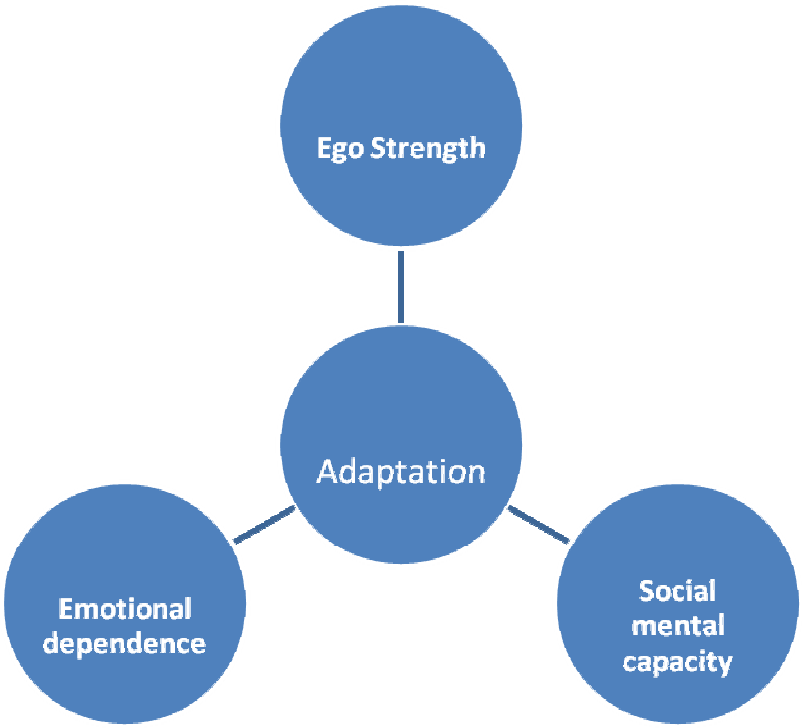
The indicators № 11 and 17 (self-acceptance and inner control) are somewhat apart from these two clusters, and the indicators № 9 and 10 (adaptation and disadaptation) are quite close to them.

4. Discussion

Thus, adaptation is, first of all, connected with self-acceptance and inner control locus (this connection can also be seen in the above described results of the correlation analysis), while on the second priority basis it is connected with the level of social mental capacity development and the successful symbiosis with the social surroundings. We can assume that an adapted upper-form pupil accepts himself, sees him to be the reason and the creator of the events in his life, takes the responsibility, is very active. We feel that the notion "Ego Strength" expresses the essence of this cluster which, in fact, is an important adaptive mechanism.

The specified cluster can help us to plot a three-component model of social psychological adaptation of the upper-form migrant pupils with such blocks as "Ego Strength", "Social mental capacity", "Emotional dependence from society" (Fig. 2).

Figure 2 – Model of social psychological adaptation of upper-form migrant pupils



The obtained data allowed us to work out the recommendations aimed at developing the psychological work with the disadapted upper-form migrant pupils in three directions. The research shows that the development of self-acceptance and inner control locus is the most relevant and high-priority area. This can be done through special role plays and trainings in self-understanding, self-confidence. Trainings in communicative competence and special business (management, organizational, project) plays, discussions in the form a debate are second on the priority list. Both the former and the latter trainings must include the plays and exercises aimed to reduce the emotional tension, to ease anxiety and to create the atmosphere of acceptance and emotional comfort.

Economic reasons forced majority of the migrant parents to come to Russia. It is known that many coming migrants can't find job in their professional field of knowledge or have insufficient level of education and Russian language, therefore they have to organize small-scale enterprises (many of which are organized with the help from the ethnic diaspora) being a small shop, bakery, hairdressing saloon, etc. 10-12 year old boys from the migrant families join the family business and by the time they are 14–15 they are competent enough in the sphere of trade, service provision, entrepreneurship, everything which is called small business. Some migrant parents work at the market, leave for purchasing the products to sell and leave their children to their relatives or elder children who can not fully control the attendance and academic achievements of the children. Very often the case may be that the parents oblige their children to sell at the market instead of attending the school, the reason being the need to sell the products as quickly as possible. Missing the classes due to the needs of family business is determined by the migrant children inclusion into the entrepreneurial activities of their fathers and other relatives. Migrant pupils are involved into loading-unloading works, small-scale wholesale, building remodeling into a storage house or office. And this is done when other children are in school and study. Still, foreign researchers U. Schoof and K. Haftendorn believe this to be a natural process when after school (within reasonable limits) children typically help their parents in their business and acquire the professional skills and competencies connected, for example, with the accountancy, logistics, etc. Thus, the teenagers are gradually involved into the entrepreneur job through practice, sometimes with no understanding of the entrepreneurial basics, through trials and errors, consciously participate in the economic life of their family. So, we see that migrant teenagers acquire the first experience of economic socialization and adaptation mainly in family business, which inevitably gives tangible social economic and financial effect both for the

family and for the children. Children participation in family business is considered to be an indicator of stability and strength of the family. This is sure to develop the mechanisms of successful economic adaptation of migrant children to a new political cultural educational space.

Being plunged into a new economic culture a child starts to consciously perceive the image of society's life, to strive for perfection in developing the relations with the environment and to master the social roles which he/she will have to perform in this society.

Along with that, it becomes clear that teenagers who are involved into family business need some theoretical knowledge, skills and competences which a school can not provide in a concentrated form.

Today the school faces new challenges connected with qualitative education for the migrant pupils, with special economic training, as well as with the planning their career and social adaptation. The school helps migrant pupils to master the basics of the entrepreneurial activities and teaches them financial literacy. During studies the pupils from migrant families are explained the meaning of terminology, are paid their attention to the issues of market economy functioning for people from other countries and cultures.

It should be noted that the obligatory school curriculum does not include this work. On the whole, we found out that the pupils from migrant families are not completely aware of the economic activities even in their country. If a migrant teenager has some economic knowledge, skills and competences, then we feel that he is more inclined to choose his individual way of living, no matter whether he is going to work in entrepreneurship area or in any other economic area. Knowledge connected with the financial literacy is valuable only with the developed competences referred to the main spheres of activities of the pupils themselves.

We conducted the research to see what financial literacy knowledge the pupils from the migrant families have. How can the financial literacy impact their social cultural adaptation to the society in Krasnoyarsk Krai? All these questions are far from being academic by nature, especially in the period of financial crisis experienced by our society. C. Bowen believes that today both the migrant adults and their children face the problems of economic socialization. Is it useful for the pupils from the migrant families to get acquainted with the basics of economics and financial literacy while studying in a secondary school? Should they be involved into discussion about the family budget? Should they be involved into arriving at joint decisions? All these questions are an area of concern for majority of the migrant parents and responsible teachers.

Before we started working with the pupils in the area of economic adaptation, we developed a questionnaire to identify the elements of their financial literacy.

Questionnaire in financial literacy for the pupils from migrant families.

1. Do you feel the lack of financial literacy which makes it difficult for you to make the decisions in personal or family finances?
2. Are you aware of the main types of the financial services, such as savings account, debit and credit cards, Internet payment systems, insurance companies, etc.?
3. Do you understand their purposes and what the terms of their usage are to solve different life problems, for example, to get a loan on education?
4. Can you manage your money every day?
5. Can you assess you future financial needs?
6. Can you pan and budget your household?

It turned out that none of the pupils from migrant families can correctly answer any of six suggested questions. Having this in mind we concluded that these pupils did not develop the basic competence in financial literacy.

As we agreed with this statement, we tried to teach the basics of the financial literacy as close as possible to the real life of the pupils and to connect the material with the current economic situation in the country and in the city of migrant pupil residence. Some lessons were devoted to the discussion on what value for money means and how to find the possibility to save the money through using the web-sites and services, for instance.

This approach allowed us to exploit the curiosity of the migrant pupils to activate the discussion of the topic "Economic adaptation" which includes a section "Financial literacy" explaining the basics of bank functioning, whether it is worth taking loan on buying the

household utensils, and what threats the personal bankruptcy can carry with no possibility to pay the loans, etc.

5. Conclusion

Thus, we see that the peculiarities of the social psychological and economic adaptation of the pupils from migrant families in the city of Krasnoyarsk in Siberian region serve to be one of the forms for the migrant pupils to adjust to a new social surrounding and are means for the migrant personal fulfillment.

The conducted research does not cover all aspects of the problem, the following areas should be further examined: summary of the organizational pedagogic principles, nature and peculiarities of the social cultural adaptation and integration of the pupils from the migrant families in a secondary school and identification of the social cultural adaptation model in Siberian region.

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STUDENS' ECLOGICAL AWARENESS DEVELOPMENT ON GEOGRAPHY LESSONS IN THE REPUBLIC OF KAZAKHSTAN

Vyacheslav Alexeevich SITAROV
Ph.D., Doctor of Pedagogical Sciences, Professor, Head of Department of Pedagogy and psychology of higher education, Moscow University for the Humanities 5 Yunosti street, Moscow, Russia 111395
editor3@academicpapers.org

Larissa UREKESHOVA
Ph.D., the highest category teacher of geography, High school number 38, Aktobe, Kazakhstan
editor2@academicpapers.org

Abstract

Relevance of the research: The research is relevant due to the total aloofness of the global environmental policy and the efforts of some states to resolve environmental problems from individuals. This actualizes the task of ecological consciousness and self-awareness development as the foundation of environmental activity of students.

Objective: The aim of the study is to theoretically justify and carry out the pilot and field testing of pedagogical conditions for early teenagers' ecological awareness development on geography lessons in secondary schools in the Republic of Kazakhstan.

Methods: The main methods of the investigation were complex theoretical analysis, categorical synthesis and simulation, allowing to consider the problem of students' ecological consciousness development during special courses.

Results: The article presents the pedagogical conditions of early teenagers' ecological awareness development at geography lessons in secondary schools in the Republic of Kazakhstan, and also discloses a pedagogical potential of ecologization of the school course "Geography" content and educational activities carried out in its framework.

Practical implications: The article reflects experience of practical solutions to the problem of early teenagers' ecological awareness development at Geography lessons in the 6th grade of the secondary school in the Republic of Kazakhstan.

Keywords: environmental awareness, early teenagers' awareness, Science teaching

JEL classification:

1. Introduction

Nowadays environmental studies and projects are among the priority objects of most of economically developed countries' investments. However, until now environmental activity of the majority of citizens is still low and in many cases poorly constitutive and inefficient. Detachment of global environmental policy and efforts of individual states in the sphere of ecology from problems of specific person plays an important role. Consequently, people perceive such policy and efforts as something external.

Environmental Code of the Republic of Kazakhstan determines active citizenship instilment regarding conservation of nature and respect for natural resources as one of the priority tasks of education in educational institutions, including schools. There is a plan that provides environmental education for educational institutions. It will be implemented by virtue of specialized and interdisciplinary educational programs as well as integration of environmental aspects into existing academic disciplines. This underlines the important role of schools in achieving of this goal. Environmental Code of the Republic of Kazakhstan defines the purpose of environmental education as the formation of proactive attitude of citizens and environmental culture in the society based on sustainable development principles (Environmental Code of the Republic of Kazakhstan). When drafting the Environmental Code, the provisions of the UNECE strategy drafted for education in favor of sustainable development, including the task of creating legislative, policy and regulatory framework for Education for Sustainable Development defined therein, were taken into account. The Code

regards Environmental Education as 'a continuous process of education, training, self-education and personal development aimed at the creation of a system of knowledge and skills, value orientations, moral and aesthetic relations, providing responsibility of a person for the environment' (Government of the Republic of Kazakhstan 2007 p. 4).

According to the Report on the implementation of the UNECE strategy drafted for education in favor of sustainable development in the framework of UN Decade of Education in favor of Sustainable Development (2005-2014), submitted by the Republic of Kazakhstan, regulatory strategy is implemented as follows: 'The law of the Republic of Kazakhstan number 319-III "Education Act" reflects the implementation of such principles of sustainability report, as continuity of learning process, equality of rights of all to qualitative education, respect for human rights and freedoms, priority of civic values, human life and health, democratic nature of education management'. Such principles of the state policy of Kazakhstan in the field of education as priority of the education system development, humanistic and developing nature of education, unity of training and education should be mentioned in the context of education in favor of sustainable development. Although "Education Act" of the Republic of Kazakhstan doesn't contain specific provisions concerning the sustainability report, it establishes a general legal framework for solving such problems in the field of education in favor of sustainable development. The provisions of sustainability report are considered in the section of educational area 'Natural science'. In the first case, the legislative framework is largely defined in relation to environmental education, covering categories of formal, informal and casual learning. At the same time, the law on education allows to solve the problems stated in the sustainability report involving much wider range of people in the framework of formal education in educational institutions. The Environmental Code is a fundamental act of environmental legislation' (Government of the Republic of Kazakhstan 2015).

The National Report of the Ministry of Energy of the Republic of Kazakhstan "State of the Environment of the Republic of Kazakhstan", published in 2015, identified the main strategic and program documents of the Republic of Kazakhstan, which determine the direction of environmental infrastructure development, special attention is paid to environmental education and instruction (Ministry of Energy of the Republic of Kazakhstan 2015).

14th December 2012 addressing the nation the President of the Republic of Kazakhstan N. Nazarbayev announced the region's development strategy "Kazakhstan 2050". Change in the citizens' attitude towards water and natural resources and environmental conservation was called one of the priorities of the strategy. The citizens' change of attitude and outlook towards environmental safety is possible by the modernization of environmental education (President of the Republic of Kazakhstan 2012).

According to the Concept of State Youth Policy until 2020 "Kazakhstan 2020: The Path to the Future", the developing of new environmental ethics is one of the defining values in the process of youth socialization, their involvement in social and political life of the country (Government of the Republic of Kazakhstan 2013). The State Program for Education Development for 2011-2020 in the Republic of Kazakhstan provides further strengthening of the environmental training of students and updating of supplementary education content.

2. MATERIALS AND METHODS

2.1. Research Methods

Theoretical, empirical, mathematic statistics methods are used in the study. Theoretical methods includes complex theoretical analysis, categorical synthesis, simulation. Empirical methods includes diagnostic (questionnaire, Method of Expert Estimations), interactive (individual methods, collective group methods, search methods), formative (formative pedagogical experiment). Among methods of mathematical statistics are comparative analysis of data, differences significance analysis (U - Mann-Whitney criterion, □* Fisher angular transformation).

2.2. Experimental research base

Secondary school number 38, Aktobe city, Kazakhstanserved as experimental research base.

2.3. Research Stages

The research was conducted in three stages.

On the first stage the issue was examined in the theory and practice of psychological and educational research, theoretical analysis of the problem was conducted, the goal, objectives, hypothesis of the research were formulated, ecological awareness developing experience in the process of education was analyzed.

On the second stage experimental work methodology was developed, primary diagnosis of control and experimental groups of students was conducted, formative experiment was implemented.

On the third stage research results were summarized, systematized and analyzed, research conclusions were formulated.

2.4. THEORETICAL BASIS OF THE RESEARCH

Solution of the task of children and teenagers ecological awareness is significant both for global community as a whole and for each country in particular. As the features of person's environmental self-consciousness and of self-consciousness are the same, such components as active, reflective, cognitive, emotional ones can be a benchmark both for ecological consciousness formation diagnosis, and for its development and formation.

Review of studies by L.M. Dautmerzaeva (2003), N. Yu. Yemelyanova (2005), V.N. Nakonechnyh (2008) shows that the understanding of human behavior determination methods is crucial in the course of developing environmental awareness, providing choice and implementation of a person's environmental activity and behavior. As a rule, a child bases his knowledge of how to interact with the environment on the observation of how these activities are carried out by society, various social institutions, by other people. Presentation of environmental issues in the content of school education is based on the same principle. That is knowledge of the system of relations between people and the environment is based on samples detached from a student himself, external as regards to him. In this case, usually, schools, particularly teachers, do not intend to control, trace the extent to which a person projects such samples on himself, subjectifies them, acquires personal attitude to them, converts external social values, norms, requirements into personal values, beliefs and suggestions. However, as it was shown above, the formation of ecological consciousness as a determinant of individual environmental behavior involves the development of its subjective components, giving a grounding for a student for self-perception not as an observer, but as a subject of ecological relationships.

As Sitarov (2012) showed, primary environmental concepts and knowledge about natural environment in local lore format of perception of the worldare formed at the elementary school. Teaching should be logical, consistent, with reliance on the image thinking, involving of arts and aesthetic activities. Foundations of ecological outlook as a holistic co-participant understanding of the nature are laid at this age. Basis of scientific knowledge of the natural environment is formed, instilment of awareness of the need to protect it, digestion of norms of behavior in the environment take place and the skills of elementary environmentally competent actions are instilled. Each subject studied in elementary school (First language, Arts, Music, Handicraft, etc.) discloses a new natural history material, enriches and helps to develop communication skills with natural objects (Sitarov 2012).

The Science courses becomes the main channel of formatting students' ecological concepts at Secondary school. On its basis integrated holistic picture of the correlations between all living things on earth and in space is formed in a single plan of the organization of life in various forms and levels of its manifestations. Didactic support of ecological thinking development of students and formation of "ecologized" moral values, corresponding to adolescence take place. Methods and forms of active, problematic, heuristic-game training are drawn up, as well as some forms of practical interaction with nature. The educational

purpose for this age group (11-14 years) is the formation of positive attitude of children towards the environment. Such disciplines as Geography, Biology, Literature, Physics and others may help to instill such attitude (Sitarov 2012).

Students' environmental concepts are consolidated, deepened and systematized, moral and ecological orientation is increasing at High school. The training develops dialectical understanding of unity between nature and society, meanwhile environmental orientation becomes a part of human culture. At this stage, holistic ecological outlook is building on the basis of integrative knowledge about the natural world providing for responsible, active environmental behavior (Sitarov 2012).

In accordance with the curriculum of general schools of Kazakhstan, environmental education issues are included in the content of following courses: Chemistry in 8-11 grades (topics: "Oxygen", "Hydrogen", "Water", "Nitrogen", "Carbon", "Metals", "Chemical production"), Geography in 6-11 grades (topics: "Geographical envelope", "Nature and population of the area of a school's location", "Relationship between nature and society", "Nature of Kazakhstan", "Inland waters of Kazakhstan", "Soil and ground resources of Kazakhstan", "Biological resources of Kazakhstan", "Diversity of natural complexes of Kazakhstan", Review section, etc.), Biology in 6-11 grades (topics: "Introduction", "Plants", "Animals", "Bacteria, viruses, fungi", "Varieties of Plants", "Animal Variety", "Human as a species", "Relations between organism and environment. Bases of ecology", "Fundamentals of ecology", "Biosphere and scientific-and-technological advance").

Being the behavior regulator, self-consciousness manifests itself as a dialectical system that provides person's self-consciousness and self-control of subjectivity on the basis of personal perception of social patterns, values, norms and regulations. The peculiarity of environmental consciousness in this sense is that an individual perceives himself as a subject in relationship with the environment, in other words, with his environmental subjectivity.

As Dautmerzaeva (2003) noted, tSciencet secondary school has the greatest potential in the formation of knowledge about nature, world and human in it. Each of the subjects of the course helps students to generate their own specific view at human and environment, developing objective worldview as the result.

Solovyev (2005) says that school Geography course, being at the junction of natural and social sciences, has a powerful educational resource for of students' ecological awareness formation.

Thus, the task of adolescents' ecological consciousness formation can be successfully solved by the ecologization of Geography course. Reliance on personal cultural approach to the educational process organization and student-centered education technology while developing and implementing a set of additional teaching materials of pro-ecological orientation of Geography course has proven its effectiveness.

3. RESULTS

3.1. Pedagogical conditions for early teenagers' ecological awareness development on geography lessons in secondary schools

In the introductory Geagraphy course, the early teenagers' education process has its own specific features due to students' age specifics. Understanding and accounting of these features will help a teacher to make learning more efficient, to create the necessary positive attitude, high motivation of educational activity.

A typical young teenager is still strongly influenced by habitual student schemes learned in elementary school, but his needs are been already changing Communication along with expanding cognitive needs start to play an important role. All spheres of life, including the learning process itself, new knowledge, mental activity methods – everything is viewed through the prism of relations with peers.

In many respects the interest of early teenagers in academic subjects is associated with the quality of teaching, whether a teacher is able to present educational material in fascinating manner, to create friendly atmosphere in a classroom. Gradually, on the basis of filling of cognitive needs, persistent cognitive interests and cognitive motives appear.

Cognitive interests can be activate in three ways: presentation of educational material, organization of educational activities and interaction of educational process participants.

When presenting training material it's important to consider novelty factor of its content, possibility to enrich and update already available knowledge, to asses the new material in its relationship with well-known phenomena, facts, in the dynamics and historical development. It is essential to take into account achievements of contemporary science and correlation with practice. When organizing of their activities teachers should pay more attention to the variety of the both group and individual forms of activities, possibility to learn new ways of activity and acquiring of new knowledge by learners, problem tasks. Creative, research and practical work have high motivating potential.

When building relationships between participants of an educational process, it is important to pay attention to the authority of a teacher as a conductor of new knowledge. His emotionality, enthusiasm, confidence form the emotional tone of students' learning activities. Pedagogical optimism, faith in cognitive capabilities of students; mutual learning and mutual support not only of learners but also in student-teacher tandem are very important. Competitive spirit and positive encouragement also create the necessary mood and overall student enthusiasm.

Non-standard lessons, such as students' conference, business game, dispute, research help to implement cognitive potential of younger teenagers in the most successful manner.

In our opinion, the most promising and flexible theoretical basis for the educational process organization is a paradigm of student-centered education. An analysis of the scientific literature on the issue of student-centered education has shown that the understanding of this approach at different times varied widely among different researchers, up to offering opposite points of view.

For example, V. V. Serikov (1998 p. 228) sdefines student-centered education as a pedagogical process with specific objectives, filled with relevant content and supported by technological solutions, which is focused on the development and self-development of personal characteristics of an individual.

Analysis of studies containing the description and analysis of ecological awareness development experience allowed us to conclude that, regardless of the age characteristics of students, training approaches and education level, the specificity of ecological consciousness formation objectives determines the expediency of such educational technologies, methods and techniques of training as:

- game technologies,
- methods of personalization by creating student-relevant situations,
- interactive methods,
- reflection methods,
- problem-tasking techniques,
- methods based on modeling and simulation of activities,
- design methods.

Therefore, relying on existing studies, early teenagers characteristics, personal and culturological approach to the organization of educational process and technology of student-centered education and on the basis of the program adopted by Order of the Minister of education and science of the Republic of Kazakhstan number 367 of 9th July 2010, we developed a set of additional teaching materials of pro-ecological orientation for learners studying Geography course in the 6th grade.

3.2. Stages of an experimental research

For the purpose of students' ecological awareness developing in 2014-2015 academic year we conducted a pilot research on the basis of secondary school number 38 in the city of Aktobe, Kazakhstan in 6 "A" and 6 "B" forms. The structure of experimental research can be divided into four stages: initial diagnosis, formative experiment, final diagnosis, analysis of the results.

The first stage included the conduction of overall assessment of environmental knowledge of students, their emotional attitude to environmental phenomena and motivation of ecologically relevant behavior implementation.

The objective of the second stage included search and selection of appropriate goals and objectives of the research methods and techniques involved in learning process, aimed at the

formation of ecological awareness of the students of form 6 of secondary school who attended introduction Geography course. The results formed the basis for developing a set of additional pro-ecological oriented teaching materials for Geography course studied by the 6th form students.

In the course of the third research phase implementation we developed projective technique-diagnostic questionnaire aimed at the determination of ecological awareness development grade of the 6th form students.

Ecologization of Geography course for 6th form is aimed at the promotion of early teenagers' ecological awareness development. Pedagogical influence methods were selection and worked out based on the knowledge of the age characteristics of the educational activity and components of consciousness: cognitive, emotional, active and reflexive. Each method is aimed at the activation of self-consciousness components complex, ensuring of their interaction and generation of self-consciousness act on this basis. The students' behavior, including speech (answers to questions, participation in discussions, preparation of messages) is more indicative of the self-consciousness act effectiveness.

3.2.1. Ascertaining stage

For the initial diagnosis of the control and experimental groups we developed a questionnaire to assess knowledge about environment, emotional attitude to environmental phenomena and motivation of implementation of environmentally relevant behaviors. In the questionnaire, students are provided with a series of statements and asked to choose the degree of agreement with the statements. The degrees of agreement with a statement are arranged according to four-choice Likert scale: strongly agree – somewhat agree – somewhat disagree – strongly disagree. The advantage of this scale is that the statements of the questionnaire based on this scale are selected according to their internal consistency, and do not require expert analysis. The questionnaire is divided into three scales: knowledge, emotions and actions. A high total score in each of the scales, calculated in accordance with the key of the questionnaire indicates the intensity of the corresponding component of environmental awareness. At the initial diagnosis stage we didn't target to identify reflection ability.

Initial diagnosis showed that the control and experimental groups have a similar level of preparation before the experiment.

3.2.2. Formative stage

At the formative experiment stage extra-educational and extra-curricular activities of environmental orientation were offered to students of the experimental group in the Geography course. These activities were smoothly included into the basic program of the discipline.

For example, such as:

1. Games and activities:

- Annual environmental project "Green City";
- Environmental diary;
- Game "Geographical names";
- Game-quest "Desert Island";
- Scaled experiment "How much water on Earth is there?";
- Story-poster "Water of the World";
- Simulation game "Totem";
- Tale-parable "Seven secrets of life";
- Game "Microjourney";
- Game-walk "Detectives";
- "Environmental Code of the Earth's inhabitants".

2. Environmental tasks, for example such as:

1. Often, you can hear: "Modern science can't find a way to kill mosquitoes". They do so much harm to human and animals indeed. Is that so? Imagine that such a remedy is found. Will be humans right if they take advantage of it?

2. The draining of swamps causes much damage to forests, not only to ones that are located not far from them but also to ones that are tens of kilometers away from the swamps.

Why are forests damaged in spite of the fact that reclamation works are carried out on swamps?

3. A layer of tin protects cans against corrosion. Cans discarded by tourists lye for decades, spoiling the nature. However, it's not a problem in the North because at low temperatures tin crumbles into powder, and the ferrum deprived of the protection quickly rusts and disintegrates too. How to protect southern regions where there is no frost against littering with cans?, etc.

3.2.3. Control stage

For the final diagnosis we developed projective methodology, questionnaire with stimulus material, which included 20 cards with images and names of the appearance depictured. Under the image a probationer will find four questions reflecting the formedness of environmental awareness components:

1. What do I know about it? - cognitive component
2. How do I feel about it? - emotional component
3. What can I do today? - activity component
4. What can I do in the future? - reflective component.

The images show the most famous and significant environmental threats, as well as environmental values, such as:

1. Utilization of batteries and accumulators
2. Vehicle exhaust
3. Greening, etc.

At the end of the school year the students of the experimental and control groups were asked to perform the task contained in projective techniques, questionnaires. The data were processed and analyzed by means of mathematical statistics.

Subsequent to the results of the formative experiment, included the introduction of set of additional teaching materials of pro-ecological orientation into Geography course for the 6th grade, the final diagnosis was carried out of students of experimental and control groups using projective techniques and questionnaires diagnostics of ecological awareness development of 6th form students. Each image on the diagnostic cards of projective technique-questionnaire is followed by four questions, reflecting the pro-ecological profile of a student's awareness. These questions include four aspects: cognitive, emotional, active, reflective. Each answer of the test was rated on a scale by means of expert appraisal (see. Table 1 and Figure 1).

Table 1. Groupwide indicators of formed students' awareness components (based on projective questionnaire technique)

	Control group	Experimental group
Cognitive	46.9	91.5
Emotional	59.8	90.2
Active	50.0	89.3
Reflective	**49.8**	**87.6**

The data is graphically presented in Figure 1.

Error! Objects cannot be created from editing field codes.

Figure 1. Percentage of groupwide indicators of formed students' awareness components in control and experimental groups (based on projective questionnaire technique)

According to statistical processing, analysis and interpretation of the results of the experimental study, the differences between the components of ecological consciousness in the control and experimental groups after the implementation of the formative experiment are statistically significant. Therefore, we can say that the developed set of additional teaching materials of pro-ecological orientation for Geography course for the 6th grade students contributes to the ecologization of Geography course and early teenagers' ecological awareness development.

4. DICUSSIONS

As shown in the works of some researchers, the most favorable period for the consciousness formation and developing in general (Sitarov & Maralov 1987) and for environmental awareness in particular (Chesnokova & Shorohova 1977, Yasvin 2000) is younger adolescence.

The range of Sciences taught in school, including Geography and Biology has the greatest potential in the formation of knowledge about nature, world and human. Each of these disciplines forms a specific view at human and his environment, resulting in the fact that students develop objective picture of the world. Consequently, the beginning of their teaching (in the Republic of Kazakhstan - 6th form) starts at the most sensitive period in the context of formation of ecological consciousness of a person. Located at the junction of natural and social sciences, Geography has a powerful educational resource for students' ecological awareness developing. The understanding of this fact and consideration of early teenagers' sensitiveness suggest that the initial Geography school course has significant potential as a resource for developing ecological consciousness and ecological culture of a person.

5. CONCLUSION

The greatest potential in the formation of knowledge about the nature, the world and human in it has the range of natural sciences taught in secondary school. Each of the subjects of this range helps to generate the specific view at human and environment, resulting in the formation of students' objective worldview.

School Geography course, being at the junction of natural and social sciences, has a powerful educational resource for formation of ecological consciousness of students.

The most perspective and flexible theoretical basis for the organization of educational process is a paradigm of learner-centered education. Personal and culturological approach of E.V. Bondarevskaya is the most consistent with our position, it aims at: development of human and cultural potential, laying of the mechanisms of self-realization, self-development, adaptation, self-control, self-defense, self-education with the aim of creation of a distinctive personal image, dialogue interaction with others, with nature, culture and civilization in general.

Thus, the task of early teenagers' ecological awareness at Geography lessons in the 6th grade can be successfully solved by the ecologization of Geography course. Applying personal-cultural approach to the educational process organization and student-centered education technology while developing and implementing a set of additional teaching materials of pro-ecological orientation of Geography course has proven its effectiveness in the experimental research.

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SUMMARY

Nowadays environmental studies and projects are among the priority objects of most of economically developed countries' investments. In the Republic of Kazakhstan several Acts on environmental protection and education are implemented, including Environmental Code of the Republic of Kazakhstan, "Education Act" of the Republic of Kazakhstan. Environmental Code of the Republic of Kazakhstan determines active citizenship instilment regarding conservation of nature and respect for natural resources as one of the priority tasks of education in educational institutions, including schools. The State Program for Education Development for 2011-2020 in the Republic of Kazakhstan provides further strengthening of the environmental training of students and updating of supplementary education content.

Solution of the task of children and teenagers ecological awareness is significant both for global community as a whole and for each country in particular. In the course of developing it, the understanding of human behavior determination methods is crucial. The Science courses are the main channel of students' ecological concepts developing at Secondary school. School Geography course being at the junction of natural and social sciences, has a powerful educational resource for of students' ecological awareness formation. The task of adolescents' ecological consciousness formation can be successfully solved by the ecologization of Geography course. Reliance on personal cultural approach to the educational process organization and student-centered education technology while developing and implementing a set of additional teaching materials of pro-ecological orientation of Geography course has proven its effectiveness.

Relying on existing studies, early teenagers characteristics, personal and culturological approach to the organization of educational process and technology of student-centered education and on the basis of the state program, authors developed a set of additional teaching materials of pro-ecological orientation for learners studying Geography course in the 6th grade.

For the purpose of students' ecological awareness developing in 2014-2015 academic year a research was conducted on the basis of secondary school. The structure of experimental research can be divided into four stages: initial diagnosis, formative experiment, final diagnosis, analysis of the results. At the first stage environmental knowledge of students, their emotional attitude to environmental phenomena and motivation of ecologically relevant behavior implementation were assessed. At the second stage appropriate goals and objectives of the research methods and techniques involved in learning process were selected. The results formed the basis for developing a set of additional pro-ecological oriented teaching materials for Geography course studied by the 6th grade students. At the third stage a projective questionnaire diagnostic technique was developed and implemented. Results of teaching experiment were analyzed at the fourth stage. The analysis suggests that the

developed set of additional teaching materials of pro-ecological orientation for Geography course for the 6th grade students contributes to the ecologization of Geography course and early teenagers' ecological awareness development.

The task of early teenagers' ecological awareness at Geography lessons in the 6th grade can be successfully solved by the ecologization of Geography course. Applying personal-cultural approach to the educational process organization and student-centered education technology while developing and implementing a set of additional teaching materials of pro-ecological orientation of Geography course has proven its effectiveness in the experimental research.

DO PEOPLE WITH A DIFFERENT EMPLOYMENT BACKGROUND AGE DIFFERENTLY? EUROPEAN EVIDENCE FROM THE SHARE SURVEY

Antigone LYBERAKI
Professor of economics, Department of Economics and Regional Development, Panteion University
alymber@panteion.gr

Platon TINIOS
Assistant Professor, Department of Statistics and Insurance Science, University of Piraeus
ptinios@unipi.gr

George PAPADOUDIS
Researcher, Department of Economics and Regional Development, Panteion University
gpapadoudis@netpads.eu

Thomas GEORGIADIS
Researcher, Department of Economics and Regional Development, Panteion University
th.georgiadis@gmail.com

Abstract

The landscape in the second half of the twentieth century was characterized in Europe by two divides. One was that between insiders and outsiders in the labor market, often associated with membership of the public sector, which enjoyed, in most places a privileged status relative to the rest of the labor market. The other divide was built around gender – the male breadwinner model. The pension system, however, is supposed to operate in an equalizing direction, ironing out employment-based inequities. This paper tests whether and to what extent inequalities persist in retirement. It does so by direct comparisons of privileged groups relative to less privileged groups of a large international sample survey of individuals aged 50+, the Survey of Health, Ageing and Retirement in Europe (SHARE), using the fifth wave conducted in 2013. The comparison proceeds by means of odds ratios applied to dimensions of outcomes related to well-being: life satisfaction; better health; chances of a better financial status. This is done for cases of pensioners where the key distinguishing feature is simple presence of someone who used to be employed worked in the public sector. This comparison is also applied at a household level, where in addition to the public-sector effect, hypotheses related to the male breadwinner model can also be approached. The results in general confirm that public sector retirees tend to fare better than their coevals, even with the relatively blunt statistical instrument checking for overall outcomes.

Keywords: Employment history, Pensioners, Well-being, Elderly, Inequalities.
JEL classification: J78, J45, J14.

1. Introduction

Europe since the Second World War first fell in love and then shunned the public sector. People who are now retired witnessed and were part of this development, having worked at the time when the public sector was growing; however, they retired when the tune of the day was retrenchment and retreat from the public. The fiscal dimension of the crisis since 2009 has put fresh emphasis on this trend, placing further pressure on public expenditure.

This paper examines the extent to which these developments still mark today's pensioners. Do those who originally chose (or were selected) to work for the public sector continue to draw the benefits of their choice long after they stopped working? Are public sector retirees still richer, healthier and happier than their colleagues from the private sector?

Framing the question a little wider, *does the type of work done in working life still echo in retirement, in the form of leading to systematically different health wealth and happiness outcomes*? And if so, *what about those whose past relationship with paid work does not lead to a pension derived from own right – women homemakers*?

The mechanisms whose final outcomes might be reflected in the SHARE data could be result of two complementary hypotheses:

Hypothesis 1: Outcomes are the result of the division of society into insiders and outsiders division. This leads to differences arising both from different employment backgrounds and from gender. The latter would operate both within the pensioners' population and also between pensioners with own right pensions and homemakers.

Hypothesis 2: The traditional male-breadwinner model of household would have a delayed cost in affecting older women's welfare compared to other women who had lived their lives in households with more equal division of roles.

2. Short literature review: insiders / outsiders and the male breadwinners / female homemakers divide

It has been argued that Europe is a continent divided between insiders and outsiders (Alesina and Giavazzi, 2006). The insider/outsider divide story initially referred to the divisions and privileges within the labor market (Lindbeck and Snower, 1986, 2002; Saint-Paul, 1996). In a similar vein it also informs political economy analyses focusing on growth implications in situations where "elites" secure privileges via controlling the government (Acemoglou, 2006). Although different authors define insiders and outsiders in a variety of ways, membership of the public sector usually has pride of place; for example Kollintzas *et al.* (2014) present a neo-classical model for the Insiders-Outsiders Society, where insiders are public sector employees.

What we try to do in this paper is to examine to what extent aspects of the insider-outsider society can be found among older Europeans, after they have finished their progression through employment. Based on the literature one would expect pensioners of the public sector to be better off in a variety of ways, compared to pensioners from the private sector and/or to pensioners from self-employment. Furthermore, one expects this to be more prominent in the European South, where, among other things, public sector wage premia tend to be higher and the insider/outsider divisions starker. This is likely to be tempered by the operation of the pension system, which in most countries at least ostensibly dedicated to correcting employment-based inequalities. To this should be added three factors: First, the impact of public sector reforms from the 1990s whose ambition and reach were greater in the North and spread south gradually. Second, the impact of the crisis since with its emphasis on public sector retrenchment, is likely to have been felt more in those countries in the eye of the storm in the South. Finally, in the Eastern countries the transition is likely to be more nuanced and to have a more marked cohort character. Thus the Esping-Andersen type of welfare state typology is likely to be reflected in the outcomes of today's pensioners.

Turning to gender, the male breadwinner model was dominant everywhere at the start of the retired population's lives but was challenged at different speeds and with differing efficacy in different parts of Europe. Thus a gender dimension must be added to the Esping-Andersen typology. The male breadwinner model (and its female carer appendage) refers to a family centered on a male worker, who earns the money to support the other family members. Women, under this model, usually stay at home and take care of children and the elderly; when they work for pay, they do so supplementary – due to an interrupted career path and occasional part-time working. As a result, women are exposed to much lower levels of life-time earnings and increased insecurity in old age (Pascall, 2006). The male breadwinner model was most prevalent during the first decades after the Second World War, and started to decline from the late 1970s onwards (Crompton, 1999; Cunningham, 2008; Lewis, 2001). There obviously exists considerable variation in the timing and characteristics of dominant family arrangements across Europe (Pfau-Effinger, 2004). The Nordic countries are at one extreme (the rising dual-breadwinner model), while the Mediterranean countries at the other (the persistence of the male breadwinner arrangements). There also appear counter intuitive trends favoring a partial return to the male breadwinner model (Berghammer, 2014).

In a retired population these ingrained inequalities over the working life, whether due to employment or to gender, are likely to be diffused to general outcomes. Career working experiences are translated to older ages through the filter of the pension system, as well as transition from the world of work to the world of retirement – both of which should in principle operate in an equalizing direction. Contrary to a purely economic view which would

see human capital operating through career choice and lifetime earnings, in our case we would expect a more diffuse impact affecting all aspects of life – financial standing obviously, but also health and life satisfaction. For our purposes and bearing in mind the age cohorts under investigation it makes sense to analyze differences in ageing experiences between pensioners on the one hand and homemakers on the other. We expect to find evidence of cumulative disadvantage of homemakers (women who stayed at home or worked intermittently but have not a pension of their own). This may be reflected in self-perceived health and life satisfaction indicators. Earlier work based on SHARE data suggests that women are not indifferent to the origin of income and having income of their own increases, ceteris paribus, their life satisfaction (Tinios, Lyberaki & Georgiadis, 2015).

3. Setting up an investigation strategy

Our approach eschews causal analysis and concentrates on outcomes. We thus compare groups of retirees with each other employing odds ratios. In this enterprise it is important to define the groups concerned. We select four groups by employment background in such a way as to find them in all countries represented in SHARE:

Pensioners –public sector

Pensioners –private sector

Pensioners from self-employment

Homemakers

In defining employment background, a number of problems had to be overcome, as the notion of working career needs to be constructed. Employment background refers to last job and not to dominant job; no spells of unemployment or other interruptions are taken into account, while no information exists on differences by professional status (hierarchical position). The public sector is likely to be composed of workers at two different poles of educational attainment: on the one extreme we have a concentration of individuals with low qualifications (employed chiefly by local authorities) and on the other we have more highly qualified individuals, usually employed by central government. To allow for this effect we control for both groups.

We further need to define dimensions corresponding to different ageing outcomes. SHARE allow us to look at three broad categories of effects: *health status*; *well-being and expectations (life satisfaction proxies)*; and *income status*.

Some of the above are direct individual outcomes –they are measured and accrue at the individual level (e.g. health, life satisfaction). Others become mediated and are filtered through the overall household welfare status, such as subjective and objective variables of poverty and income status. We look at both individual and household level effects.

At the level of the household, we try to define different types of households according to their employment (or non-employment) background. We use information at the level of the individual (as defined above) to construct 7 types of households. Some of them are dual pensioners households (from the same employment background), some are dual pensioners (but with mixed employment background), other households combine one pensioner and one homemaker, while there are also single person households (from any background). We examine income status and subjective indicators (such as difficulty in making ends meet).

At this stage we are interested in describing outcomes, *not* the processes that led to them. In other words, we look at the current situation of the old as they are today. We do not attempt causal explanation, such as to try to explain the *source* of the differences. We therefore do not attempt, for example decomposition analysis, which would try to explain differences by causing factors them– e.g. health outcomes by lifestyle choices and so on. This leads us to rely on odds ratios (**OR**) which benchmark experiences against the experience of one dominant group – the ex public sector workers. In all cases we control for age and educational qualifications, which would also absorb some of the effects that will be due to greater female longevity.

Odds ratios are a widely used statistical technique when dealing with categorical data. In particular, the examination of whether or not the probability of 0 or 1 (in our case a negative versus a positive outcome) is the same in two different groups when being compared.

The odds ratio mathematical expression for two groups is as follows:

$$OR= p1/(1-p1) / p2(1-p2) = p1(1-p2) / p2(1-p1) \quad (1)$$

and it takes values higher than 0 and lower or higher than 1. When the OR is equal to 1 there is no significant difference between the groups as concerns the outcome in question. For example: Taking p1 is the probability of one person, who belongs to a distinct group, to be poor and 1-p1 to not be poor and if accordingly, p2 is the probability of another person, who does not belong in the same group but to another one, to be poor and 1-p2 to not be poor. If in that case the odds ratio estimation for these groups is 0.5 or 2, which means a significant difference (or inequality) between these two distinct groups. These two values (<1 & >1) may also interpret the direction of the inequalities according to which group is set as the reference group in any particular exercise. The higher or lower (than 1) value of odds ratios the greater the degree of inequality. Its absence would mean odds ratio of 1 but this kind of values are not that frequent.

For the estimations below we use logistic regressions with probability weights in individual level (and in household level accordingly) reporting OR (instead of coefficients) while controlling for respondents' age and educational qualifications. Every OR is based on the comparison of the relative frequency of a single event between two distinct groups. In our case the distinct population groups are represented by the individuals who are pensioners from private sector or self-employment or they are female homemakers as compared to individuals who are pensioners from public sector. Choosing this set of groups for this examination means that the rest of the distribution is not taken into account for that matter.

4. Sample and data definitions

The SHARE wave 5 sample is 66,246 individuals respondents from fifteen countries, which fall into four broad geographical groups roughly corresponding to distinct typologies of welfare state: Nordic countries (Sweden, Denmark and the Netherlands), Continental (Germany, Belgium, France, Switzerland, Austria and Luxemburg), Southern countries (Italy, Spain and Israel) and Eastern countries (Estonia, Slovenia and Czech Republic) (see Börsch-Supan et al. 2013; Börsch-Supan, 2016 for methodological details).

Table 1. SHARE wave 5, sample size by former employment status and country

country	Pensioners from the Private Sector	Pensioners from the Public Sector	Pensioners from Self Employment	Female Homemakers	Total
SE	1,703	739	287	4	**2,733**
DK	1,024	636	245	24	**1,929**
NL	1,209	330	241	490	**2,270**
DE	1,774	716	205	340	**3,035**
BE	1,614	683	320	568	**3,185**
LU	464	193	86	290	**1,033**
FR	1,617	646	444	208	**2,915**
CH	1,044	141	250	224	**1,659**
AT	1,968	400	442	384	**3,194**
IT	1,515	292	516	892	**3,215**
ES	1,900	225	637	1,334	**4,096**
CZ	2,593	1,246	171	14	**4,024**
SI	1,425	425	150	183	**2,183**
EE	3,083	294	111	27	**3,515**
IL	627	193	90	269	**1,179**
Total	**23,560**	**7,159**	**4,195**	**5,251**	**40,165**

Source: SHARE wave 5 (release 5.0.0), May 2016.

One of the first tasks for this paper was to examine certain questions and data of the available datasets and construct distinct and mutually-excluded groups derived from descriptions about the current and former employment status of the respondents in employment and pension's module (Table 1). Our analysis is based on four groups including 40,165 individuals in 30,049 households. Pensioners are all those who described themselves as 'retired from own work', so would exclude beneficiaries of citizen's pensions and survivor pensions. The four groups are:

Pensioners retired from own work as private sector employees.

Pensioners retired from own work as public sector employees.

Pensioners retired from own work as self-employed.

Female homemakers.

Analyses on household level derive from comparisons among specific households' types empirically obtained by grouping based on their composition (Table 2). For example, one or two pensioners, male or female members, mixed or distinct types, each time according to the employment status of their members etc. Out of these groups we selected seven groups to form the basis of our comparison.

The public sector effect: Reference group is a household with at least one member who is a public pensioner. This is compared to (a) households with at least one pensioner from the self-employment or private employment and (b) households with at least one female homemaker.

The dual pensioner effect: Reference group is a household with at least two pensioners of whom one from the public sector, compared with other dual pensioner households (no public sector).

The cost of the male breadwinner model: Reference group is household with at least two pensioners, compared to household with one male pensioner and one homemaker.

Table 2. SHARE Wave 5 sample size at household level, by household type

Code	Household with…	#
1.	**one pensioner from private sector**	11,678
1.1	two pensioners from private sector	3,932
2.	**one pensioner from public sector**	3,445
1.2	two pensioners from private and public sector	1,595
2.2	two pensioners from public sector	759
3.	**one pensioner from self-employment**	1,955
1.3	two pensioners from private sector and self-employment	837
2.3	two pensioners from public sector and self-employment	205
3.3	two pensioners from self-employment	399
1.3.3	three pensioners from private and self-employment	0
4.	**one female homemaker**	2,862
1.4	pensioner from private sector and one fem homemaker	1,578
2.4	one pensioner from public sector and one fem homemaker	396
3.4	one pensioner from self-employment and one fem homemaker	396
1.3.4	two pensioners from private & public and one female homemakers	3
4.4	two female homemakers	6
1.4.4	one pensioner from private sector and two female homemakers	0
3.4.4	one pensioner from self-employment and two female homemakers	0
1.3.4.4	two pensioners from private & public and two female homemakers	1
1.1.4	two pensioners from private & one homemaker	**2**
	Total number of households	**30,049**

Source: SHARE wave 5 (release 5.0.0), May 2016.

5. Empirical results

5.1. Individual- based outcomes

The next step of empirical analysis compares on a pairwise basis outcomes of different groups of retirees. It examines whether any given group is in better or worse shape than public sector pensioners. It does this by comparing how much luckier the public sector worker is. For instance, a value of 0.7 for the private sector pensioner in France means that a person of that description is *less* likely to report (say) that he/she is enjoying good health as compared with his/hers public sector counterpart. The same comparison in Italy for example, reveals a value of 0.81 which has the same meaning as above but the difference is less marked, as the result approaches the value of 1. All results are controlled for age and educational qualifications, while confidence intervals (**CI**) are also presented.

The comparison involves three dimensions of individual well-being: good health, life satisfaction and shortage of money as an inhibiting factor. Table 3 reports the first dimension for the fifteen countries and four country groups.

Table 3. Self-perceived health-related odds ratios (p-weighted, age and educational status adjusted), Reference group: Pensioners from public sector, by country

	Pensioners from Private Sector			**Pensioners from Self Employment**			**Female Homemakers**		
country	OR	*CI 95%*		OR	*CI 95%*		OR	*CI 95%*	
SE	1.07	*0.86*	*1.33*	1.16	*0.83*	*1.64*	n.a.		
DK	0.76	*0.60*	*0.98*	0.77	*0.54*	*1.09*	n.a.		
NL	0.83	*0.62*	*1.13*	1.18	*0.79*	*1.76*	0.97	*0.67*	*1.42*
DE	0.89	*0.73*	*1.09*	0.97	*0.68*	*1.38*	1.06	*0.74*	*1.52*
BE	0.92	*0.73*	*1.15*	1.00	*0.72*	*1.39*	0.87	*0.65*	*1.16*
LU	0.68	*0.45*	*1.03*	0.71	*0.38*	*1.36*	0.72	*0.46*	*1.15*
FR	0.70	*0.57*	*0.87*	0.68	*0.51*	*0.91*	0.49	*0.34*	*0.71*
CH	0.90	*0.55*	*1.47*	0.64	*0.36*	*1.13*	0.59	*0.28*	*1.23*
AT	0.78	*0.59*	*1.01*	0.72	*0.51*	*1.01*	0.67	*0.47*	*0.98*
IT	0.81	*0.62*	*1.08*	0.79	*0.56*	*1.11*	0.53	*0.37*	*0.75*
ES	1.11	*0.67*	*1.84*	1.68	*0.89*	*3.17*	0.82	*0.47*	*1.42*
CZ	0.94	*0.79*	*1.12*	1.58	*1.02*	*2.44*	n.a.		
SI	0.75	*0.58*	*0.98*	0.69	*0.45*	*1.04*	0.56	*0.36*	*0.87*
EE	0.79	*0.58*	*1.08*	1.54	*0.86*	*2.73*	n.a.		
IL	1.18	*0.70*	*2.00*	1.94	*0.96*	*3.93*	1.38	*0.72*	*2.67*
Total	**0.84**	***0.76***	***0.92***	**0.91**	***0.80***	***1.05***	**0.63**	***0.55***	***0.72***

Source: SHARE wave 5 (release 5.0.0), May 2016.

Note: Self-perceived health-related odds ratios are based on SHARE wave 5 question that reads as follows: *"Would you say your health is...",* allowing respondents to select one of the following five answer categories: Excellent; Very good; Good; Fair; Poor. Odds ratios presented in the above table report the probability of reporting Excellent; Very good; Good health status.

Looking at Table 3 dealing with self-perceived health we note that the insider/outsider distinction is still very much in evidence in old age. Pensioners from the public sector report better health than any other group of old age individuals (pensioners and homemakers). When comparing different groups of countries, in the Nordic countries the differences are less stark, followed by the Continental group. The starkest divisions are displayed in the Southern and Eastern countries.

As regards the other exercise, the male breadwinner model stores high and discernible cost to older homemaker women. Women homemakers have much lower probability to report good health and to draw satisfaction from their life. Furthermore, they are more likely to incur

shortage of money that inhibits them to do the things they want to do. The cumulative gender disadvantages are almost non-existent in the Nordic group, they have a low incidence in the Continental group (except for Austria) and become very high in the Southern and Eastern countries.

The analysis proceeds to examine life satisfaction in a similar fashion (Table 4). For each country we present the odds ratio of the comparison with public pensioners. Values less than one imply that the group is less fortunate than the public sector. The conclusions of Table 3 carry over, in one or other form, to all dimensions: There is an advantage to be in the public sector. The 'hierarchy of luck' extends from private employees, to the self-employed with homemakers almost universally at the bottom.

Table 4. Life satisfaction odds ratios (p-weighted, age and educational status adjusted), Reference group: Pensioners from public sector, by country

	Pensioners from Private Sector			**Pensioners from Self Employment**			**Female Homemakers**		
country	OR	*CI 95%*		OR	*CI 95%*		OR	*CI 95%*	
SE	0.87	*0.69*	*1.10*	1.14	*0.78*	*1.65*	n.a.		
DK	0.84	*0.62*	*1.13*	0.90	*0.57*	*1.43*	n.a.		
NL	1.01	*0.73*	*1.40*	1.65	*1.04*	*2.63*	1.07	*0.71*	*1.61*
DE	0.81	*0.66*	*1.00*	0.67	*0.47*	*0.96*	0.98	*0.68*	*1.42*
BE	0.96	*0.77*	*1.20*	1.21	*0.87*	*1.67*	1.05	*0.79*	*1.40*
LU	0.76	*0.50*	*1.14*	0.99	*0.51*	*1.90*	0.63	*0.39*	*1.02*
FR	0.81	*0.66*	*0.99*	0.73	*0.55*	*0.97*	0.78	*0.55*	*1.11*
CH	1.02	*0.63*	*1.64*	1.09	*0.61*	*1.95*	1.04	*0.57*	*1.91*
AT	0.63	*0.46*	*0.85*	0.74	*0.52*	*1.06*	0.67	*0.44*	*1.02*
IT	0.83	*0.62*	*1.11*	0.97	*0.69*	*1.36*	0.56	*0.40*	*0.78*
ES	0.75	*0.45*	*1.25*	0.92	*0.50*	*1.68*	0.60	*0.35*	*1.01*
CZ	0.97	*0.82*	*1.15*	1.17	*0.78*	*1.75*	n.a.		
SI	0.86	*0.66*	*1.11*	0.97	*0.64*	*1.47*	0.66	*0.42*	*1.03*
EE	0.94	*0.70*	*1.26*	1.57	*0.94*	*2.62*	n.a.		
IL	0.90	*0.53*	*1.52*	0.63	*0.32*	*1.24*	0.65	*0.35*	*1.21*
Total	**0.85**	***0.77***	***0.93***	**0.86**	***0.75***	***0.99***	**0.72**	***0.64***	***0.82***

Source: SHARE wave 5 (release 5.0.0), May 2016.

Note: Life satisfaction odds ratios are based on SHARE wave 5 question that reads as follows: On a scale from 0 to 10 where 0 means completely dissatisfied and 10 means completely satisfied, how satisfied are you with your life? Odds ratios presented in the above table report the probability of reporting scales 8 to 10 (very satisfied).

The public sector is overrepresented in the top quartile of the pension income distribution (Table 5), even after controlling for education and age. Compared to the public sector, pensioners in all countries have markedly lower chances of receiving a pension that is placed at the top 25% of the pension income distribution if they had worked in the private sector, or if they were self-employed. Sweden is a clear outlier, as both the private sector and the self-employed are closer to parity – indeed it looks like the private sector may even be privileged. In Sweden the pension system must compensate for some of the disadvantages of the private sector – changes of jobs, gaps in contribution history, low pay.

The picture, throughout the SHARE sample as for the self-employed is, if anything, that they do less well by the pensions system, most probably through enjoying lower protection (and lower contributions). This appears to be the case for all the countries except for Sweden and Czech Republic. Table 5 does not include information on the third category (namely homemakers), as they almost by definition have little involvement (if any) with the pension system.

Table 5. Being at the top pension income quartile odds ratios (p-weighted, age and educational status adjusted), Reference group: Pensioners from public sector, by country

	Pensioners from Private Sector			**Pensioners from Self Employment**		
country	OR	*CI 95%*		OR	*CI 95%*	
SE	1.26	*1.00*	*1.58*	0.93	*0.64*	*1.34*
DK	0.46	*0.36*	*0.59*	0.13	*0.08*	*0.24*
NL	0.51	*0.38*	*0.69*	0.23	*0.15*	*0.36*
DE	0.46	*0.37*	*0.57*	0.25	*0.15*	*0.40*
BE	0.44	*0.36*	*0.55*	0.22	*0.15*	*0.33*
LU	0.55	*0.37*	*0.80*	0.39	*0.21*	*0.76*
FR	0.63	*0.50*	*0.78*	0.19	*0.13*	*0.29*
CH	0.47	*0.32*	*0.69*	0.11	*0.06*	*0.20*
AT	0.28	*0.22*	*0.37*	0.17	*0.12*	*0.25*
IT	0.45	*0.33*	*0.61*	0.17	*0.12*	*0.25*
ES	0.38	*0.23*	*0.65*	0.12	*0.06*	*0.22*
CZ	1.04	*0.85*	*1.27*	0.71	*0.43*	*1.18*
SI	0.68	*0.50*	*0.92*	0.45	*0.25*	*0.80*
EE	0.58	*0.44*	*0.76*	0.34	*0.18*	*0.65*
IL	0.77	*0.47*	*1.26*	0.14	*0.05*	*0.35*
Total	**0.61**	***0.56***	***0.68***	**0.27**	***0.23***	***0.32***

Source: SHARE wave 5 (release 5.0.0), May 2016.

Note: Pension income is defined as the sum of income received from: i) Old age, early retirement, and survivor pensions; ii) Private and occupational pensions; iii) Disability pensions/ benefits; iv) Unemployment benefits/insurances; v) Social assistance. The estimation of the pension income distribution is restricted to the sample of the analysis (ie persons belonging to the four former employment status categories). Odds ratios present the probability that a person falls to the top (richest) 25% of the pension income distribution.

5.2. The level of the Household

We now turn to examining the household level information. We proceed to three sets of comparisons focusing on the insider/outsider as well as the male breadwinner hypotheses. Table 6 looks at household's income status and making ends meet comparing households with at least one pensioner from public sector *vis-à-vis* households with at least one pensioner from the self-employment or private employment; while Table 7 presents the corresponding information by comparing households with at least one pensioner from public sector with households with at least one female homemaker.

The outcome indicators selected are at opposite ends of the distribution: belonging to the bottom quartile of the income distribution – that is close to the poverty line; stating the household makes ends meet easily or very easily looks at the opposite, luckier part of the population.

Given that ORs are ratios of probabilities, added to the fact that belonging to the bottom 25% income of the population is bounded upwards by 25% (that would be the probability in the case of near-perfect equality), the OR is a ratio of two small percentages. As we can see the probability is always in favor of the less deprived group almost in every country. The general picture is as follows: the presence of a public pensioner is sufficient to increase the probability *not* to encounter the difficulties to make ends meet, but also to reduce the chance to be poor.

The overall picture derived from the tables below follows the same pattern as before: each reference group is better off as compared to any other group. It is only to be expected that estimates vary according to each comparison and the confidence intervals tend to be wide but the result remains the same: whenever the outcome is something negative (belonging to the bottom 25% of the income distribution) the comparison presents a significant large odds ratio

(>1) while whenever the outcome is something positive (making ends meet easily) the odds ratio is significant small (<1). In other words, this means that each group we compare to the reference group is worse off according to the estimates below. The absence of a public sector worker is sufficient for the household to make ends meet less easily while belonging more frequently at the bottom of the income distribution.

The following commentary on each separate table focusses on how the overall picture varies by country – the variability of each comparison.

Table 6. Household's income status and make ends meet-related odds ratios: The public sector effect vis-à-vis households with at least one pensioner from the self-employment or private employment

Reference group: Households with at least one member pensioner from public sector

vis-à-vis: households with pensioners from private sector and/or self-employment

	Bottom 25% Equivalent Income			**Makes ends meet easily**		
country	OR	*CI 95%*		OR	*CI 95%*	
SE	1.00	*0.77*	*1.30*	1.15	*0.87*	*1.52*
DK	1.72	*1.29*	*2.31*	0.68	*0.47*	*0.97*
NL	2.72	*1.70*	*4.36*	0.51	*0.31*	*0.85*
DE	2.37	*1.73*	*3.24*	0.63	*0.47*	*0.85*
BE	2.39	*1.72*	*3.30*	0.51	*0.38*	*0.67*
LU	1.56	*0.85*	*2.88*	0.69	*0.36*	*1.32*
FR	3.10	*2.23*	*4.32*	0.52	*0.40*	*0.69*
CH	2.63	*1.40*	*4.94*	0.70	*0.35*	*1.38*
AT	6.05	*3.25*	*11.26*	0.38	*0.24*	*0.60*
IT	2.01	*1.15*	*3.53*	0.61	*0.43*	*0.87*
ES	2.75	*0.79*	*9.55*	0.61	*0.31*	*1.22*
CZ	1.22	*0.96*	*1.54*	0.67	*0.55*	*0.82*
SI	1.94	*1.27*	*2.96*	*0.75*	*0.57*	*0.99*
EE	1.48	*1.03*	*2.13*	*0.68*	*0.51*	*0.89*
IL	0.86	*0.41*	*1.82*	0.70	*0.40*	*1.23*
Total	**2.05**	***1.76***	***2.38***	**0.59**	***0.52***	***0.67***

Source: SHARE wave 5 (release 5.0.0), May 2016.

Note: The estimation of the equivalent income distribution refers to the whole sample of persons aged 50+ in each country. Odds ratios present the probability that a household falls to the bottom (poorest) 25% of the equivalent income distribution. Make ends meet odds ratios focus on subjective well-being of the household and are based on the SHARE wave 5 question that reads as follows: "*Thinking of your household's total monthly income, would you say that your household is able to make ends meet...*", allowing respondent to select among the following categories (With great difficulty; With some difficulty; Fairly easily; Easily). Reported odds ratios present the probability of making ends meet easily or very easily. According to the households' codes as presented in Table 2**,** "*households with pensioners from private sector and/or self-employment*" includes households with codes "1"; "1.1"; "3"; "1.3" and "3.3". *"households with at least one member pensioner from public sector"* includes households with codes "2"; "1.2"; "2.2" and "2.3".

Table 6 looks at what are expected to be the 'lucky households'. The public sector is well represented in middle or higher income groups. They thus have a *smaller* chance of being in the bottom 25% and a *bigger* chance to make ends meet easily. On the contrary, households with at least one pensioner from the self-employment or private employment have a bigger chance of being in the bottom 25% (OR=2.05) and a smaller chance to make ends meet easily (OR=0.59). The variability of odds ratios, except the country specific differences, shows that the public sector group is heterogeneous: the presence of low skilled and local authority workers on the one hand and higher educated civil servants on the other. In the majority of

countries, therefore the confidence intervals are such as not to rule out that only the presence of a single public pensioner has a positive effect. We should also bear in mind that the control for educational level and the number of breadwinners has not been done in this exercise – hence the greater dispersion. One should also notice that the ORs for making ends meet are higher than for income – a possible indicator of non-income benefits, wealth and other 'privileges'.

The presence of a female homemaker (Table 7) may signal *both* that the household can afford to finance abstinence for the market (negative effect) *and* the absence of multiple income sources. It is thus not surprising that the evidence is inconclusive in some countries. The total odds ratio of 3.98 as concerns the probability of belonging to the bottom 25% of equivalent income as well as the total odds ratio of 0.30 as concerns the ease of making ends meet are quite clear as to which group is better off. Once again, the ORs have an opposite direction depending on the negative or positive outcome.

Table 7. Household's income status and make ends meet-related odds ratios: The public sector effect vis-à-vis households with at least one female homemaker

Reference group: Households with at least one member pensioner from public sector

vis-à-vis: household with at least one female homemaker

	Bottom 25% Equivalent Income			**Makes ends meet easily**		
country	OR	*CI 95%*		OR	*CI 95%*	
SE	n.a.			n.a.		
DK	n.a.			n.a.		
NL	4.21	*2.43*	*7.30*	0.74	*0.42*	*1.32*
DE	4.88	*3.05*	*7.82*	0.62	*0.39*	*0.98*
BE	5.89	*4.09*	*8.48*	0.60	*0.42*	*0.85*
LU	2.70	*1.46*	*5.01*	0.81	*0.40*	*1.64*
FR	8.82	*5.42*	*14.35*	0.47	*0.31*	*0.72*
CH	3.23	*1.58*	*6.60*	1.51	*0.68*	*3.38*
AT	11.52	*5.98*	*22.17*	0.27	*0.16*	*0.45*
IT	6.77	*3.83*	*11.96*	0.25	*0.17*	*0.36*
ES	8.25	*2.27*	*29.94*	0.27	*0.14*	*0.52*
CZ	n.a.			n.a.		
SI	8.30	*4.58*	*15.04*	0.37	*0.22*	*0.62*
EE	n.a.			n.a.		
IL	5.59	*2.62*	*11.94*	0.31	*0.16*	*0.58*
Total	**3.98**	*3.36*	*4.71*	**0.30**	***0.26***	***0.35***

Source: SHARE wave 5 (release 5.0.0), May 2016.

Note: According to the households' codes as presented in Table 2, "*household with at least one female homemaker*" includes households with codes "4"; "1.4"; "3.4" & "4.4". *"Households with at least one member pensioner from public sector"* includes households with codes "2"; "1.2"; "2.2" & "2.3".

When the comparison is limited between groups with two incomes, the presence of a public sector worker improves the situation relative to other comparisons. It is important to notice that public pensioner households are not in the bottom 25% and can make ends meet much more easily. Furthermore, dual pensioner households with a public presence fare much better than all the other dual pensioner households virtually everywhere (Table 8). Homemaker households are worse off in most of the countries, though less so in the Nordic countries, and in cases dramatically so (Table 9). Steady incomes, for example, make borrowing for home ownership easier.

The presence of two incomes in a household has an important effect in making ends meet easily, even taking account the income effect (being able *to afford* not to work). This advantage is more marked in the countries where dual income households are more common

(North and Centre) and less so in the South and East. We must remember that male breadwinner households were the norm in Europe a generation ago – reflected to a larger extent among the countries where change has been less rapid.

Table 8. Household's income status and make ends meet-related odds ratios: The dual pensioner effect (households with at least two pensioners of whom one from the public sector), compared with other dual pensioner households

Reference group: Households with at least 2 pensioners, one from public sector *vis-à-vis: household with at least two pensioners, none from public sector*						
	Bottom 25% Equivalent Income			**Makes ends meet easily**		
country	OR	*CI 95%*		OR	*CI 95%*	
SE	1.63	*0.98*	*2.70*	1.43	*0.83*	*2.44*
DK	2.18	*1.26*	*3.77*	0.48	*0.26*	*0.89*
NL	3.52	*1.51*	*8.19*	0.42	*0.18*	*0.99*
DE	2.06	*1.26*	*3.38*	0.57	*0.36*	*0.89*
BE	2.62	*1.27*	*5.41*	0.32	*0.16*	*0.62*
LU	1.11	*0.27*	*4.48*	1.01	*0.24*	*4.17*
FR	3.28	*1.60*	*6.71*	0.52	*0.31*	*0.87*
CH	3.99	*0.86*	*18.55*	0.83	*0.26*	*2.64*
AT	3.78	*1.24*	*11.52*	0.68	*0.35*	*1.33*
IT	4.49	*1.81*	*11.18*	0.47	*0.28*	*0.80*
ES	n.a.			1.56	*0.55*	*4.41*
CZ	1.35	*0.90*	*2.02*	0.53	*0.39*	*0.73*
SI	1.88	*1.03*	*3.41*	0.54	*0.33*	*0.87*
EE	0.81	*0.40*	*1.66*	0.82	*0.55*	*1.22*
IL	0.70	*0.20*	*2.48*	0.74	*0.21*	*2.59*
Total	**2.19**	***1.69***	***2.84***	**0.53**	***0.43***	***0.65***

Source: SHARE wave 5 (release 5.0.0), May 2016.

Note: **"**household with at least 2 pensioners, none from public sector**"** includes "1.1"; "1.3" & "3.3" codes. "Households with at least two pensioners, one from public sector**"** includes "1.2"; "2.2 & "2.3".

Table 9. Household's income status and make ends meet-related odds ratios: The cost of the male breadwinner model (households with at least two pensioners compared to household with one male pensioner and one homemaker)

Reference group: Households with at least two pensioners *vis-à-vis: household with one male pensioner and one homemaker*						
	Bottom 25% Equivalent Income			**Makes ends meet easily**		
country	OR	*CI 95%*		OR	*CI 95%*	
SE	n.a.			n.a.		
DK	n.a.			n.a.		
NL	1.32	*0.85*	*2.07*	1.16	*0.67*	*2.00*
DE	2.23	*1.39*	*3.59*	0.64	*0.39*	*1.05*
BE	4.74	*3.25*	*6.92*	0.56	*0.37*	*0.83*
LU	3.03	*1.50*	*6.13*	1.02	*0.43*	*2.43*
FR	5.15	*2.95*	*8.98*	0.77	*0.44*	*1.35*
CH	1.57	*0.90*	*2.76*	1.46	*0.53*	*4.01*
AT	5.12	*3.35*	*7.83*	0.52	*0.32*	*0.83*
IT	3.01	*2.12*	*4.26*	0.35	*0.26*	*0.48*
ES	6.82	*3.64*	*12.77*	0.39	*0.27*	*0.58*
CZ	n.a.			n.a.		
SI	7.27	*3.65*	*14.48*	0.26	*0.13*	*0.51*
EE	n.a.			n.a.		
IL	2.92	*1.28*	*6.63*	0.27	*0.12*	*0.59*
Total	**2.69**	***2.30***	***3.14***	**0.38**	***0.33***	***0.44***

Source: SHARE wave 5 (release 5.0.0), May 2016.

Note: **"***household with one male pensioner and one homemaker***"** includes households with codes "1.4"; "2.4" and "3.4". *"Households with at least two pensioners"* includes households with codes "1.1"; "1.2"; "2.2"; "1.3"; "2.3" and "3.3".

6. Conclusions

It appears that the dominance of the public sector that characterized the first decades after the Second World War has left a legacy in the form of a more comfortable old age Europe. This is translated into retirees who are healthier, richer and happier than their counterparts in the private sector. This could be an echo of better conditions and more generous benefits during working lives. It is significant though that the filter of pension systems and health care systems ostensibly organized around need do not correct fully the preexisting inequality. As a result in the current European older population the public sector as an employer is still an important feature for overall well-being.

Women homemakers are subject to a different kind of legacy. Their problematic involvement with the labor market translates to a permanent disadvantage at older ages, visible both in individual outcomes but also in their families.

7. Acknowledgement

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FINANCIAL INDICATORS AFFECTING STOCK PERFORMANCE THE CASE OF CAPITAL PRODUCT PARTNERS

Antonis PANTAZIS
M.Sc. University of Piraeus
Padazis_adonis@hotmail.com

Theodoros PELAGIDIS
Professor, University of Piraeus & NR Senior Fellow, Brookings Institution, US. 21, Lambraki Ave., GR-18533
pelagidi@unipi.gr.

Abstract
We analyze the importance of certain financial indicators that provide important information for both potential investors and the management of a company. We reach to a conclusion regarding the effect, negative or positive, of selected financial indices particularly on a public listed shipping company's stock return. We consider these indices critical for a shipping company in its efforts both to achieve high stock returns and become "attractive" for future investors.
Keywords: Economics, General Financial Markets, Financial Securities
JEL classification: R4, R42, G1

1. Introduction

In an effort to deal with the question regarding the factors affecting the performance of a shipping company, financial performance plays a critical role. The aim of this paper is to analyze some key financial indicators affecting the performance of a public-listed, leading shipping company, paying attention to the information provided in particular on its liquidity, capital structure and return on equity.

In this regard, we have taken CAPITAL PRODUCT PARTNERS as a case study (CPR), looking at how its stock performance interacts with eight (8) key financial ratios, comparing, at the same time, its performance with the NASDAQ INDEX in which our selected shipping company is listed. We consider CPR as a representative company as it is well diversified operating in all three (3) markets, dry cargo, liquid cargo and containerships. In order to proceed to our empirical research, we calculate the following eight (8) key financial ratios: ROA, ROE, ROS, FIXED ASSET RATIO, TIE, DEBT EQUITY RATIO, SOLVENCY RATIO, and CURRENT RATIO, taken from the published financial statements of CPP. We also take the NASDAQ INDEX return for commercial transportation on a quarterly basis for the period 2008 – 2015 and then we examine if and how they interact each other.

In the end, we come up with an overview that contains additional information for stock analysts, investors as well as for the management of the company itself, so that more secure conclusions can be reached as to which factors one should focus on shaping an effective strategy and achieving performance goals.

2. Financial indices analysis

We use financial indices to analyze both historical as well as financial accounting data (current situation). It should be stressed that an index implies a strict proportionality between the numerator and the denominator, which is expressed by the index value. The main advantage of the indicators, apart from their ease of calculation, is that they allow comparisons regardless of the size of individual businesses, so they can be used to analyze cross-sectional and longitudinal data.

This makes them extremely useful for a number of applications, the main ones being:

- Assessing the viability of a unit
- Assessing the effectiveness of an investment plan (or, more generally, an action plan).
- Provision for bankruptcy

• Valuing the value of a business.

Following our survey from the quarterly published financial statements of the company, we have calculated eight (8) financial indices for the period 2008-2015 on a quarterly basis. Before proceeding with the conclusions of our data processing, we present below a brief analysis of these ratios.

YEAR	QUARTER	ROE	ROA	ROS	Fixed Assets Efficiency Ratio	Current Ratio	Solvency	TIE	Debt Equity Ratio
2008	1st	0,0522	0,0163	0,3509	0,0171	24,5894	0,0380	0,1572	2,1928
	2nd	0,0636	0,0196	0,3931	0,0207	16,8647	0,0415	0,5144	2,1621
	3rd	0,0787	0,0226	0,4343	0,0241	25,2171	0,0448	0,4511	2,3835
	4th	0,0828	0,0204	0,3937	0,0222	10,2502	0,0399	0,8974	2,7530
2009	1st	0,0624	0,0130	0,2914	0,0139	2,9754	0,0292	0,2188	3,3597
	2nd	0,0494	0,0117	0,2594	0,0124	2,4241	0,0286	0,0738	2,8887
	3rd	0,0451	0,0104	0,2339	0,0111	3,2911	0,0268	0,0698	2,9942
	4th	0,0336	0,0077	0,1794	0,0083	3,1724	0,0234	0,0256	3,0166
2010	1st	0,0346	0,0094	0,2260	0,0102	5,2926	0,0270	0,1489	2,4238
	2nd	0,0267	0,0071	0,1742	0,0075	1,9987	0,0244	0,2859	2,4602
	3rd	0,0150	0,0047	0,1344	0,0050	3,4721	0,0220	0,4703	1,9748
	4th	0,0100	0,0032	0,0961	0,0034	3,8299	0,0203	0,2767	1,9770
2011	1st	0,0100	0,0032	0,1117	0,0034	3,9735	0,0204	0,3238	1,9866
	2nd	0,0492	0,0179	0,6737	0,0204	3,1016	0,0433	0,2887	1,6222
	3rd	0,1300	0,0560	3,0066	0,0631	1,2156	0,1106	1,2964	1,1840
	4th	0,0020	0,0009	0,0327	0,0010	1,6588	0,0196	0,3794	1,2247
2012	1st	0,0063	0,0027	0,1206	0,0031	0,9857	0,0232	0,5159	1,2240
	2nd	0,0053	0,0030	0,1675	0,0033	1,4928	0,0310	0,1881	0,7251
	3rd	0,0115	0,0064	0,3746	0,0071	1,5041	0,0388	0,2187	0,7388
	4th	-0,0610	-0,0327	-1,6711	-0,0365	1,3834	-0,0464	0,6090	0,7988
2013	1st	0,0383	0,0208	0,9435	0,0237	1,1948	0,0672	1,2202	0,7844
	2nd	0,0585	0,0322	1,4448	0,0377	1,9341	0,0948	0,7960	0,7600
	3rd	0,0413	0,0233	1,1412	0,0279	2,0576	0,0752	0,9212	0,7268
	4th	0,0025	0,0014	0,0581	0,0017	1,8941	0,0262	0,9365	0,7465
2014	1st	0,0146	0,0081	0,3654	0,0097	2,1590	0,0417	0,7349	0,7581
	2nd	0,0104	0,0057	0,2563	0,0068	2,0565	0,0360	0,4747	0,7737
	3rd	0,0127	0,0084	0,3865	0,0094	3,7816	0,0444	0,4277	0,6533
	4th	0,0157	0,0092	0,4640	0,0115	3,7771	0,0452	0,5320	0,6623
2015	1st	-0,0042	-0,0024	-0,1202	-0,0030	2,3633	0,0170	0,3784	0,6924
	2nd	0,0145	0,0091	0,3791	0,0011	2,4120	0,0504	0,4572	0,5469
	3rd	0,0145	0,0087	0,3103	0,0102	1,6587	0,0482	0,5711	0,6004
	4th	0,0164	0,0098	0,3426	0,0115	1,6028	0,0521	0,4912	0,6095

• Return on Equity (ROE)

This index reflects the profitability of a business and provides an indication as to whether the objective of achieving a satisfactory result from the use of shareholder funds has been achieved. In other words, it measures the efficiency with which the funds of the company's shareholders are employed in it. It is the main indicator that a company's management, in case of a positive result, tends to show in the most prominent way in the annual report. The indicator comes from dividing net profit for the period with total equity.

• Return on Assets (ROA)

This index measures the performance of an enterprise's total assets and allows an assessment of the effectiveness of its operations. The index shows the ability of the enterprise to survive and to attract funds for investment, “rewarding” them accordingly. We take this index by dividing all net profits into total assets.

• Return on Sales (ROS)

This index (ROS = Net Income / Total Revenues) is the net profit per unit of sales. This indicator is used for a simplified estimation of future profits, based on predicted sales, provided of course that it has a durable stability. In fact, ROS incorporates the result of a number of changes in the company's financial figures, so its values may be highly volatile. A

steady increase in ROS means that the company grows more efficiently, and if it diminishes over time, it points to emerging economic problems.

• Fixed Assets Efficiency Ratio

The Fixed Asset Efficiency Index calculates the ability of a company to use its fixed assets (ships) to generate revenue.

Fixed Assets Efficiency Ratio = Net income/Fixed assets

• Current Ratio Index

This index shows the liquidity measure of an enterprise and the margins of security so that it is able to meet the payment of the daily necessary obligations. The more predictable a company's money inflows, lower price of this index are generally accepted, although this is mainly in line with the sector in which the firm belongs. The General Liquidity index is found by dividing current assets by short-term liabilities. This ratio must be greater than the unit, which means that the working capital is positive and that the total of current assets and cash is higher than the short-term liabilities.

General Liquidity Indicator = Current Assets / Current Liabilities

• Solvency

$$\text{Solvency Ratio} = \frac{\text{Net Income (or After-Tax Profit)} + \text{Depreciation}}{\text{Short-Term Liabilities} + \text{Long-term Liabilities}}$$

The Solvency index indicates the company's ability to meet its obligations or more simply stated how many times the company can cover its costs. Ideal index values vary per business sector.

• Times Interest Earned (TIE)

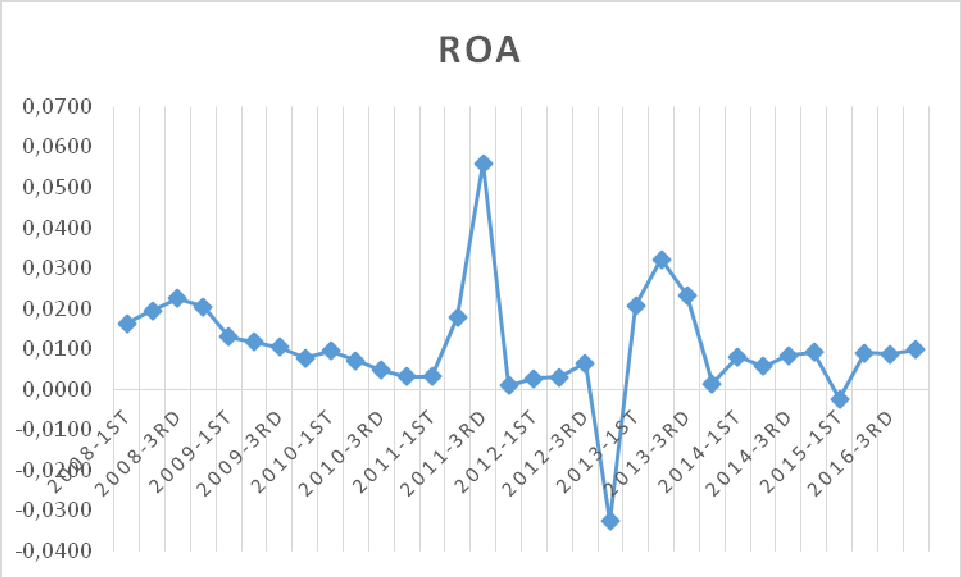
TIE is an index that shows how many times a company receives interest expenses by showing alternatively how many times a company's borrowing can be increased and the business unit to be able to repay it. This index is calculated by dividing EBIT by interest expenses.

• Debt to Equity (DTE)

This index measures the structure of the enterprise's funds and its borrowing burden, by showing the amount of assets funded by creditors in relation to the funds provided by its shareholders. The larger this index is, the more the company relies on financing its assets in foreign capital and less on its own. Prices above the unit mean that the contribution of the enterprise's shareholders is greater than the creditors' contribution. This index also shows how much the equity-capital is able to cover a unit of creditors' capital.

This indicator is used by the lenders of the firm to assess the degree of collateral that is being provided by equity capital but it is also used by the firm's management and its shareholders to assess the capital leverage level. This index is calculated by dividing the total liabilities by total equity capital.

We present below some useful conclusions resulting from the processing of our data for stock analysts, investors, management of the company, providing, at the same time, the corresponding diagrams as well.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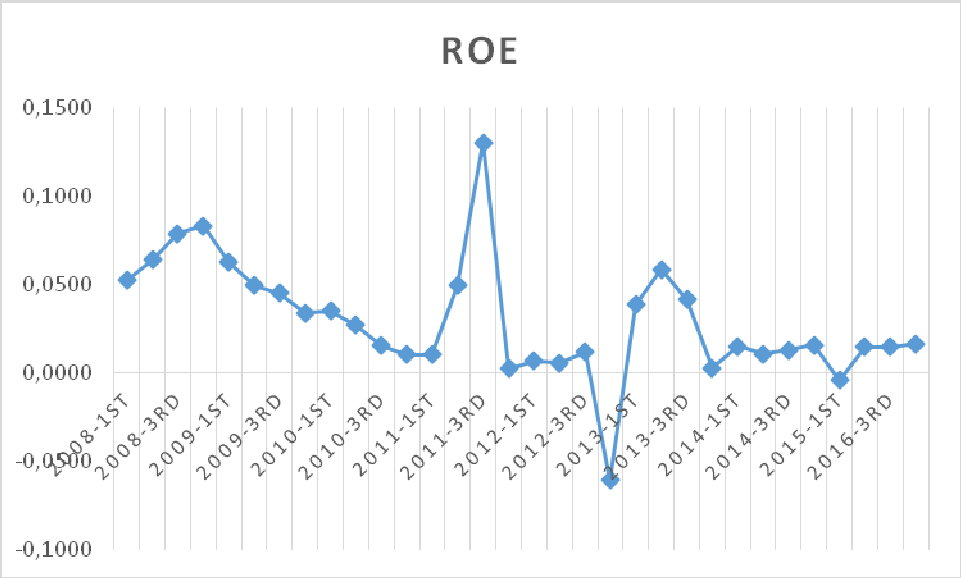
2016-3RD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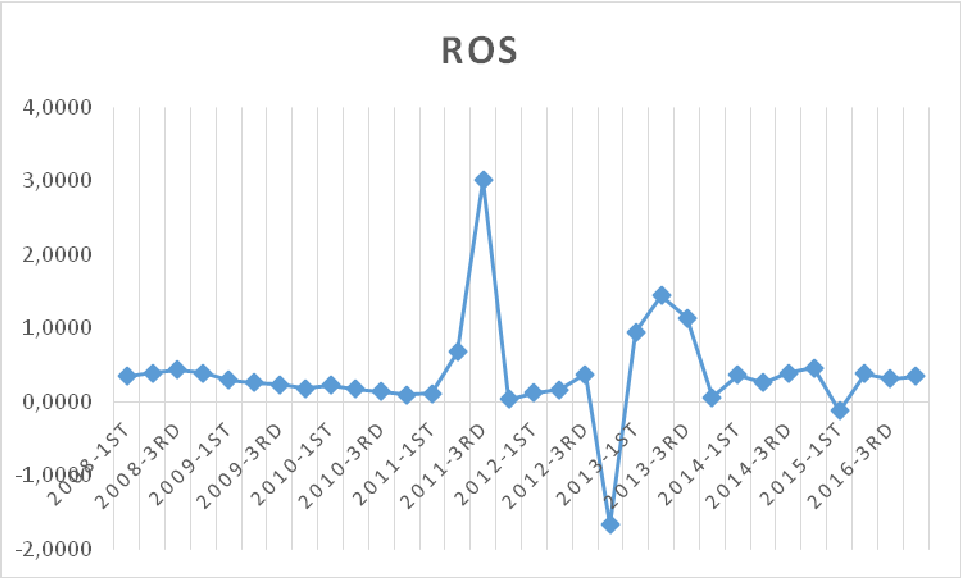
2015-1ST
2016-3RD


ROS
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0,0000
-1,0000
-2,0000
2008-1ST
2008-3RD
2009-1ST
2009-3RD
2010-1ST
2010-3RD
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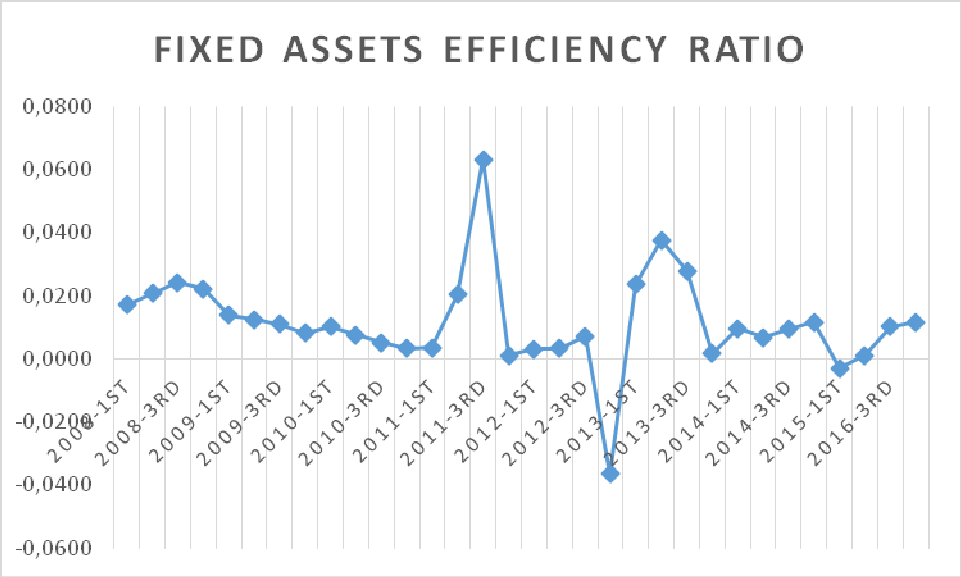
2013-1ST
2013-3RD
2014-1ST
2014-3RD
2015-1ST
2016-3RD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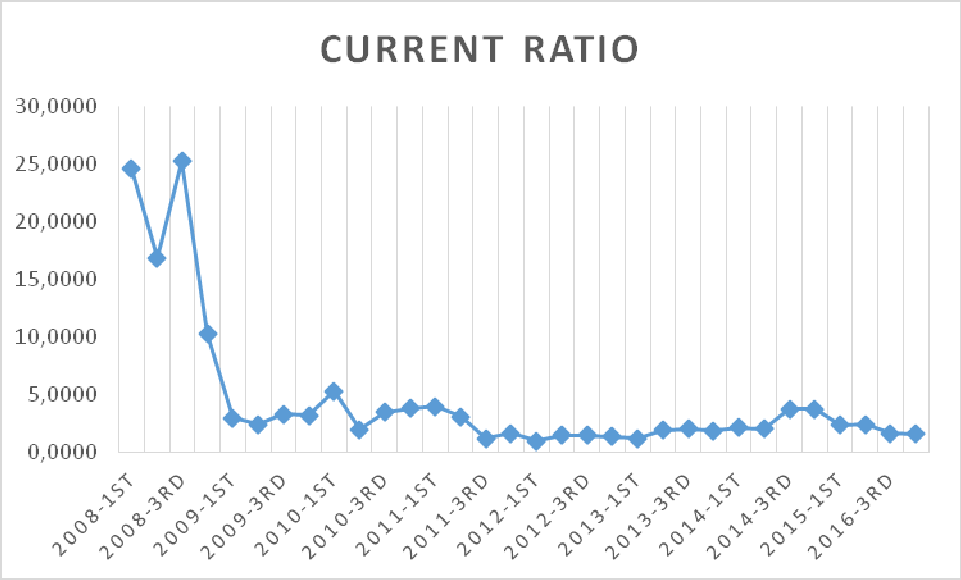
0,0400
0,0200
0,0000
-0,0200
-0,0400
-0,0600
2008-1ST
2008-3RD
2009-1ST
2009-3RD
2010-1ST
2010-3RD
2011-1ST
2011-3RD
2012-1ST
2012-3RD
2013-1ST
2013-3RD
2014-1ST
2014-3RD
2015-1ST
2016-3RD


CURRENT RATIO
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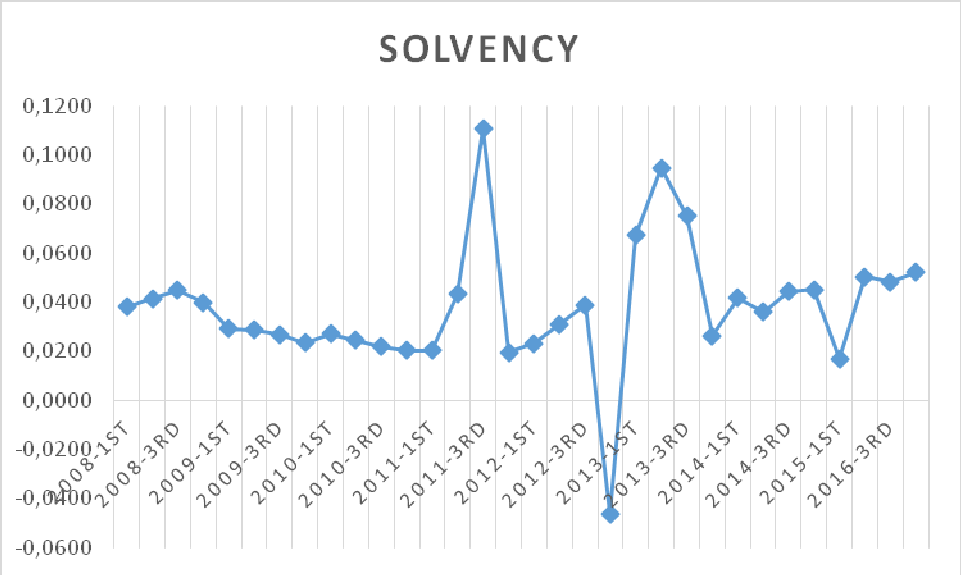
20,0000
15,0000
10,0000
5,0000
0,0000
2008-1ST
2008-3RD
2009-1ST
2009-3RD
2010-1ST
2010-3RD
2011-1ST
2011-3RD
2012-1ST
2012-3RD
2013-1ST
2013-3RD
2014-1ST
2014-3RD
2015-1ST
2016-3RD


SOLVENCY
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0,0600
0,0400
0,0200
0,0000
-0,0200
-0,0400
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2008-1ST
2008-3RD
2009-1ST
2009-3RD
2010-1ST
2010-3RD
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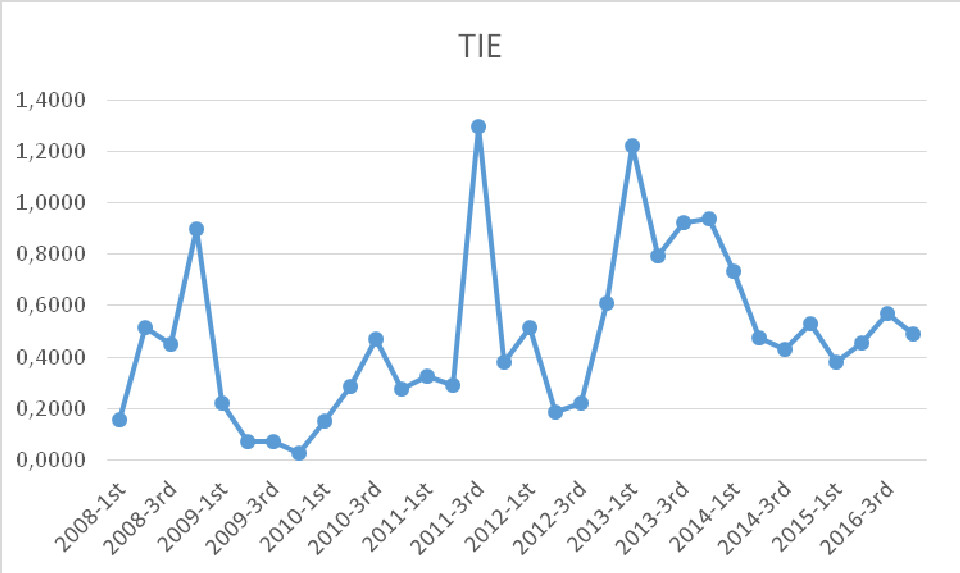
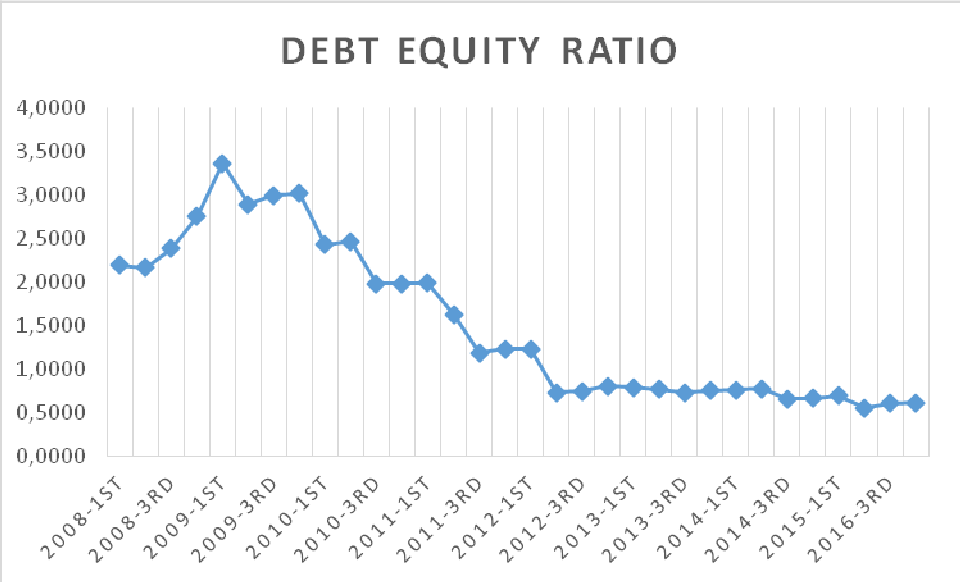
2015-1ST
2016-3RD





From the data processing of these indices, we have noticed that, given the great drop in the freight market during 2008-2015, Capital Product Partners L.P. indices for the period 2008-2015 are positive, and only from the third quarter of 2012 to the third quarter of 2013 some indices appear negative (ROE, ROA, ROS, FIXED ASSET, and SOLVENCY). This suggests that the capital structure of the company combined with its operational function gives the company the advantage of coping with long-term negative market changes.

More specifically, we observe that:

1. ROE, ROS, ROA after the third quarter of 2013 remain positive with some price fluctuations, which is reasonable given that in the period 2013-2015 the BDI index has hit historically low.

2. FIXED ASSETS EFFICIENCY RATIO is also positive. It should be emphasized that especially for the period 2013-2015 it is particularly important, since during this period many companies had their vessels laid up, which proves that although the low freight market the company exploits its fleet positively, which is also the main revenue producer.

3. CURRENT RATIO remains positive for the entire period 2008-2015, which is very important for company's liquidity as it proves that it can meet its daily basic debt obligations.

4. SOLVENCY RATIO, the ideal prices of which vary as per industry, with the exception of the period from the third quarter of 2012 to the third quarter of 2013, show positive fluctuations.

5. TIE for the period 2018-2015 also shows positive fluctuations, which is positive because the company can increase its borrowing in order to finance new investment programs.

6. DEPT EQUITY RATIO from 2009 to 2012 is declining and from 2012 to 2015 shows stability, so we have reached to the conclusion that the company has reduced its borrowing and this fact is positive for future investors as in the period of the financial crisis, was in line with its debt obligations. In particular, it is obvious that the pressures exerted during this period of the international financial crisis, the beginning of which has been placed during the time of the collapse of LEHMAN BROTHERS, which had and continues to have negative impact on the maritime sector. This has led to an unprecedented crisis in both developed and developing economies, resulting in a sharp decline in world trade. The effect of this was also the reduction of demand for shipping commercial transport which coupled with oversupply tonnage, resulted in large fluctuations in the freight market, and thus to a decline of the revenues for shipping companies. The consequence was that many public listed shipping companies were quoted as being subject to oversight, delisting or even bankruptcy. From the above, it becomes clear that the financial indices of a public listed shipping company incorporate and reflect all the above mentioned developments that ultimately affect its stock performance.

The decoding of the financial indicators is a useful instrument, not only for future investors who seek to invest in such a company. It isalso useful for the management of every company willing to benefit through both monitoring the progress of these indicators and taking the necessary feedback to make - if necessary – effective adjustments to its strategic planning.

To sum up, we see how important is to examine and study the performance of financial ratios that affect the performance of each public-listed shipping company, especially for the sector of shipping commercial transport that is strongly affected by external factors such as (Stopford 2009):

- Political decisions leading to social / political / economic turmoil (e.g. Middle East war, Venezuelan crisis, embargo on Russia).
- Government decision to increase / decrease stockpiles of raw materials (see China), which have a direct impact on the freight market.
- Export of US oil.

The sustainability and profitability of a public listed shipping company are shown through the performance of financial indicators presented above. The analysis and the results are of critical importance for the management of a company so its leaders can take all necessary measures for improving the performance of the company.

3. DATA ANALYSIS – METHODOLOGY

YEAR	QUARTER	ROE	ROA	ROS	Fixed Assets Efficiency Ratio	Current Ratio	Solvency	TIE	Debt Equity Ratio	NASDAQ RETURN QUARTELY AVERAGE	STOCK RETURN QUARTELY AVERAGE
2008	1st	0,0522	0,0163	0,3509	0,0171	24,5894	0,0380	0,1572	2,1928	-0,0004	0,0027
	2nd	0,0636	0,0196	0,3931	0,0207	16,8647	0,0415	0,5144	2,1621	0,0016	-0,0013
	3rd	0,0787	0,0226	0,4343	0,0241	25,2171	0,0448	0,4511	2,3835	0,0020	0,0089
	4th	0,0828	0,0204	0,3937	0,0222	10,2502	0,0399	0,8974	2,7530	0,0014	0,0030
2009	1st	0,0624	0,0130	0,2914	0,0139	2,9754	0,0292	0,2188	3,3597	0,0041	0,0024
	2nd	0,0494	0,0117	0,2594	0,0124	2,4241	0,0286	0,0738	2,8887	-0,0024	-0,0059
	3rd	0,0451	0,0104	0,2339	0,0111	3,2911	0,0268	0,0698	2,9942	-0,0010	-0,0003
	4th	0,0336	0,0077	0,1794	0,0083	3,1724	0,0234	0,0256	3,0166	-0,0009	-0,0009
2010	1st	0,0346	0,0094	0,2260	0,0102	5,2926	0,0270	0,1489	2,4238	-0,0009	0,0006
	2nd	0,0267	0,0071	0,1742	0,0075	1,9987	0,0244	0,2859	2,4602	0,0012	0,0007
	3rd	0,0150	0,0047	0,1344	0,0050	3,4721	0,0220	0,4703	1,9748	-0,0023	-0,0010
	4th	0,0100	0,0032	0,0961	0,0034	3,8299	0,0203	0,2767	1,9770	-0,0022	-0,0026
2011	1st	0,0100	0,0032	0,1117	0,0034	3,9735	0,0204	0,3238	1,9866	0,0005	-0,0021
	2nd	0,0492	0,0179	0,6737	0,0204	3,1016	0,0433	0,2887	1,6222	-0,0003	0,0023
	3rd	0,1300	0,0560	3,0066	0,0631	1,2156	0,1106	1,2964	1,1840	0,0046	0,0053
	4th	0,0020	0,0009	0,0327	0,0010	1,6588	0,0196	0,3794	1,2247	-0,0021	-0,0009
2012	1st	0,0063	0,0027	0,1206	0,0031	0,9857	0,0232	0,5159	1,2240	-0,0018	-0,0046
	2nd	0,0053	0,0030	0,1675	0,0033	1,4928	0,0310	0,1881	0,7251	0,0014	0,0007
	3rd	0,0115	0,0064	0,3746	0,0071	1,5041	0,0388	0,2187	0,7388	0,0009	-0,0013
	4th	-0,0610	-0,0327	-1,6711	-0,0365	1,3834	-0,0464	0,6090	0,7988	-0,0015	0,0024
2013	1st	0,0383	0,0208	0,9435	0,0237	1,1948	0,0672	1,2202	0,7844	-0,0010	-0,0041
	2nd	0,0585	0,0322	1,4448	0,0377	1,9341	0,0948	0,7960	0,7600	-0,0011	-0,0023
	3rd	0,0413	0,0233	1,1412	0,0279	2,0576	0,0752	0,9212	0,7268	-0,0009	0,0005
	4th	0,0025	0,0014	0,0581	0,0017	1,8941	0,0262	0,9365	0,7465	-0,0007	-0,0025
2014	1st	0,0146	0,0081	0,3654	0,0097	2,1590	0,0417	0,7349	0,7581	-0,0011	-0,0017
	2nd	0,0104	0,0057	0,2563	0,0068	2,0565	0,0360	0,4747	0,7737	-0,0015	-0,0006
	3rd	0,0127	0,0084	0,3865	0,0094	3,7816	0,0444	0,4277	0,6533	0,0015	0,0019
	4th	0,0157	0,0092	0,4640	0,0115	3,7771	0,0452	0,5320	0,6623	-0,0036	0,0030
2015	1st	-0,0042	-0,0024	-0,1202	-0,0030	2,3633	0,0170	0,3784	0,6924	0,0004	-0,0034
	2nd	0,0145	0,0091	0,3791	0,0011	2,4120	0,0504	0,4572	0,5469	0,0017	0,0027
	3rd	0,0145	0,0087	0,3103	0,0102	1,6587	0,0482	0,5711	0,6004	0,0003	0,0028
	4th	0,0164	0,0098	0,3426	0,0115	1,6028	0,0521	0,4912	0,6095	0,0002	0,0017

YEAR	1st QUARTER NASDAQ AVERAGE	2nd QUARTER NASDAQ AVERAGE	3rd QUARTER NASDAQ AVERAGE	4th QUARTER NASDAQ AVERAGE
2008	-0,0004	0,0016	0,0020	0,0014
2009	0,0041	-0,0024	-0,0010	-0,0009
2010	-0,0009	0,0012	-0,0023	-0,0022
2011	0,0005	-0,0003	0,0046	-0,0021
2012	-0,0018	0,0014	0,0009	-0,0015
2013	-0,0010	-0,0011	-0,0009	-0,0007
2014	-0,0011	-0,0015	0,0015	-0,0036
2015	**0,0004**	**0,0017**	**0,0003**	**0,0002**

Dependent Variable: STOCK_RETURN_QUARTELY_AV
Method: Least Squares
Date: 05/06/17 Time: 12:11
Sample (adjusted): 2008Q1 2015Q2
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002250	0.005597	-0.402041	0.6919
CURRENT_RATIO	0.000343	0.000176	1.948019	0.0656
DEBT_EQUITY_RATIO	-0.001352	0.001730	-0.781465	0.4437
ROA	-1.245462	1.002908	-1.241851	0.2287
FIXED_ASSETS_EFFICIENCY_	-0.091000	0.307131	-0.296291	0.7701
NASDAQ_RETURN_QUARTELY_A	0.298426	0.371026	0.804326	0.4307
ROE	0.281258	0.159819	1.759857	0.0937
ROS	0.010673	0.007684	1.388984	0.1801
SOLVENCY	0.128441	0.170800	0.751994	0.4608
TIE	-0.000307	0.002326	-0.131804	0.8965

R-squared	0.521700	Mean dependent var	4.51E-05
Adjusted R-squared	0.306465	S.D. dependent var	0.003094
S.E. of regression	0.002576	Akaike info criterion	-8.823732
Sum squared resid	0.000133	Schwarz criterion	-8.356666
Log likelihood	142.3560	Hannan-Quinn criter.	-8.674314
F-statistic	2.423862	Durbin-Watson stat	2.411654
Prob(F-statistic)	0.047588		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.200327	Prob. F(9,20)	0.3476
Obs*R-squared	10.52134	Prob. Chi-Square(9)	0.3099
Scaled explained SS	3.213293	Prob. Chi-Square(9)	0.9552

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 05/06/17 Time: 13:00
Sample: 2008Q1 2015Q2
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.96E-05	1.11E-05	2.662498	0.0150
CURRENT_RATIO	-4.72E-07	3.49E-07	-1.350657	0.1919
DEBT_EQUITY_RATIO	-9.48E-06	3.44E-06	-2.756072	0.0122
FIXED_ASSETS_EFFICIENCY_	-3.48E-05	0.000610	-0.057013	0.9551
NASDAQ_RETURN_QUARTELY_A	-0.000972	0.000737	-1.318035	0.2024
ROA	0.002022	0.001993	1.014714	0.3224
ROE	7.03E-05	0.000318	0.221346	0.8271
ROS	-2.11E-05	1.53E-05	-1.383942	0.1816
SOLVENCY	-0.000531	0.000339	-1.563264	0.1337
TIE	-8.29E-06	4.62E-06	-1.793586	0.0880

R-squared	0.350711	Mean dependent var	4.42E-06
Adjusted R-squared	0.058531	S.D. dependent var	5.28E-06
S.E. of regression	5.12E-06	Akaike info criterion	-21.26592
Sum squared resid	5.24E-10	Schwarz criterion	-20.79885
Log likelihood	328.9888	Hannan-Quinn criter.	-21.11650
F-statistic	1.200327	Durbin-Watson stat	2.168246
Prob(F-statistic)	0.347618		

CORRELATION MATRIX

	C	CURRENT...	DEBT_EQUI...	ROA	FIXED_ASS...	NASDAQ_R...	ROE	ROS	SOLVENCY	TIE
C	3.13E-05	-6.81E-07	-7.60E-06	0.004059	-6.08E-05	0.000188	-0.000421	-2.84E-05	-0.000855	-7.15E-06
CURRENT...	-6.81E-07	3.09E-08	1.64E-07	-0.000120	2.20E-06	-8.46E-06	1.16E-05	1.11E-06	1.87E-05	1.34E-07
DEBT_EQUI...	-7.60E-06	1.64E-07	2.99E-06	-0.000543	1.06E-05	0.000132	-2.82E-05	5.63E-06	0.000145	2.51E-06
ROA	0.004059	-0.000120	-0.000543	1.005824	-0.114839	0.070569	-0.132376	-0.006220	-0.149737	-0.000257
FIXED_ASS...	-6.08E-05	2.20E-06	1.06E-05	-0.114839	0.094329	0.039979	0.000783	-0.000163	0.007115	-0.000112
NASDAQ_R...	0.000188	-8.46E-06	0.000132	0.070569	0.039979	0.137660	-0.028695	-0.000886	-0.009815	3.75E-05
ROE	-0.000421	1.16E-05	-2.82E-05	-0.132376	0.000783	-0.028695	0.025542	0.000835	0.019728	-2.40E-05
ROS	-2.84E-05	1.11E-06	5.63E-06	-0.006220	-0.000163	-0.000886	0.000835	5.90E-05	0.000886	4.15E-06
SOLVENCY	-0.000855	1.87E-05	0.000145	-0.149737	0.007115	-0.009815	0.019728	0.000886	0.029173	8.66E-05
TIE	-7.15E-06	1.34E-07	2.51E-06	-0.000257	-0.000112	3.75E-05	-2.40E-05	4.15E-06	8.66E-05	5.41E-06

Using the E-views and the least mean squares method, we have examined how eight (8) financial indices and the return of the NASDAQ INDEX for commercial transports affect CAPITAL PRODUCT PARTNERS's stock performance. These indices have been calculated on a quarterly basis from the Company's published financial statements, additionally the stock return and NASDAQ INDEX return for commercial transports are their logarithmic quarterly values. We define stock performance as dependent variable and as independent variables the eight (8) financial indices and the return of the NASDAQ INDEX for commercial transports, where the following occurs:

EQUATION:

STOCK_RETURN_QUARTELY_AV = C(1) + C(2)*CURRENT_RATIO + C(3)*DEBT_EQUITY_RATIO + C(4)*ROA + C(5)*FIXED_ASSETS_EFFICIENCY_ + C(6)*NASDAQ_RETURN_QUARTELY_A + C(7)*ROE + C(8)*ROS + C(9)*SOLVENCY + C(10)*TIE

STOCK_RETURN_QUARTELY_AV = -0.00225040047433 + 0.00034260892561*CURRENT_RATIO - 0.00135230074861*DEBT_EQUITY_RATIO - 1.24546159241*ROA - 0.0910002693187*FIXED_ASSETS_EFFICIENCY_ + 0.298425650562*NASDAQ_RETURN_QUARTELY_A + 0.281258179302*ROE + 0.0106734331174*ROS + 0.128440824123*SOLVENCY - 0.000306591008469*TIE

From the data processing of the above we have reached to the conclusion that our equation based on the fact that Adjusted R squared is equal to 0.306, interprets 30.00% of the company's share yield, which is particularly high as 70,00% that remains unmodified confirms that stock returns are affected by a multitude of variables according to the relevant literature (Grammenos and Arcoulis 2002, Grammenos and Marcoulis 1996, Bhandari 1988).

In addition, we can see that based on the equation that emerges from our sample and in combination with the Beta coefficients of the independent variables, it is confirmed that the performance of the firm's stock has a more pronounced impact from the most important financial indices, based on the relevant literature. These indices are:

1) ROA (highest negative correlation b = -1.245),
2) ROE (positive correlation b = + 0.281),
3) SOLVENCY RATIO (positive correlation b = + 0.128)
4) Additionally the performance of the NASDAQ index to which the company is listed has a positive impact on stock's performance (positive correlation b = + 0.298).

On the contrary FIXED ASSET RATIO (b = -0.091) does not affect the performance of the stock, although it shows how efficiently the company uses its assets, where in the case of shipping sector is quite important because the firm's vessels are the main generator of its

revenue. Of course, this can be attributed to the fact that due to the international financial crisis, the international freight market as well presents a great volatility in freight rates, which does not lead to the optimal usage of vessels by the firms of the shipping sector.

Finally, we have noticed that CURRENT RATIO (b = + 0.0003), TIE (b = b = -0.0003) and DEBT EQYITY RATIO (b = -0.001), ROS (b = + 0.010) have a quite low impact on the performance of firm's stock. Probably, due to the international financial and maritime crisis, these indices which are related with factors such as liquidity and the structure of equity capital, debt capital are moving towards these insignificant levels of impact due to the loan restructuring that has been effected by healthy and non-healthy firms of the shipping sector. This confirms that investors are focusing on key financial indicators.

4. CONCLUSIONS

From an overview of the above, we conclude that:

1) Based on indicators showing above a positive correlation with share return:

- ROE and ROA after the third quarter of 2013 remain positive with some fluctuations in their prices, which is logical as the BDI index has historically low in the period 2013-2015.
- SOLVENCY RATIO, which prices vary by industry, with the exception of the third quarter of 2012 and the third quarter of 2013, show positive fluctuations.

2) Based on indices that do not correlate with the share return:

FIXED ASSETS EFFICIENCY RATIO also remains positive, and we can state that especially for the period 2013-2015 is particularly important, since at this time many companies have laid up their ships, which proves that despite the low ratio price is achieving positive exploit of its fleet, which is also the main revenue producer.

3) Based on indices that have a low correlation with share return:

- TIE for the period 2018-2015 also shows positive fluctuations, which is positive because the company can increase its borrowing in order to finance new investment programs.
- DEPT EQUITY RATIO from 2009 to 2012 is declining and from 2012 to 2015 shows stability, from this we conclude that the company has reduced its borrowing and is a sign of solvency for its creditors, investors, as in the financial period crisis, was in line with its borrowing obligations.
- The current ratio remains positive for the entire 2008-2015 period, which is very important for the company's liquidity because it proves that it can meet its daily basic debt obligations.

Finally, we have reached to the conclusion that every public-listed shipping company cannot, of course, influence the factors from its external political and geoeconomic environment mentioned above.

In this paper, in chapter 2 we have analyzed the importance of financial indicators as to the fact that their continuous monitoring provides important information for both potential investors and the management of the company in order to achieve both profitability and sustainability goals. In chapter 3, we have reached to an answer regarding the effect, negative or positive, of selected financial indices on a public listed shipping company's stock return. We consider this as critical information for the management of the company in its effort to increase further positive effects and mitigate any negative ones in order to achieve high stock returns and become "attractive" to future investors.

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MODELING THE PROCESSES OF REGIONAL DEVELOPMENT BASED ON GEOSTATISTICS METHODOLOGY

Tatyana V. YALYALIEVA
Candidate of Economic Sciences, e Professor of the Department of Management and Law, Volga State University of Technology, Russia, Yoshkar-Ola
e-mail: yal05@mail.ru

Dmitry L. NAPOLSKIKH
Candidate of Economic Sciences, Associate Professor of the Department of Management and Law, Volga State University of Technology, Russia, Yoshkar-Ola
e-mail: NapolskihDL@yandex.ru

Abstract
Paper deals with the economic essence of the main elements of geostatistics, study solves problems of spatial modeling regional development based on geostatistics and methodology of clusters. The purpose of this research is to adapt deterministic methods of geostatistics to the spatial modeling of regional industrial clusters. Particular attention is given to practical application of geostatistics methods for visualizing the monitoring network and its cluster structure. The paper offers model of industrial clusters of the Tatarstan Republic (region of Russian Federation) based on interpolation of data monitoring network, Delaunay triangulation and construction of Voronoi polygons.
Keywords: development, industrial clusters, spatial modeling, geostatistics
JEL classification: O1, R58

1. Introduction

In modern Russian practice remains a simplified approach to spatial localization of industrial clusters at the regional level, cluster development processes coincides with the administrative boundaries of region. An analysis of the spatial distribution of the points of economic growth of the leading world economies shows that industrial clusters rarely coincide within their borders with the region, subjects and institutions of economic development can be located within the boundaries of neighboring administrative units (Dzhindzholia et al., 2015). The insufficient level of the methodological tool for clusters spatial modeling significantly limits the possibilities of applied research of the Russian economic space in order to optimize strategies for industrial and innovative development of territories (Agafonov, 2010). Therefore, the development of methods for modeling and visualizing the development of clusters within the economic space of regions remains urgent (Artamonova and Hustalev, 2013). The solution of this scientific problem involves studying the processes of transformation of the internal structure of the economic space under the influence of clustering processes.

The author put forward a hypothesis about the possibility of practical application of the methodological tools of geostatistics as the central direction of the development of the conceptual foundations of clusters spatial modeling. Adaptation of basic methods and tools of geostatistics for problems of spatial modeling of clusters is focused on the following main aspects of this scientific problem:

- formation of a system of formally clear quantitative criteria for the localization and agglomeration of production in order to identify clusters;
- differentiation cluster from territorial production complexes, vertically integrated corporate structures and quasi-clusters;
- formation of an empirical basis for investigating the spatial structure of regional industrial clusters;
- development of unified methodological approaches to the selection of the metric and spatial resolution of the monitoring network;

consideration of the evolutionary dynamics of the development of industrial clusters through the comparison of changes in the internal structure of the cluster and the external manifestations of these changes in the economic space.

2. Data and method

Geostatistical analysis and visualization of the obtained results was carried out with the software tools QGIS 2.18. Information base of the research includes the materials of the Russian cluster Register compiled by the Russian cluster observatories of the Higher School of Economics (Moscow). Modeling of industrial clusters was carried out on the example of three clusters located on the territory of the Tatarstan Republic (region of Russian Federation):

cluster "New Materials" (number of participating organizations: 12, total number of employees: 27646 people),

"Food cluster of Tatarstan Republic " (number of participating organizations: 20, the total number of employees: 5023 people),

Agropolis "Alkiagrobioprom" (the number of participating organizations: 29, the total number of employees: 954 people).

As a basic characteristic of the organizational development of clusters is considered the average number of employees in cluster, which makes possible to compare the clustering processes in various spheres of economic activity.

In the Russian regions there are areas that are not covered by measurements of the economic value of ***Z***, which characterizes the dynamics of cluster development. Accordingly, interpolation values of the clustering efficiency indicators is the identification of the external effects of cluster economic activity on the basis of estimating the intermediate values of the values of the indicators from the available discrete set of known values. We describe the interpolation problem on some domain ***D*** for the system of points $x_i(i \in 0,1 \ldots, N)$ that do not coincide on the plane. Let the values of the function in question be known only at these points:

$$y_i = f(x_i) \quad y = 1, \ldots, N \quad (1)$$

Accordingly, the interpolation problem consists in finding a function ***F*** that:

$$F(x_i) = y_i \quad y = 1, \ldots, N \quad (2)$$

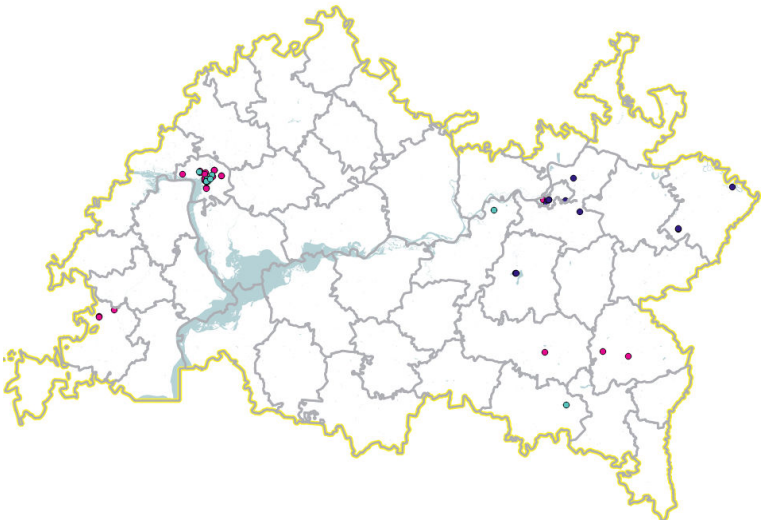
The use of deterministic interpolation models within the framework of the problem of spatial modeling of regional industrial clusters makes it possible to obtain a smoothed value of the economic value estimate at the point of space. The basic method for solving applied problems within the visualization of a monitoring network and its cluster structure is the Delaunay triangulation - the construction of triangles with vertices at measurement points, provided that the triangles are not intersected by edges and the minimum number of triangles that are obtuse. Thus, the Delaunay triangulation ***DT(S)*** for a given set of points ***S*** on the plane is a decomposition into simplexes (triangles), for any of which all the points in ***S*** except for the points that are its vertices lie outside the circle circumscribed around the triangle.

Another approach to visualization of distributed data in space is the construction of Voronoi polygons. The Voronoi polygon P_i , constructed on the plane for a certain measurement point x_i, is characterized by the fact that it contains only those points whose distance from the point x_i is less than or equal to the distance to any other measurement point ***xi***. Note that the basis for constructing the Voronoi polygons lies in the neighborhood of the measurement points obtained during the Delaunay triangulation, the boundaries of each polygon P_i consist of segments of the middle perpendiculars drawn to the sides of the Delaunay triangles.

3. Analysis and Results

A comparative analysis of the basic theoretical approaches to the interpretation of the category "cluster" existing in economics has made it possible to conclude that the main distinguishing feature of the cluster is the geographical concentration of organizations in a certain field of activity. In the scientific literature devoted to the study of the processes of clustering economic space, the point is made that the organizations entering the cluster must be within one hour of movement in road transport, that is, in some conditional circle with a diameter of not more than 100 kilometers. Figure 1 shows the adaptation of the monitoring network to the tasks of identifying clusters within the administrative division of region on the example of the Tatarstan Republic.

Figure 1. Adaptation of the monitoring network of enterprises participating in clusters within the framework of the administrative division of the Tatarstan Republic



In the framework of the methodology of geostatistical analysis, the study of clustering processes is based on the allocation of a certain territory on which a number of measurements of a certain economic value ***Z*** are carried out. The spatial arrangement of the cluster participants causes an arbitrary character of the distribution over the region of the set of points at which the economic value ***Z*** was measured. Accordingly, Clustering the economic space of Russian regions is called randomly distributed minutes on the territory of dots ***(x, y)***, which measured the performance values of the cluster.

The Delaunay triangulation allows qualitatively isolating the segments of the analyzed space with a high density of measurements, also called "clusters" in geostatistics. From the point of view of the instrumentation of applied research, Delaunay's triangulation is the basis for constructing linear interpolation: the three vertices of triangles uniquely determine the plane within which the quantitative values of the function under consideration are calculated according to geometric principles. Figure 2 shows the Delaunay triangulation for the monitoring network of organizations participating in clusters of the Tatarstan Republic, there are two distinct centers of clustering processes in the cities of Kazan and Naberezhnye Chelny.

Figure 2. Delaunay triangulation for the monitoring network of organizations participating in clusters of the Tatarstan Republic

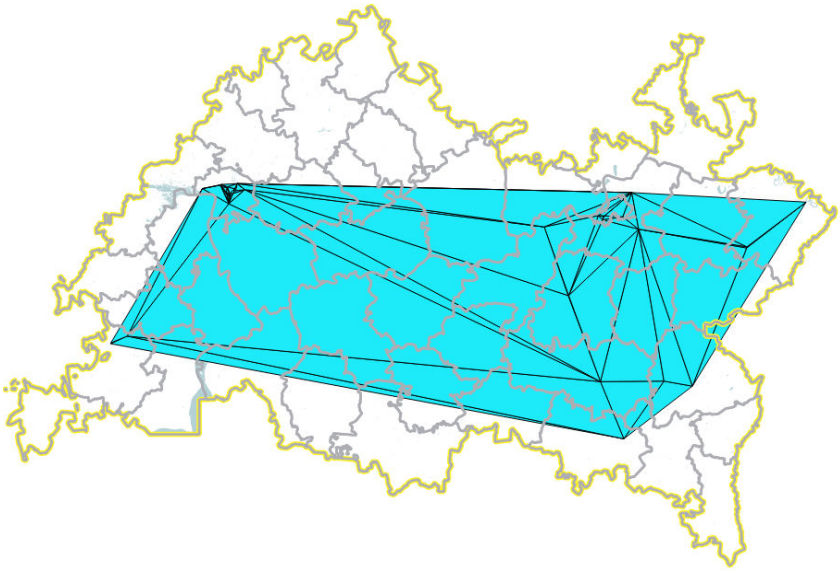


Figure 3 shows the Voronoi polygons constructed for the monitoring network of organizations participating in clusters of the Tatarstan Republic.

Figure 3. Voronoi polygons, built for the monitoring network of organizations participating in clusters of the Tatarstan Republic

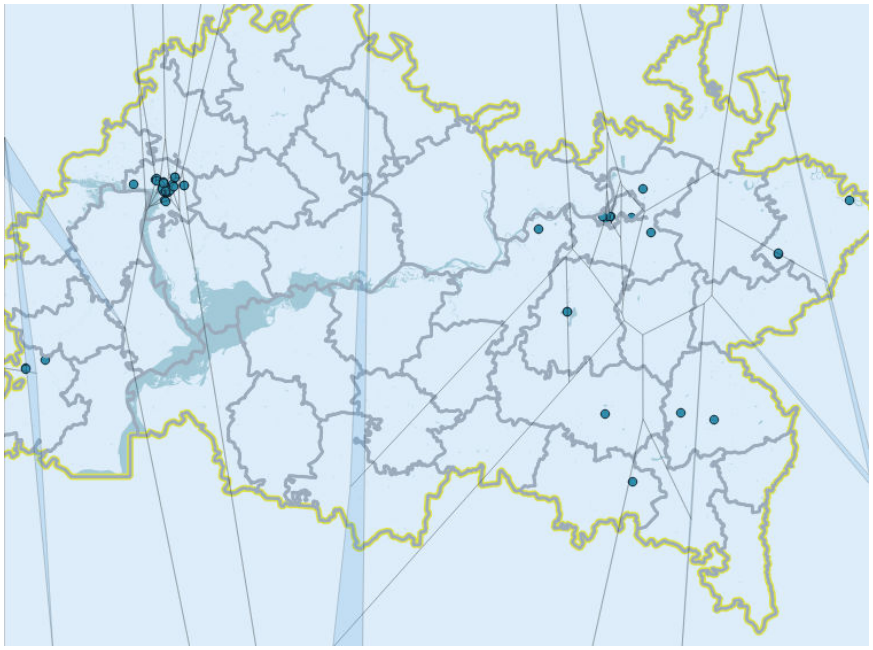


Figure 4 shows the values of such an index of cluster development of the territory as "the number of employees of cluster member organizations" obtained on the basis of interpolation of the heat map, giving an idea of the spread of the externalities of the processes of clustering the economic space of the region, in particular, the creation of jobs.

Figure 4. Heat Map values of the "number of employees of cluster organizations" for the Tatarstan Republic

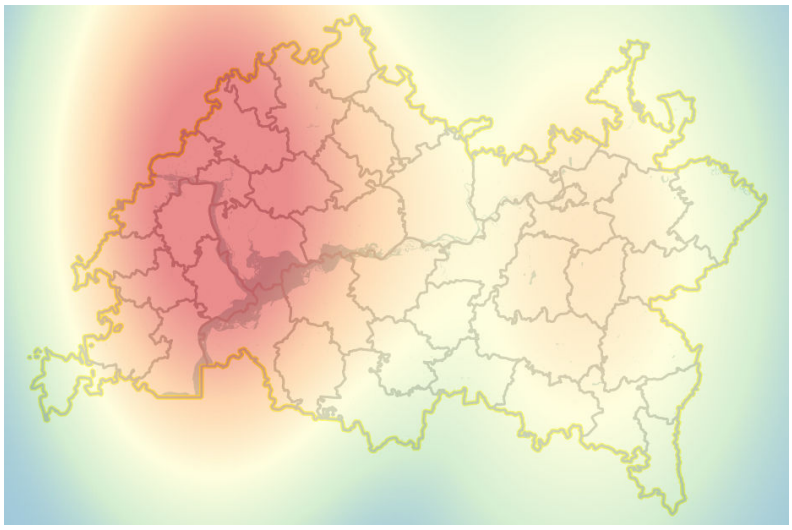
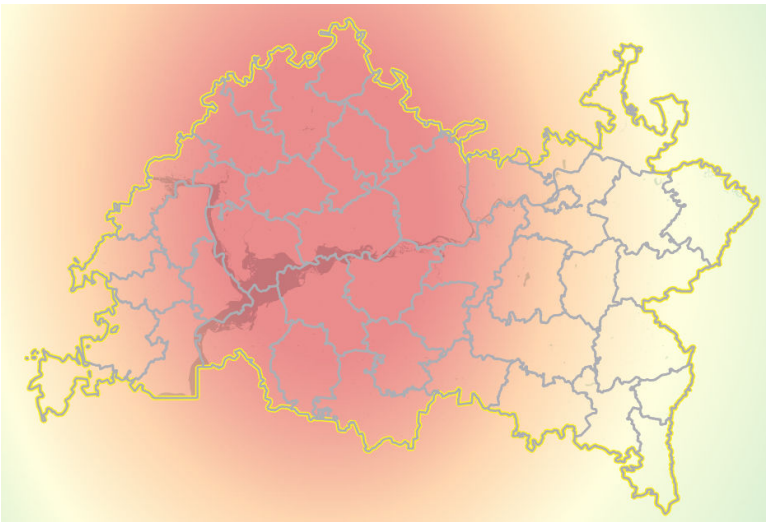


Figure 5 presents the forecasted heat map, subject to the formation of high-tech production in the city of Chistopol, which creates 200 jobs and participates in the technological chains of the clusters under consideration.

Figure 5. The forecasted heat map of the indicator value "the number of employees of cluster organizations" for the Tatarstan Republic



Getting a smoothed evaluation is applicable to the study of the institutional environment of the cluster and the territory of the spread of external social and economic effects of implementing cluster initiatives. At the same time, to solve narrowly specialized problems within the framework of the policy of forming and developing regional industrial clusters, obtaining a smoothed evaluation may not be sufficient for a full-fledged analytical support for the adoption of managerial decisions.

An alternative to the use of deterministic models is stochastic modeling, which makes it possible to reproduce the initial variability of measurements of the economic value under study in the framework of the equally probable realization of spatial function in the territory. The estimation of the equally probable realization of the spatial function on the territory makes it possible to consider its variability, to assess the probabilities and risks of implementing the cluster policy behind it. Stochastic modeling can be applied to solve complex problems of spatial modeling of regional industrial clusters, for example, to calculate the extent of the boundary of the internal "core" of the cluster.

4. Discussion

Alternative methodological approaches focuses on the construction of cluster organizational schemes (Gimadeeva, 2015; Krivenko, 2014)) and abstract graphical modeling

or affect a separate quantitative aspect of cluster development (Kireeva, 2015; Markov, 2015; Matafonova, 2016). Among these approaches, the basic organizational model of O. Solvell's cluster, developed on the basis of the balance of supply and demand (Sölvell, 2009.), the E. Feather model of cluster and regional specialization (Feser, 1998), the institutional model of the cluster of K. Ketels and J. Lindquist (Ketels, Lindqvist and Sölvell, 2012), should be singled out. Also in the Russian economic literature, the current trends in the formation of clusters with mixed industry specialization and territorial clusters are practically not considered.

The fundamentals of applying geostatistics methods for solving applied problems in various spheres of scientific knowledge are systematized by J.Matheron (1968), M.Kanevsky (1999), R.V. Arutyunyan (1999), V.V. Demyanov and E.A. Savelieva (2010). However, the methodological aspects of spatial modeling of regional industrial clusters on the basis of geostatistics have not yet received sufficient coverage in the economic literature (Natashkina and Ermolaev, 2014; Naydyonov et al., 2015; Pugacheva and Baranov, 2013).

The application of geostatistics methods allows us to consider the regional industrial cluster as a territorial economic system of the environmental type, which has the following set of characteristics: a complex dualistic structure, openness and flexibility of border configuration, plastic adaptability, interactive nature of cooperative and collaborative processes. Structural features of a territorial industrial cluster as a mesoeconomic system determine the need to use for methodological support of solving problems of identification and classification of clusters of an integrated approach on the basis of a combination of the advantages of macro- and microeconomics instruments. An objective limitation of the macroeconomic approach in the identification of clusters is an increase in the degree of methodological assumptions in determining the spatial boundaries of cluster segments and their industry specialization. The use of the microeconomic toolkit makes it possible to identify the core enterprises of the core of the regional industrial cluster and their interrelations, the methodological advantage of this approach to identifying cluster entities at the regional level is the construction of a logical sequence of stages of clustering the economy of the regions (Larionova, Napolskikh,.and. Yalyalieva, 2015).

The organizational prerequisite for support of cluster infrastructure is adoption of regional and municipal programs for social and economic development and the provision of subsidies for development of technology parks (Kireeva, 2015; Gimadeeva, 2015). Technology parks is a complex of real estate and infrastructure that provides conditions for the efficient operation of a number of small and medium-sized industries. Technology park is managed by a single operator, the main service is to lease or purchase land and premises, as well as provide the necessary transport, logistics and telecommunications infrastructure.

The adoption of government programs to support the development of clusters should include mechanisms for public-private partnership. In this case, the regions have the right to establish benefits for the payment of taxes and fees. The possibility of granting tax privileges at the regional level within the framework of the creation of special economic zones is an effective tool for the development of clusters.

One of the areas of support for the development of clusters is the identification and minimization of administrative barriers. Implementation of the principle of "one window" when obtaining a building permit and conducting state expertise of project documentation is an important factor in attracting investment in the cluster.

5. Conclusion

The first and fundamental stage of geostatistical research, regardless of the scope of application, is the analysis of the data distribution, which makes it possible to determine the presence of observation and emission errors in the data, and also at the initial stage to reveal the basic statistical regularities and correlation of the values of the investigated quantities. In this case, the monitoring network is called a cluster network if it has segments with a significantly higher measurement density of the investigated quantities than the rest of the observation area. If the identified segments with an increased measurement density in turn are characterized by higher or lower values of the investigated value, it becomes necessary to perform the procedure of declustering in order to obtain representative statistics and to exclude errors in mean values, variations, etc. Thus, the methodological toolkit of

geostatistics as an interdisciplinary area is highly complementary to the cluster as an economic category and can be used to develop the conceptual foundations of spatial modeling of regional industrial clusters.

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METHODS OF COMPETITIVENESS ASSESSMENT OF AGRICULTURAL ENTERPRISE IN EASTERN EUROPE

O. V.[1] DOVGAL
Phd in Economic.
dovgalua17@gmail.com

M. V.[2] KRAVCHENKO
Phd in Economic
kravchenkokolyan@yandex.ru

N. I. [2] DEMCHUK
Phd in Economic.
natademchyk@gmail.com

O. A.[2] ODNOSHEVNAYA
Phd in Economic.
elic2602ukr.net

O.Y.[1] NOVIKOV
Phd in Economic.
novikov@mnau.edu.ua

U. Y.[3] ANDRUSIV
Phd in Economic.
andrusivu@ukr.net

I. M.[1] LESIK
Phd in Economic.
ilesik@ukr.net

I. R. [3] POPADYNETS
Phd in Economic.
Irav.if@gmail.com

Abstract

The purpose of the article is to substantiate theoretical and methodological principles and to develop practical recommendations for the formation of competitive advantages of agro-industrial enterprises based on the methods of factor analysis. The article highlights the theoretical principles of formation of competitive advantages in agro-industrial enterprises. The article forms the methodological approaches to managing the competitiveness of agro-industrial enterprises. The organizational and economic measures on increase of competitive advantages of the enterprises of the agro-industrial complex are substantiated. The results of the study allow making more substantiated conclusions about the competitiveness state of economic entities as well as facilitating the adoption of managerial decisions on improving certain areas of activity of the agro-industrial enterprise.

Keywords: competitiveness, methodological approaches, agro-industrial enterprise, benefits, organic products, integrated systems

JEL classification: E00, F00,L20, L21

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[1] Nikolaev National Agricultural University. 9, Heorhiia Honhadze Str. Mykolayiv, 54020 Ukraine

[2] Dnepropetrovsk State University of Agriculture and Economics. 25, Voroshylova str., Dnipropetrovsk, 49027 Ukraine

[3] Ivano-Frankovsk National Technical University of Oil and Gas 15 Karpatska Street, Ivano-Frankivsk, 76000, Ukraine

1. Introduction

The production of high quality organic products and the efficiency of agricultural enterprises are particularly relevant in terms of distribution of integration processes. In recent years, agricultural enterprises in developing countries operate in a volatile competitive environment that requires the implementation of scientifically based approaches to competitiveness management in order to ensure stable competitive position of economic entities in the strategic perspective. Considering the current market relations, characterized by increasing competition, limited financial support of manufacturers, uncertainty and variability of the political, economic and social factors, the main task for the agricultural enterprises is the adoption of effective management decisions.

A competitive agro-industrial enterprise should not only outperform its competitors from the point of view of more effective use of internal potential, but also have a flexible, adaptive response to external opportunities and threats. The unsystematic and dispersed nature of revenues into modernization of production activities of enterprises, low investment activity, the lack of integrated application of innovative technologies, imperfection of the economic management mechanism of the production process and inter-branch relations, economic relations with processing enterprises and trade enterprises, and insufficient state support hamper the provision of competitive development of enterprises.

The question of the selection and practice methodology of implementing the directions of the enterprises competitiveness increase is researched in the works of scientists-economists: Vasylieva N. K (Vasylieva N. K. 2017), Hadley (Hadley 2006), Barnes (Barnes 2008). These scholars have considered the general issues of competition from the point of view of national economies.

Issues of competitiveness at the national level were raised by A. Sin and C. Nowak (Sin and Nowak 2014), which concluded that the main thing in the competitiveness is the promotion of state-owned enterprise development.

Sweden's experience was systematized in the work of A. Wästfelt, Q. Zhang (Wästfelt and Zhang 2016), that proved that the gain of competitive advantages was achieved through saving labor costs in direct relationships with consumers in suburban areas.

An unfortunate UK experience was raised by C. Thirtle, L. Lin Lin, J. Holding (Thirtle et al. 2004), that revealed that lowering of wages in comparison with other spheres leads to a decline in competition throughout the whole industry.

Within the framework of the modern theory of agroeconomics, attention is being paid to innovation as a competition increase factor. Some scientists focused on cloud technologies to increase the competition (Ojha, Misra, and Raghuwanshi 2015), some scientists focused on database use (Barrett et al. 2017). Among many articles devoted to the analysis of weather forecasting for the optimization of agricultural work, one can distinguish the manuscript by Caroline Mwongera, Kelvin M. Shikuku, Jennifer Twyman, Peter Läderach (Mwongera et al. 2017) who systematized the latest achievements in this field.

M. Hartvigsen (Hartvigsen 2014) considered the problems of raw specialization, which creates dependence on the conjuncture and imbalance of the payments.

The influence of exchange factors on the level of competition among agroholdings was investigated by M. Sunderman (Sunderman et al. 2000).

The study of the theory and development of measures for provision of competitiveness of dairy enterprises was conducted in the works of some authors such as Andrieu (Andrieu et al. 2017) and J. Preece (Preece 2006).

However, the following issues still remain inadequately investigated: issue of a systematic approach to the understanding of competitiveness as a complex economic category, the relation between competitiveness and the competitive advantages of enterprises, and organizational and economic realization measures of the competitive potential of the agro-industrial market subjects. In this aspect, especially relevant is the study of the formation and development of agro-industrial enterprises' competitiveness and the development of recommendations on improving the quality of management.

The purpose of the article is to substantiate theoretical and methodological principles and to develop practical recommendations for the formation of competitive advantages of agro-industrial enterprises.

To achieve this goal, the author proposes the following tasks:

- to clarify the conceptual apparatus of the research problem, in particular the interpretation of the essence of the "competitiveness" category of the enterprise;
- to improve methodological approaches to managing the competitiveness of agro-industrial enterprises;
- to substantiate organizational and economic measures for the implementation of the competitive development strategy of the agro-industrial enterprises;
- to develop organizational and economic measures in order to increase the competitive advantages of agricultural enterprises.

2. Methods

In the world economic science, the significant advances in research are devoted to the study of the methodological foundations for the analysis and evaluation of the competitiveness of enterprises (Biorusov O. S. 2008; Bolobolov A. 2003). Currently, a broad arsenal of approaches and methods is used for assessing both competitiveness and competitive advantage (Karlan et al. 2014). Subjective methods are used in determining the competitive advantages of a methodical toolkit, which is based on the study of causal relations, statistics, intuition and experience. These include methods of sociological research and expert methods. The estimation of competitive advantages with the help of objective methods means independent determination of factors and causal structure of the investigated phenomenon. They are verified experimentally and subjected to objective observation and measurement.

Methods for evaluating competitiveness and individual benefits differ in their ability to assess the overall and partial benefits levels. Each of the methods has the characteristic advantages and disadvantages that affect the possibility of their practical application in assessing the competitiveness and individual benefits.

Consequently, in spite of the considerable amount of scientific research on the competitiveness assessment of enterprises, it should be noted that there are no universal methods for this. Each of the modern methods has certain drawbacks that reduce the practical value of research results. The imperfection of individual assessment methods affects the diversity of approaches to the process of studying competitive advantages and the limited possibilities of their application. This fact is due to the concentration of attention of researchers in certain aspects of the subject of research, as well as features of the choice of object and scale of research, the choice of tools.

Each of the modern methods has certain drawbacks that reduce the practical value of research results. The imperfection of individual assessment methods affects the diversity of approaches to the process of studying the competitive advantages and the limited possibilities of their application. This fact is due to the concentration of researchers' attention on certain aspects of the research subject, as well as features of the object choice, research scale, and the choice of tools.

Therefore, the process of the competitive advantages studying of agro-industrial enterprises should be based not only on the properties and characteristics of the competitiveness category, but also on full compliance with the specifics of the industry (Velandia et al. 2009). In this case, the producers as the subjects of management need to solve the following tasks: assessment of the actual level of competitiveness as well as its potential level; reflection of the factor component of competitiveness in the analysis results; research of competitive advantages at the level of the subject and products; selection of methods and tools for evaluation according to the specificity of the study.

The presented analytical review of methods for competitiveness assessment and individual competitive advantages, along with the limited specific methods, showed the practical value of each of them. Thus, it can be assumed that competitiveness research should be based on the use of several complementary groups of methods that could reflect all the necessary aspects of its formation and, in the long run, could form an integral assessment of competitiveness and individual competitive advantages.

This study is based on factor analysis, and the problems listed above are solved on its basis.

The object of the research is the management process and the competitive advantages of the agro-industrial enterprises.

The subject of the research is a set of theoretical, methodological and practical aspects of ensuring the competitiveness of agro-industrial enterprises.

3. Results and discussion

The objective necessity of organizing the management of an enterprise competitiveness in the agro-industrial sector is substantiated by the following provisions:

- processing organizations are open systems, fully dependent on the state of the environment;
- in the conditions of active competition between manufacturers of organic products, the strategic perspective orientation of the company allows it to react to factors of uncertainty and environment risks;
- the complexity of forecasting the future market structure calls for the use of managerial technologies;
- effective reaction of an enterprise to the environmental influence is impossible without the adaptive abilities.

In view of the inadequacy of the study of this problem, the authors consider it relevant to highlight the peculiarities of the formation of competitive advantages that are characteristic of the agro-industrial enterprises.

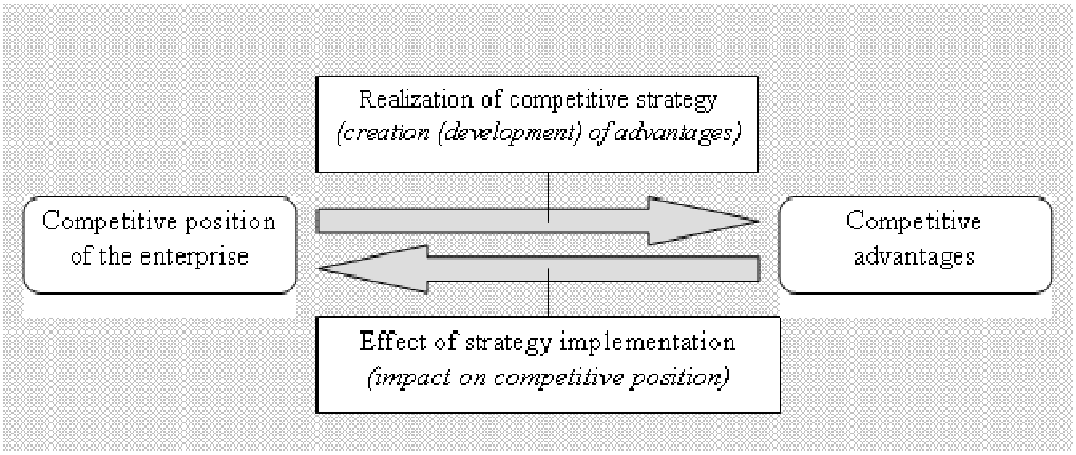
The ability of economic entities to compete with other manufacturers within a certain market space determines the basis of the competitiveness category. Competitiveness of the manufacturer shows its suitability in the strategic perspective to external changes. Some authors understand the competitiveness as a complex of interrelated economic characteristics (factors), which could help in achieving market advantage (Tsiganiuk O.O. 2009). Other researchers determine the competitiveness of the subject as the ability to use the available potential with maximum efficiency in order to provide a favorable market position (Nagirna L. V. 2010; Zarutskii I. D. 2008; Beregovyi V. 2006).

The presence of many interpretations of competitiveness and the lack of a unified methodological approach to its evaluation indicates the importance of the problem and the need for further research. The authors will understand the competitiveness as the multifactor indicator, which reflects the ability of the subject to compete within a certain market space by ensuring the competitive advantages of internal components of economic activity and manufactured products (goods, services) in accordance with the requirements of this market and consumer needs at a specific time.

Competitive status of the manufacturer affects the development and selection of strategic management decisions in the field of forming the competitive advantages. Different types of manufacturers are differentiated by size and market share (Giannakis and Bruggeman 2015). They also differ in their internal capacities, which influence the process of forming the competitive advantages and lead to the creation of their characteristic types together with the nature and force of external action.

The presence of several intra-industry segments in the structure of modern markets leads to the fact that the manufacturer either focuses on a small number of markets, or is trying to reach the majority of them. In this case, the overall competitive position of the company serves as a set of positions in various intra-industry segments. The actual competitive position of an enterprise, which is achieved through the use of existing advantages, acts as a "starting point" in choosing a future competitive strategy that involves the formation of new types of advantages or the development of existing ones (Figure 1).

Figure 1. Cycle of strategic formation of competitive advantages in agro-industrial enterprise



According to the provided information, the company undergoes a cycle of competitive development during the change of market positions. During this process, the agro-industrial enterprise realizes the strategy of forming the competitive advantages.

The actual competitive status of the subject provides several alternatives for further development, which are determined by the strength and nature of the environmental impact. In this case, each of the options is characterized by individual types of benefits, which are due to the combination of external and internal factors.

Changing the manufacturer's competitive status as a result of the influence of external economic conditions also involves changing the types of benefits created (Smaliychuk et al. 2016). Determination of the place and role of the subject in a competitive environment is a prerequisite for the further development of a competitive strategy that best suits the goals and objectives of the manufacturer.

Since the ultimate goal of the subject's competitive development is the creation and development of types of competitive advantages, the relationship between them and the type of implemented strategy is obvious (Table 1).

Table 1 Transformation of types of competitive advantages depending on the type of subject's competitive position and the nature of the environment attractiveness change

Type of competitive position	Types of competitive advantages	General development direction of the subject of competition		
		negative	neutral	positive
Specialized leader	Concentrated differentiation	Differentiation, combination of types	Concentrated differentiation	Concentrated differentiation
Universal leader	Low costs	Low costs, concentrated differentiation, combination of types	Low costs	Low costs
Specialized follower	Concentrated differentiation, focused combination of types	Concentrated differentiation	Concentrated differentiation, combination of types	Low costs, combination of types, concentrated differentiation
Universal follower	Low costs, combination of types	Concentrated differentiation, focused combination of types, low costs	Low costs, differentiation, combination of types	Low costs
Specialized	Concentrated	No benefits	Concentrated	Concentrated

outsider	differentiation, no benefits		differentiation	differentiation, low costs, combination of types
Universal outsider	Low costs, no benefits	Concentrated differentiation, combination of types	Low costs, differentiation, combination of types	Low costs. differentiation, combination of types

Being a self-organized system, the organic products market consists of many interconnected structural elements and is divided into subsystems depending on the type of product, its destination, as well as the territorial boundaries of the market. The market for organic products is characterized by high technological diversification of production, which allows the production of various types of products. However, the commodity substitution between the main types of products is rather limited, which allows us to talk about consumer demand, supply and prices within a single market.

As a result of the analysis of the structural elements of the finished organic products market, the main groups of factors were generalized determining the general direction of the development of the external market environment. The following specific features of the internal potential of agro-industrial enterprises have a direct influence on the process of competitive advantages formation: use of natural and biological factors in the process of production; possible inexpediency of the production of certain foods; land is not only the object of labor, but also its subject, as well as the main means of production; within the regional boundaries, the enterprise is not isolated, however it is based on an optimal combination with other enterprises, thus forming a cluster; variety of ownership forms, forms of management and size of enterprises; location of production in a certain territory and its attachment to separate raw material zones; seasonality of production due to the divergence of the working period with the production period; meeting the needs of the population in food; specialization in the production of certain types of products (Novichenko A 2008; Martusenko I. V. 2010).The above features directly affect the main factors of the internal industry environment (Table 2).

Table 2 Features of the main factor characteristics of the internal environment of agro-industrial enterprises

Internal factor	Characteristic features of agro-industrial enterprises
Production	- biological nature of the used resources and the resulting products; - high requirements for ecological cleanliness of raw materials and manufactured products; - insufficient quality of raw milk; - non-rhythmic production due to the seasonal supply of raw materials
Marketing	- the need for a forecast of agricultural production in the future; - increased consumer demands for environmental and product quality; - "long way" of products from manufacturer to consumer; - variety of types of marketing structures at the enterprise.
Financial position	- uneven income of financial resources during the year; - high relative share of working capital in the balance structure; - the need for constant attraction of borrowed funds;
Human resources	- low provision of highly qualified specialists; - low level of special education for middle managers
Management	- dynamic, unstable nature of external conditions of activity; - relative underdevelopment of strategic management methods at the enterprise.

These features of the external and internal environment form certain types of competitive advantages, which are transformed into new modified types under the influence of industry specifics. Identification of the types of competitive advantages (present and potential) by the

manufacturer is associated with certain difficulties, among which there is a lack of scientifically grounded approaches to the study of the system of internal and external influence factors on the economic entity. As a result, the lack of effective management, organizational, and economic mechanisms for responding to the environment changes and the imperfection of the methodological apparatus for assessing competitive advantages lead to low competitiveness of processing enterprises.

The nature of the company's competitive advantages is determined by the dynamics of environmental factors (Moschini and Hennessy 2001). The management of the competitiveness of the economic relations' subject involves a comprehensive influence study of the system of internal and external factors, as well as the application of modern, scientifically based methods of evaluation.

The first stage of the proposed methodology is to determine the potential level of the company competitiveness as a derivative from the attractiveness level of the external environment and the internal competitive potential of the entity.

Functioning of the agro-industrial enterprise as an open system to the influence of external conditions involves the study of its attractiveness for the subjects of competition. While studying the external environment, the attention should be paid to the determination of sectoral and geographical conditions of the formation of factor influence on the enterprise activities (Grinchuk V. Yu. 2010). Firstly, the factor influence may be limited both by industry and by individual intra-industry segments. Another restriction type assumes the existence of a local space, separated by territorial barriers. The manifestation of these types of restrictions is interrelated, which contributes to the formation of market structures with different qualitative and quantitative factor composition.

The next step is to evaluate each of the factors using a set of criteria, and to calculate general state indicators of the external and internal environment. The evaluation criteria are indicators that reveal the nature and potential of the individual factor. The actual level of interaction between the manufacturer and the external environment is characterized by the ratio of the real and potentially possible production volume or the ratio between the consumed and the available resources (goods) of the participants in the industry exchange.

Another approach is proposed in the study of competition between manufacturers of organic products (Nikiforova E. N. 2009). In this case, the manufacturer and competitors are elements of a single subsystem, and are interconnected by a competitive relationship. Estimation criteria in this case characterize the quality of internal development of this subsystem. The study of the environment of agro-industrial enterprises allowed us to determine the set of the following groups of factors: suppliers of raw materials, end users of organic products, intermediaries (intermediate consumers), and market competition (activity of competitors). These estimation criteria reflect the degree and direction of influence of these environment factors, taking into account the existing features of the industry.

The next (second) stage is the study of the ability of the agro-industrial enterprise to compete with other actors for the limited resources and opportunities of the environment, taking into account qualitative characteristics of the internal environment factors: production; management; marketing; human resources; financial position. While determining the criteria for evaluating these groups of factors, the authors used the principle of generalization in the final evaluation of the various aspects of the object's operation. However in practice, the factors and indicators that describe the activities of the enterprise are highly interdependent. This is due to the presence of interconnections between the functional zones of the enterprise.

The developed factor indicators of attractiveness are subject to further expert evaluation by conducting a written questionnaire in order to determine the minimum and maximum values of the criteria, as well as the nature of their impact. The calculation of criteria for evaluating each factor is carried out according to the following formula:

$$k_{ij} = \frac{k_{\hat{o}ij} - k_{ij\min}}{k_{ij\max} - k_{ij\min}}, \qquad (1)$$

where k_{ij} – evaluation indicator of i-criterion and j-factor; $k_{\hat{o}ij}$ – actual value of i-criterion and j-factor; $k_{ij\max}$ – maximum value of i-criterion and j-factor; $k_{ij\min}$ – minimum value of i-criterion and j-factor.

If the indicator exceeds the smallest and the largest values, its value equals to the minimum or maximum value, respectively. The obtained values of the estimated indicators are summed up by factor. This helps to calculate a weighted average of the influence degree of each factor (p_j):

$$p_j = \frac{\sum_{i=1}^{n} k_{ij}}{n}, \qquad (2)$$

where p_j – weighted average of j-factor influence degree; k_{ij} – evaluation indicator of i-criterion and j-factor; n – number of factors.

The final step is to determine the general indices of the attractiveness of the external environment (I_{PR}) and the level of competitive potential (I_{KP}), which represent the sum of estimates of the corresponding constituent factors, adjusted to their significance. An expert assessment of the importance of factor groups and the determination of weighting factors allows us to reflect the role of factors in shaping the benefits of the enterprise. The form of the significance study is a survey of a group of experts, which is conducted in the form of questionnaires. During the study, an expert group of 8-12 people was invited to distribute 100 points between the factors of the external and internal environment. The obtained weighting factors allow finding the generalized indices of attractiveness of the environment:

$$I_{PR} = \sum_{j=1}^{m} W_{PRj} \cdot p_{PRj}, \qquad (3)$$

where I_{PR} – general indicator of the attractiveness estimation of the environment; p_{PRj} – j-factor estimation indicator; W_{PRj} – j-factor influence coefficient; m – number of factors.

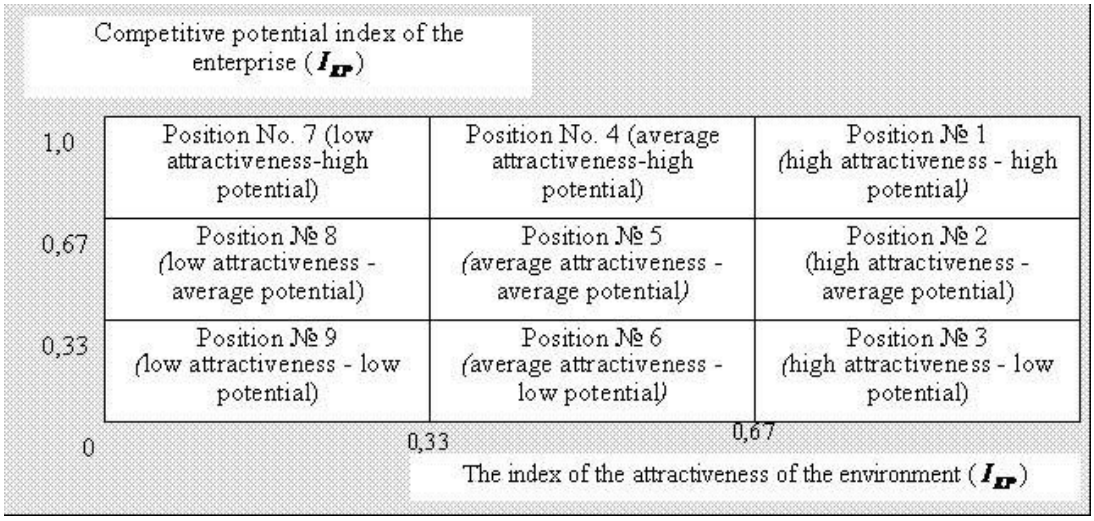
And the condition of internal potential:

$$I_{KR} = \sum_{j=1}^{m} W_{KRj} \cdot p_{KRj}, \qquad (4)$$

where I_{KR} – general indicator of the competitive potential estimation of the enterprise; p_{KRj} – j-factor estimation indicator; W_{KRj} – j-factor influence coefficient; m – number of factors.

The last action of this stage of evaluation is the positioning of the processing enterprise in the matrix "Competitive potential-attractiveness of the external environment", which allows setting the level of general competitiveness of the subject (Figure 3).

Figure 2 Matrix of the competitiveness assessment of the agro-industrial enterprise



The horizontal dimension of the matrix is defined by an indicator of the market attractiveness, and the vertical - by the competitive status of the subject. Usually, the subject cannot control parameters, by which the state of the processing organization is assessed by the I^{PR} axis. Positioning along the I^{KR} axis is under the control of the subject and can be

changed. Each axis of coordinates is the axis of a multifactor measurement, which makes the model more analytical in comparison to other matrices and more realistic in terms of determining the competitiveness of production and its positioning in the system of competitive relations. The expanded dimension of the matrix allows for a more detailed analysis of the possibilities and prospects of strategic choice.

The next (third) stage of the implementation of the proposed methodology is to clarify the competitive position of the company in the market and to determine the nature of the competitive advantage origin. This stage is the basis for further strategic and tactical steps of the manufacturer in the organization of the competitive advantages managing process.

The obtained estimates of competitive forces and product benefits are a prerequisite for the development of a competitive strategy, and they determine the means to achieve strategic goals. Company's competitive position in the market has a major impact on the type of competitive advantages created. The assessment of the competitive status of the subject allows: identifying the features of the competitive development of the market; establishing the degree of enterprise dominance; identifying the closest competitors, and establishing the relative position of the subject among other market participants.

The next step is to group entities into competitive positions in the intra-industry markets. In this case, grouping is an intermediate process of data sorting for further analysis. In order to identify competitive positions, the authors choose the criteria for analysis and calculate indicators that characterize them. To find the boundaries of the market, we used the size of the market share of the manufacturer (D) and the rate of its growth over a specific period of time (T):

$$D_{c\partial} = \frac{1}{n}, \qquad (5)$$

where $D_{ñ\partial}$ – average arithmetic mean of market shares;

n – number of enterprises.

Subsequently, the division of the studied amount into two sectors is carried out: "strong" enterprises with a market share that exceeds the average level, and "weak" enterprises with a market share below the average level. In order to differentiate competitors in the resulting sectors, their average market shares are calculated:

$$D_{c\partial 1} = \frac{1}{n_1} \cdot \sum_{i=1}^{n_1} D_i, \quad D_{c\partial 2} = \frac{1}{n_2} \cdot \sum_{j=1}^{n_2} D_j, \qquad (6)$$

where $D_{ñ\partial 1}$, $D_{ñ\partial 2}$ – the arithmetic mean of the market share of "weak" and "strong" enterprises, respectively;

n_1, n_2 – number of enterprises with a market share below and above the average level;

D_i, D_j – market shares of enterprises below and above the average level, respectively.

For each group, we calculate the mean-square deviation:

$$\sigma_{D1} = \sqrt{\frac{\sum_{i=1}^{n_1} (D_i - D_{ñ\partial 1})^2}{n_1}}, \quad \sigma_{D2} = \sqrt{\frac{\sum_{j=1}^{n_2} (D_i - D_{ñ\partial 2})^2}{n_2}}, \qquad (7)$$

The calculated indicators (along with the maximum and minimum market shares - $D_{\min}$ and $D_{\max}$) are the main ones for determining the share of dairy enterprise market. Depending on its size, we propose to allocate four classes of the enterprise: the market leader; an enterprise with a strong competitive position; enterprise with a weak competitive position; outsider. The calculation of boundaries for homogeneous and heterogeneous aggregates varies and can be carried out according to the following system (Table 3).

Table 3 Criteria for assigning enterprises to groups depending on the held market share

Competitive position of the enterprise depending on the size of the market share	Using "Three sigma rules" (homogeneous set)	Using the law of averages variation (heterogenous set)

Market leader	$D_{ñð2} + 3 \cdot \sigma_{D2}; D_{\max}$	$D_{ñð} + 3 \cdot \sigma_{D2} / \sqrt{n_2}; D_{\max}$
Enterprise with a strong position	$D_{ñð}$; $D_{ñð2} + 3 \cdot \sigma_{D2}$	$D_{ñð}$; $D_{ñð} + 3 \cdot \sigma_{D2} / \sqrt{n_2}$
Enterprise with a weak position	$D_{ñð1} - 3 \cdot \sigma_{D1}; D_{ñð}$	$D_{ñð} - 3 \cdot \sigma_{D1} / \sqrt{n_1}; D_{ñð}$
outsider	$D_{\min}$; $D_{ñð1} - 3 \cdot \sigma_{D1}$	$D_{\min}$; $D_{ñð} - 3 \cdot \sigma_{D1} / \sqrt{n_1}$

The procedure for distinguishing groups of commodity producers by the degree of change in market share is almost identical in its content and begins with the calculation of the indicator that characterizes the growth rate of the market share of each producer with the following definition of its minimum and maximum values:

$$T = \frac{1}{m} \cdot \frac{D^t - D^{to}}{D^{to}} \cdot 100\%, \qquad (8)$$

where T – The growth rate of the market share of the enterprise,%

$D^t (D^{to})$ – The market share of the enterprise in the period of time, %

m – Number of years in the analyzed period.

In case of impossibility of calculating the indicator of a separate enterprise, an exception is made from the existing procedure of determining the limits: the manufacturer does not participate in further research and is assigned the highest competitive position.

When calculating the average arithmetic value of the growth rate, the following formula is used:

$$T_{ñð} = \frac{1}{n}, \qquad (9)$$

where $T_{ñð}$ – The arithmetic average of the growth rates of market shares;

n – Number of analysed enterprises.

The average growth rates in the sectors are calculated according to the formulas :

$$T_{cð1} = \frac{1}{n_1} \cdot \sum_{i=1}^{n_1} T_i, \quad T_{cð2} = \frac{1}{n_2} \cdot \sum_{j=1}^{n_2} T_j, \qquad (10)$$

where $T_{ñð1}$, $T_{ñð2}$ – The arithmetic mean of the growth rates of enterprises located in the 1st and 2nd sectors respectively;

n_1, n_2 – The number of enterprises with the growth rate of the market share below and above the average level, respectively;

T_i, T_j – Market shares of enterprises in the first and second sectors.

Selection from a total of two sectors characterizing enterprises with the highest and lowest growth rates of a market share requires calculation in each group of the mean square deviation:

$$\sigma_{T1} = \sqrt{\frac{\sum_{i=1}^{n_1} (T_i - T_{ñð1})^2}{n_1}}, \quad \sigma_{T2} = \sqrt{\frac{\sum_{j=1}^{n_2} (T_i - T_{ñð2})^2}{n_2}}, \qquad (11)$$

where σ_{T1}, σ_{T2} – The average deviation of the growth rate of the market share of enterprises in the first and second sectors.

The assessment of the competitive advantages of the company's products by the developed method complements the results of the research of the competitor's status of the manufacturer and creates a coherent picture of the actual level of competitive advantages.

The final stage of the method is the synthesis of the results of all previous studies and the final conclusion about the competitiveness of the manufacturer. At this stage, a situational analysis is conducted describing the situation of the enterprise and revealing the potential directions of development of competitive advantages. The next step is to look for sources of sustainable competitive advantages and to form a set of measures aimed at their achievement.

4. Conclusions.

Taking into account the current state of agricultural production, its own direction of effective integration is the most important way of its development, which would best suit national interests, available resources, geographical position, and potential of the country.

The main task of the integrated corporate structure is to achieve competitive economic benefits at the expense of the synergy effect, the growth of labor productivity, diversification and rational specialization of production, reducing overhead expenses, and raise in the level of management

The development of integration processes in agro-industrial production consists of the gradual organizational integration of isolated, diversified specialized production plants for the production of raw materials, its storage, processing, and sale of finished products that operate in the conditions of the social division of labor, into a single integrated industrial and legal structure and help to develop a competition level.

The integrated system of formation of the production and processing sphere of organic products should be based on certain general scientific methodological principles. Among them, it is necessary to highlight: systemacity, priority, complexity, scientific substantiation, formation of optimal organizational and economic management mechanism, balance and proportionality, adequacy, combination of regional and sectoral planning etc.

In accordance with the current problems of the processing and production development of organic products, we propose to supplement the existing principles with the following: the unity of the development process of the agro-industrial complex and modernization of the country economy; consistency of interests and efficiency; planning and balance; modernization and development; regulation of foreign economic relations; activation of innovative processes.

The use of the proposed methodology determines both the research value of the evaluation results and the effectiveness of further decisions on the organization of the entire management process. The results of the study allow making more substantiated conclusions about the state of competitiveness of economic entities and facilitating the adoption of managerial decisions on improving certain areas of activity of the agro-industrial enterprise.

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CHALLENGES OF A SUSTAINED AND SUSTAINABLE DEVELOPMENT: A STUDY-CASE

Zenólia ALMEIDA
PhD. Governador Valadares Academy of Letters, Minas Gerais, Brazil
zenalmeida@gmail.com

Inguelore SCHEUNEMAN
PhD. Assistant Professor retired from Universidade Federal de Pelotas, Brazil
inguelore@gmail.com

Teresa SEQUEIRA
PhD. Assistant Professor at Universidade de Trás-os-Montes e Alto Douro (UTAD), and Senior researcher at Centre for Transdisciplinary Development Studies (CETRAD), Vila Real, Portugal
tsequeir@utad.pt

Francisco DINIZ
PhD. Associate Professor with Abilitation retired from UTAD, and Senior researcher at CETRAD, Vila Real, Portugal
fdiniz@utad.pt

Abstract

The town of Governador Valadares went through several economic cycles throughout its history which led to the destruction of its forests and the depletion of its soil, causing poverty and stagnation. Socioeconomic indicators point out the actual stage of the town's development. In order to fully understand what its inhabitants think about this reality, two separate researches were conducted: a) with students and teachers of both public and private secondary schools to assess their social awareness regarding the environment, their attitudes, values and social practices towards Rio Doce, as well as the town's natural and cultural heritage; b) with stakeholders, opinion makers and other inhabitants to understand what they think about "the town we have" and their view of a suitable future for Governador Valadares; in other words, "the town we want to have in a near future". The information gathered made it possible to make a SWOT analysis that can serve as an important basis for public policies targeting the town's sustainable development. The final goal of the current study is to make a Master Plan for the Integrated Territory Management – ITM methodology.

Keywords: Territory, Social Perception, Integrated Management, Governance, Sustainability

JEL classification: R58, Q01, 021

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1. Introduction

The municipality of Governador Valadares, with a total area of 2,342.319 km^2 and an estimated population of 278,363 inhabitants (IBGE, 2015), of which 96% living in the urban area, is currently facing several problems, namely economic stagnation, low levels of employment, social inequality, violence and unsafety, besides an unpayable debt towards nature, due to decades of large-scale extractive activities. The exuberant Atlantic forest that used to cover the region was decimated and the river that flows through it, is degraded and polluted.

Throughout its history, Governador Valadares has experienced cycles of growth and crisis, always caused by the search for riches, regardless of the impact on the territory which has always been considered as a source of endless resources. Territory is here understood as a system composed of mostly non- renewable resources, which calls for an integrated management of its use, according to a development pattern that is both compatible with its preservation and sustainable, depending on the articulation of different and often contradicting perspectives (Oosterbeek, 2012a).

Every territory has necessarily and simultaneously different combinations of a functional and symbolic nature. Its nature is systemic and integrated, which is only disrupted by people's reckless actions. A growth-oriented management based on a developmental creed has been the cause of environmental and social unbalance. Any form of growth which does not create social justice does not guarantee sustainability. Jurisdiction over a territorial space occurs both to perform certain "functions" and to produce "meaningful results". Along with its own cultural imprints, the territory becomes the *locus* of a struggle for recognition and rights. It often gains such relevance, that it equally combines function/resources and identity/symbol (Raffestin, 1993).

The present study-case departed from the concept of territory and territoriality to try and understand the historic path of what is now the town of Governador Valadares and the type of relationship people have established with the territory as well as the process of building their own territoriality. Bibliographical and documentary research was followed by two field researches, in an attempt to know the water social awareness (focussing on River Doce) as well as the perception/awareness of the town that we now have. Results made it possible to make a SWOT analysis, outlining a context that can serve as the basis for setting public policies and making a strategic reflection in view of an alternative future. The main goal is to come up with a Master Plan for Governador Valadares, based on a governing strategy that focus on the Integrated Territorial Management (ITM), a methodology which helps overcome the individuals' and their groups' (*stakeholders'*) alienation, so that it creates a positive approach to the goals set by and for the group.

Choosing the ITM methodology allows that both former contributions and the ones that are being developed come from within civil society alongside with public management. This new model for managing the territory is revolutionising the concept of isolated governance from public authorities; it considers difference as healthy, diversity as rich, and the identification and solving of the problems that affect the territory and its communities as a challenge. The ITM methodology consists of a set of tools that promote diversity and cultural integration of the social, economic, and environmental dimensions, by identifying the dilemmas that one is faced with when trying to find solutions for the territory and its communities. It works with enlarged actions and the integration of all the territories involved in it, based on the assumption that it is not enough to focus on the triple bottom line: economy (growth), society (harmony) and environment (preservation).

When compared to other types of management, ITM presents itself as a plural methodology that takes into account individuality, diversity, and the contradictions that are part of society, using perspective, forward-looking, technological integration and transdisciplinarity. Oosterbeek (2012b) points out some specific features that show the difference between Integrated Territorial Management and traditional forms of Management and Strategic Management as regards: a) Dynamics: processes take place in a network that allows their combination and adaptation to asymmetries within the territorial system and to differences in the rate at which they occur; b) Focus: it acknowledges the individual's new *status* within society, without giving up the abstract, rational approach; c) Object: individuals and groups, since they display chaotic behaviours which account for social dynamics; d) Values: focussing on values and their dynamics allows one to understand how the individuals' and groups' perceptions regarding the territory influence the choices they make; e) Context: the territory is marked by multiple agendas that are independent and, at the same time, linked by a network that holds them together and ensures their joint evolution; f) Processes: the plural nature of a society, marked by contradictions and in an ongoing transition, calls for diverse and convergent ways that reflect its dynamic character.

Based on this view, the present article proposes an Integrated Territorial Management model for Governador Valadares. It has taken into consideration those aspects which led to its

territorialisation— a place with material resources and means of production, as well as the possibility of building and controlling connections and networks — flows of people, goods and information (HAESBAERT, 2005).

2. Territory, territoriality and sustainable development

Space and territory are not one and the same thing (Haesbaert; Limonad, 2007). The former pre-exists the latter; it is the basis, the raw material of social action, which collectively produces the territory. Space is the original prison, whereas the territory is the prison human beings build for themselves (RAFFESTIN, 1993). Territory is the locus of all relationships and territoriality a process through which relationships are lost and reconstructed. The relational character is part of power references, circulation and communication networks, territorialities, control of natural resources, which show the social relationships between subjects and between these and their place of living, both economically, politically and culturally (Raffestin, 1993).

Territory is a spatial cutout defined by ownership, power and control relationships over resources and flows, based on political, economic and cultural aspects (Haesbaert, 2009; Saquet, 2007; Spósito, 2004). Territoriality is the very contents of territory, which may be designed from the interconnection of multiple power relationships, from economic and political relationships, to the more symbolic power of cultural relationships (HAESBAERT, 2009). It is something abstract, but not in a radical sense, reducing it to an analytical abstraction. It is also an abstraction in the ontological sense: it exists as the image or symbol of a territory and may become an effective political and cultural strategy, even when the territory it refers to is not totally outlined. Because there is such a rigid separation between territory as ownership (material) and as appropriation (symbolic), the complexity and the richness of the "multiterritoriality" in which we are immersed are ignored by many (Haesbaert, 2004). In view of its dynamic nature, territoriality helps create local identity processes. Besides incorporating a strictly political dimension, territoriality also refers to economic and cultural relationships, since it is closely linked to the use people make of the soil, how they organize themselves in the space, and how they value the place (Haesbaert, 2004).

In the late 1990s, the notion that natural resources were endless was replaced by the realization that they were rapidly and inexorably being exhausted, questioning the type of development model adopted by the countries. Until then, terms like development and growth were understood as referring to the same thing and, so far, society has not yet completely given up that assumption, despite lacking arguments to support it. Environmental problems have become more and more obvious and complex, and proven to be likely to change and interfere with the quality of life of millions of people.

Development occurs in a territory from two perspectives: based on official information, which put it in a position to be compared to other territories; or through its citizens' social perception, revealing another outlook, based on cognitive processes, cultural values and expectations. The way human beings act in a given territory (landscape) has its roots in their concepts and values, which, in turn, are culture-bound. We see what we were taught to see, and miss to see what we do not understand.

3. Methodology

The method chosen to carry out the research was the case-study, which, according to Yin, (2001) involves data gathering, field visits and supervision, resorting to a previously selected theoretical basis, which allows one to make a quantitative and qualitative approach to the subject of the research. It observes, registers, analyses and correlates facts or phenomena (variables) without any kind of manipulation, seeking to establish how often a phenomenon takes place, how it relates and is linked to others, its nature and characteristics (Cervo & Bervian, 2007). It is a way to research current phenomena within their own real context, even in situations when it is not always easy to tell phenomena and their context apart.

The methodological procedures that were adopted were the following:

a) Bibliographical and documentary research; it included selecting and reading documents, articles and books on the socioeconomic formation of Governador Valadares,

besides looking into such concepts as Territory, Integrated Territorial Management (ITM) Governance, Social Perception, Sustainability; official statistics of the municipality and of the region. ITM projects developed in other territories were also used as guiding references.

b) Field research I: "The water as a perception factor of the environment".

Sample Universe: students and teachers from secondary schools in Governador Valadares. Sample: 326 students (21% of the sample universe) and 32 teachers (36,8% of the sample universe) from four secondary schools (two public and two private). 56,7% of the students included in the sample attend a public school and 43,3% a private one. The schools are located in two territories: Ilha dos Araújos (Araújos Island, with a population of 8,000 people, approximately) and the centre of Governador Valadares (with an estimated population of 276,000 inhabitants) (IBGE, 2014). Schools were selected according to their size and importance. In order to collect the data, a structured questionnaire was used; it contained 28 questions (both close and open), formulated in such a way as to assess the social perception on the water, concepts and attitudes relating to environmental issues, people's interest for matters pertaining to River Doce, how often these matters are discussed in the classroom, and other related questions. Before the questionnaire had been applied, there was a pre-test, done by the teachers, under the supervision of the researcher and project author.

c) Field research II: "Perception of the town we (now) have and of the town we wish to have in the near future.

Sample Universe: the inhabitants of Governador Valadares; sample: representative stakeholders and opinion makers of the various urban territorial segments. The questionnaire was applied to 128 (hundred and twenty-eight) people, via e-mail, containing a letter with a description of the project and a link where answers could be registered. The number of people who answered the questionnaire totalled 65 (sixty-five). Since it was not possible to have virtual access to other stakeholders and opinion makers, 30 (thirty) questionnaires were applied in person, accounting to 95 (ninety-five) the number of people interviewed. The questionnaire addressed the personal profile: a) gender, age, level of education, occupation, address, social status (social position or leadership); b) questions to assess the citizens' perception as regards public services offer (health, education, culture and leisure infrastructures, quality, urban access and mobility, public transportation and safety); economy (quality of local commerce; job and income creation); environmental policies (preservation of the environment and of River Doce, sewage treatment, waste management); citizenship (follow-up and participation of the community in public actions that concern the citizens, transparency of public management); the town's quality of life and living conditions. Answers were analysed and shown in tables and graphs. The open questions sought to capture the interviewee's perception of the town we have: the challenges; the necessary changes; the participation in civil society; the institutional authorities' role; their opinion about Governador Valadares. The picture is completed by the interviewees' view on the town we wish to have in the near future (in twenty years' time).

d) SWOT analysis – a tool used to study the scenario, that can be applied to any type of situation and is a key-element to a good planning process and to define strategic actions – based on data obtained from field research II.

4. Results

Following the application of the already mentioned methodological procedures, it was possible to obtain the following information:

a) Field research I: Social perception of the water as the main thread to sustainably plan human beings/environment relationships. The information that was obtained revealed a prevailing, somewhat unelaborate environmental perception: the environment continues to be regarded as a space that excludes human beings and social and cultural dimensions — an idea that is conveyed by most interviewees. In their answers, teachers and students from private and public secondary schools showed no discrepancy in terms of attitudes and values regarding the sustainable environment concept. They associate pollution, degradation and abandonment with the river, despite their lack of interest for actions and measures to prevent

it. Although teachers often referred their concern for the environment, only a few address the issue in the classroom, which shows lack of coherence between words and actions.

Despite believing that the river pollution can affect their health, and that it is everybody's responsibility to protect the river and avoid its degradation, half of the students and teachers did nothing whenever they witnessed people polluting the waters, a sort of behaviour that made them feel uncomfortable. Only a few admitted having changed their behaviour patterns, having taken up more positive and environmentally correct attitudes in their daily life. In general, they are not aware of the fact that River Doce is the tenth most polluted river in the whole of Brazil (IBGE, 2014). They also ignore that within the civil society of Governador Valadares there are entities that are engaged in the struggle for protecting and preserving the river.

In the course of this research, the need or the importance of dealing with environmental education issues have never been identified as a way to prepare responsible citizens, aware of these matters and ready to express a commitment to everybody's life and well-being and to the life and well-being of society in general. Nowadays, that is a great challenge that education professionals, who are still ignorant of environmental responsibility actions, must deal with. Environmental education barely exists in schools, and when it does, its content is not suitable to inform and prepare students to exert a changing (perhaps revolutionary) citizenship, capable of changing people's relationship with the environment in which they live. Therefore, it is necessary that the school, as an institution, reviews its role of forming citizens for the future. It is the public authorities' responsibility to pay attention and supervise the management and preservation of River Doce, for the people's and the town's survival depends on it.

b) Field research II: Interviews to Governador Valadares dwellers have shown that they are aware of the weaknesses and threats preventing the town from being competitive, as well as of the strengths and opportunities that may help it become more dynamic and sustainable again. This awareness can be seen in the SWOT analysis that follows:

c) SWOT analysis based on research II:

WEAKNESSES (factors that somehow internally hinder and/or prevent the creation of competitive advantages): public education; sanitation; urban infrastructures and mobility; public transportation; sustainability.

STRENGTHS (internal elements that generate benefit): strategic location; regional cluster; growth potential; a transparent public management; the fact that it is a friendly town.

THREATS (external forces with a negative impact on the town's effort to once again be dynamic): discontinuity in public policies; ethics and individualism; level of investment and employment; public safety.

OPPORTUNITIES (external forces with a positive impact, over which one has no control): alternation of power; citizen participation.

The awareness of the weaknesses and threats, strengths and opportunities emerging from the "town we have" and from the "town we wish to have" may help develop new governance dynamics, in a conscious, participating way.

From the data that were obtained, the present study proposes to set up a Master Plan for the territory of Governador Valadares, based on ITM-oriented governance strategies in order to try and overcome individuals' and groups' alienation, leading them to make proposals regarding the goals established for and by the group. In fact, that is the way to the integrated and sustainable development of Governador Valadares.

5. Discussion: there is a way

Proposing a sustainable development model was an important step to reduce the negative impacts of the disastrous production mode adopted by modern society. The great crisis that has been affecting the globalised 21st century world and still makes the headlines cannot be

looked into as it used to be in the past, in light of classic economic tenets that account for it in terms of overproduction, excessive savings or structural unemployment. The concept of development has become broader and more integrated, understood as: development of the people (through the increase of their potential, of a better access to education, training, healthcare, housing, environment and food); for the people (which means that development is not an end in itself, but rather economic growth results in better living conditions); by the people (meaning that they are not only the recipients of the development process, but they are actually part of it, responsible for the decisions that influence their lives (Pungs, 1999).

This new management model of the territory gives a whole new dimension to the concept of public power, according to which authorities act alone, and uses the principles of sustainable development. It is a set of tools that promotes diversity and cultural integration of the social, economic and environmental dimensions, starting by identifying the dilemmas one faces when looking for solutions for both the territory and the communities living in it. Implementing it includes a training programme at various levels, focussing on very important resources such as human capital, territorial matrix, territorial consortiums and communication – the latter being considered the spinal cord of all activities for its multiplying effect. According to the new model, government, firms, civil society organizations, educational institutions, and regional authorities become partners in creating sustainable solutions to promote development. The idea is that a place may become a tool to sustainably promote economic development. (Scheunemann, 2012, p. 54). To be successful, it must be an integrated and harmonious set, contributing to territorial management, by focussing on quality and global sustainability (Oosterbeek, 2012b).

The Integrated Territorial Management proposes to look for sustainable solutions in terms of development, by creating synergies between the public power, the private initiative, the civil society organizations, local and regional authorities and educational institutions. It does not dismiss traditional methods, but rather incorporates new tools, focussing on reaching a type of development that is based on territorial dynamics, on valuing human as well as social capital, and on a society that is fully aware of its role as part of the planning process and as an agent of change. So that it can be applied, two complementary components are required: qualification of human resources, in a logic of social capital formation and fight against all forms of alienation, and the creation of a supervision model, internalised by the community it is meant for, that favours a culture of quality and critical reflection. The ITM model allows one to prepare the group to go through the "area reconnaissance" stage and reach the "area identification" one, overcoming individual alienation and becoming aware of the fact that diversity and contradiction do exist within society and, as such, they cannot be neither ignored nor avoided, but rather thought of and organised.

ITM is not a recipe; nevertheless, some common methodological steps and procedures must be observed, if the model is to be implemented (Oosterbeek, 2014): a) Territorial Diagnosis: to define the territory in detail, specifying its stakeholders, dynamics of interests and traditions that may serve as guidelines for establishing a Master Plan; b) Territorial Matrix: to establish the territory's organic fabric, with places of remembrance, forums for discussion and dialogue dynamics for governance; c) Planning: to identify the dilemmas to be tackled; d) Integrating Areas: to identify potentially strategic axes in the territory, defined by means of forward planning, to build consortium projects (articulated and elaborated by integrated work groups), always bearing in mind governance issues (without excluding any of the interested parties) as well as scale projects (always expanding in a globalisation perspective); e) Human capital formation: basic and advanced training on ITM for formal and informal authorities, firm personnel and members of the community, giving them a better understanding of dilemmas and of how to plan ahead; f) Communication: definition of a communication plan to support ITM actions; g) Debate: Setting up forums to transversally discuss relevant subjects; h) Territorial Governance: following the creation of a Centre for Knowledge, which is a locus of articulation between stakeholders and project development; i) Territorial monitoring: it guides future actions within the territory, by structuring a permanent observatory.

ITM is a process and not a specific policy. If it is to be implemented, it requires that contradiction be accepted as something positive, capable of generating dynamism, and not as something that must be overcome.

6. Final remarks

The Integrated Territorial Management - ITM model is, then, revolutionary, for it breaks with public authorities' tendency to act alone and welcomes difference, regards diversity as rich, and accepts identifying dilemmas and looking for solutions for both the territory and the communities as a challenge. It comprehends a set of tools that promote diversity and make it possible to integrate the social, economic, and environmental dimensions within culture, beginning with the identification of the dilemmas in need of a solution that affect the territory and the communities living in it.

By associating culture with the triple bottom line — economy, society and environment — , ITM provides a holistic view of a reality that is plural, integrated, systemic and undivided. This type of participating governance model looks for sustainable solutions compatible with the sustainable development of any given territory, through a synergetic process, involving public authorities, the private initiative, civil society organizations, local and regional authorities, and educational institutions. It includes all the aspects of a territory (economy, environment, society and culture), in a transversal, integrated manner, thus contributing to the governance of a given territory. In traditional management, these factors are looked into from a unilateral, segmented perspective that has no relationship with the bigger picture, thus compromising its chances of success.

The Integrated Territorial Management provides knowledge and solutions, which allows one to go beyond an horizontal, non-integrated view of sustainability. The ITM methodology is related to territorial identity, governance and sustainability. In this new management model, government, firms, civil society organisations, educational institutions, and regional authorities become partners in providing sustainable solutions that enhance development.

The proposal to create a Masterplan for Governador Valadares, based on a ITM, approach may help the town and the region grow in a balanced, integrated and sustainable way, overcoming the challenges posed by the imbalances brought about by an exclusively economic view. Setting up a plan based on the ITM model calls for a strategic view, flexible proposals, as well as management. In that sense, towns have no alternative but to radically become new permanent education territories or face the risk of turning into spaces where nature, people and their dreams will be decimated.

Main challenges and difficulties to overcome by Integrated Territorial Management approach:

- the purely naturalistic view of the concept of environment (as a set of plants, animals, water and air);
- the absence of a holistic view of the reality (which is plural and indivisible);
- the individualism that characterizes society (apart from alienation);
- the absolute lack of collective sense of people;
- the absence of involvement of the different social stakeholders in the proposals and in the monitoring of local public policies;
- the traditional, segmented and crystallized management of the Brazilian public sector;
- the lack of transparency in public management, although Federal Law No. 12527 of November 18, 2011 regulates the constitutional right of citizens' access to public information.

The main limitation to the proposal of Integrated Management of Territory lies in the current moment of transition of Brazilian society - the rupture from the old order based on practices of reclaiming (of social movements) to a modern management, based on the propositional practices. From another perspective, at the same time as this transition process introduces limitations, it opens the way for new proposals for future work. The transitory of the change can also be a tool of transformation.

In this line of research, new observations will focus on each change - as a window of opportunity-, asking what are their limits and possibilities. To do so, it is necessary to recognize that:

a) the conflict is something constitutive of social relations and must be assumed, in this perspective, in the process of building a strategic vision of the city, where citizens are the real protagonists;

b) the basis of social support for a new development project is the participation of active citizenship and the construction of public spaces of negotiation where all the stakeholders involved in the production and reproduction of life in the cities are present;

c) we must be aware of the possibility of building new collective references, redefining territorial alliances, reworking the bases of its economy, of its ties of solidarity, the basis of its culture and its sense of identity.

Although one cannot foresee the future, one must build alternative scenarios following accurate models. The ITM model that has been proposed for Governador Valadares may be replicated in other towns of the River Doce Basin, serving as a basis to reach sustainable development.

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Announcements, Conferences, News

2018 American Economic Association Annual Meeting at the Allied Social Sciences Association (ASSA)

January 5th-7th, 2018 - Philadelphia, PA

Conference Overview[1]

In 5th - 7th January 2018, the Annual Conference of the American Economic Association (AEA) in conjunction with the Allied Social Science Association (ASSA) will take place in Philadelphia. The American Economic Association, founded in 1885, is a non - profit scholarly association, which aims to publish and discuss research topics in economics. Part of its mission is the AEA journals, the Annual Meeting as well as to build careers in economics. The AEA brings together thousands of professionals and graduates from different disciplines, who focus on the research and teaching of economics.

The aim of this yearly conference of significant importance is to bring together the best personas in the field of economics and salute the progress and the innovation in this field. During this Conference a variety of economic topics will be presented and discussed through many speakers and panels. It is worth to mention that selected papers from the conference are published each May in a Papers and Proceedings edition by the AEA as well as the fact that this Annual Conference offers many networking opportunities, award presentations and lectures.

Research papers, that are going to be discussed in January 2018, include but are not limited to: “Behavioral and Experimental Economics Insights for Agri-environmental Challenges”, “China's National Carbon Market, Economic Applications of Machine Learning”, “Innovation in the Assessment of Economic Learning”, “International Trade and Health”, “Issues Relating to Higher Education Financing”, “Monetary Policy Implications”, “Startups and Entrepreneurship”, “Energy Policy” and “Marriage Markets in Developing Countries”.

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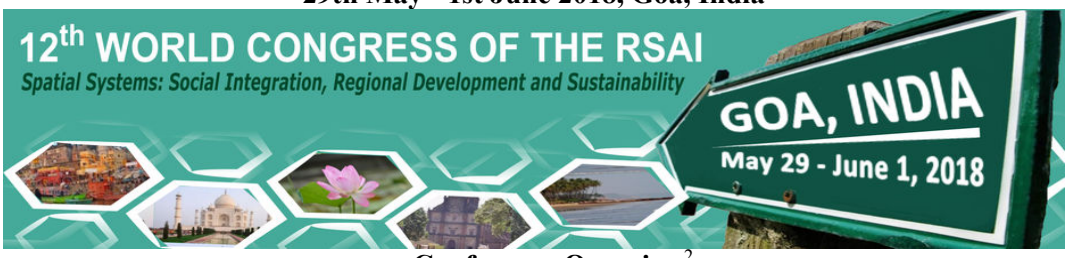
1 Conference overview by Vilelmini Psarrianou

12th World Congress of the Regional Science Association International "Spatial Systems: Social Integration, Regional Development and Sustainability"

29th May - 1st June 2018, Goa, India



Conference Overview[2]

In 29th May to 1st June 2018, the 12th World Congress of the Regional Science Association International (RSAI) will be held in Goa, India. RSAI is an international community of scholars, which was founded in 1954 and focuses on the regional impacts of the processes of economic and social change.

The upcoming World Congress titled "*Spatial Systems: Social Integration, Regional Development and Sustainability*" will welcome regional scientists, practitioners and researchers in the field of regional science and its aim is to act as source of inspiration for young students and scholars by creating an attractive network, to promote the exchange of knowledge and the interaction among the participants and overall to create an environment that encourages the research community. Having in mind that regional science concentrates on the achievement of a sustainable future via a better understanding of the notion of 'region' as a special unit, this Congress focuses on the needs of development across the regions as spatial entities. The sub-themes of the Congress, such as the "bid data for regional science", the "environmental issues", the "innovation and entrepreneurship" and the "migration and labor markets", are expected to be a motivation platform for further discussion and debates.

The sub-themes will be aimed at providing a platform for debates and discussions around the key issues of contemporary regional science and carve out the way to future research agenda. Furthermore, lectures, scientific and themed sessions as well as workshops will be a vital part of the upcoming Congress. Some of the special sessions include the topics of water management in South Asia, a spatial analysis regarding the transition from neural computing to deep learning and analytical approaches to climate change at multiple scales.

2 Conference overview by Vilelmini Psarrianou

Academic Profiles

Professor Antigone Lyberaki

Professor Antigone Lyberaki is Professor of Economics at Panteion University in Athens. She was a Member of Parliament for 'To Potami', a party of the liberal centre in 2015. She has a PhD in Economics on Greek small and medium enterprises and an MPhil in Development Studies from IDS based at the University of Sussex. She has been a visiting professor in New York (CUNY) and Paris (EHESS). She was a Visiting Professor at the LSE and a Visiting Fellow at IDS at Sussex in 2016. Her research interests are SMEs, migration, ageing and gender. She has served as board member of ActionAid Hellas (2004–14), and Solidarity Now (2014–), an NGO active in refugee relief.

Some of her most recent academic publications include the following:

2017: (with P. Tinios), 'Small Firms as a Blind Spot in Greek Austerity Economics'. IDS Working Paper 491, Brighton: IDS.

2017: 'Women in the Economy', Athens: Papadopoulos (in Greek).

2017: (with C. Meghir and D. Nicolitsas), 'Labor Market Regulation and Reform in Greece'. In: C. Meghir, C. Pissarides, D. Vayanos, N. Vettas (eds), Reforming the Greek Economy. MIT Press (forthcoming, October 2017).

2016: 'Hopes and Expectations dashed: Migrant Women, the Informal Welfare State and Women's Labor Force Participation in Southern Europe'. In: Z. Meghani and L. Eckenwiler (Eds) Migrant Women Workers: Ethical and Political Issues, Routledge International Studies of Women and Place, pp. 224-250.

2015: (with P. Tinios), 'A 'Fairweather Welfare State'? Formal and informal social protection and the Greek crisis'. In: R. Gerodimos and G. Karyotis (eds) The Politics of Extreme Austerity: Greece and the Eurozone crisis, Palgrave, pp. 106-122.

2014: (with P. Tinios), 'The Informal Welfare State and the Family: Invisible Actors in the Greek Drama'. Political Studies Review, 12(2): 193-208.

2013: (with P. Tinios and G. Papadoudis), 'Retrospective explanation of older women's lifetime work involvement: Individual paths around social norms'. Advances in life course research, 18(1): 26-45

2013: (with P.Tinios, A. Mimis & Th. Georgiadis), 'Mapping population ageing in Europe: How are similar needs in different countries met by different family structures?', Journal of Maps, 9(1): 4-9.

By Vilelmini Psarrianou
Chief Executive, RSI J

Professor Amit Batabyal

Professor Amit Batabyal is Arthur J. Gosnell Professor of Economics in the Department of Economics in Rochester Institute of Technology.

He has studied Applied Economics and Business Management in Cornell University, followed by a master's degree on Agricultural and Applied Economics in the University of Minnesota and PhD studies on Agricultural and Resource Economics in the University of California.

He has taught in various universities such as the College of William and Mary in Virginia, the Utah State University, the Deakin University in Melbourne and the Monash University in Malaysia.

His academic area of interest includes applied microeconomics, natural resource economics, ecological economics, development economics, International Trade Theory, regional economics, as well as philosophy and political science.

He is a member of the American Economic Association (AEA), the American Agricultural Economics Association (AAEA), the Association of Environmental and Resource Economists (AERE), the International Society for Ecological Economics (ISEE) and the International Economics and Finance Society (IEFS).

Dr Amit Batabyal has received a lot of awards and honors, such as the "Best Paper in Studies in Regional Science Award" by the Regional Science Association International in 2011, the Mattei Dogan Foundation Prize by the International Social Science Council in 2013 and the Certificate of Recognition for Outstanding Scholarly Achievement by the Rochester Institute of Technology in 2014, 2015 and 2016.

His most recent publications include but are not limited to:

Regional Growth and Sustainable Development in Asia, edited (with P. Nijkamp). Springer, 2017.

A Game Theoretic Analysis of Tariffs, Dynamic Inconsistency, Resource Conservation, and Trade, Applied Economics Letters, 13, 217-22, 2006.

Ecological, Economic, and New Synthetic Perspectives in Range Management: An Interpretative Essay, (with H. Beladi), International Review of Environmental and Resource Economics, 5, 147-98, 2011.

A Game Model of International Trade, Transport Costs, Invasive Species, and Protocol Compliance, (with P. Nijkamp), Transportation Research Part D, 46, 267-72, 2016.

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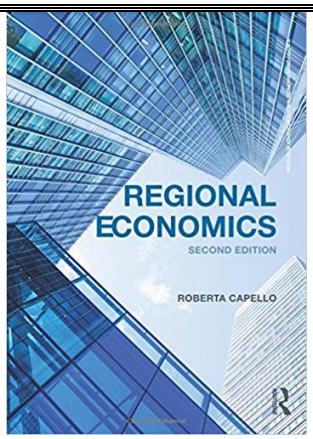
Chief Executive, RSI J

Book Reviews



Book Title: Regional Economics (Second Edition)
Author: Roberta Capello
© 2016-Routledge
ISBN-13: 978-1138855885
ISBN-10: 1138855885

This book provides a comprehensive and up-to-date treatment of regional economics. Also, we could say that, this book is "must have book" especially for those working on issues of regional economics and this because includes key theoretical developments of the last ten years.

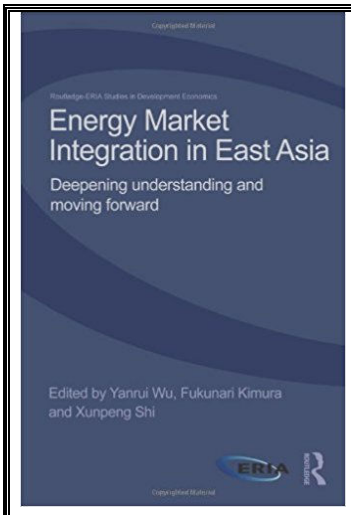
More specific, the second edition of *Regional Economics* provides an understanding of earliest location theories to the most recent regional growth theories. It is also enriched by the recent debate on smart specialization strategies recently developed by the EU for the design of new cohesion policies.

In addition, the main issues being thoroughly developed are the following: proximity and innovation theories, the concept of territorial capital and the debate on the role of agglomeration economies in urban growth.

Finally, the central parts of this book are the following:

- *Location Theory: Physical-metric space (Agglomeration and Location, Accessibility and Location, Hierarchy and Location)*
- *Theories of Regional Growth: Uniform-abstract space (Productive Structure and Development, Demand, Factor Endowment)*
- *Theories of Local Development: Diversified-relational space (Territorial Competitiveness and Exogenous Development, Territorial Competitiveness and Endogenous Development: Agglomeration Economies, Territorial Competitiveness and Endogenous Development: Innovation and Proximity*
- *Theories of Regional Growth: Diversified-stylized space (Territorial Competitiveness and Cumulative Demand/Supply Growth, Territorial Competitiveness and Endogenous Growth, Towards a Theoretical Convergence: the Territorial Foundations of Regional Growth Models)*

Book Review by Christos Genitsaropoulos, RSI J



Book Title: Energy Market Integration in East Asia: Deepening Understanding and Moving Forward (1st Edition)

Authors: Yanrui Wu, Fukunari Kimura, Xunpeng Shi

© 2014-Routledge

ISBN-13: 978-0415827737
ISBN-10: 0415827736

This book highlights the East Asian nations through the dialogue between ASEAN and its partners have been promoting energy market integration (EMI) for a decade. Essentially, this book is the first publication of its kind exclusively focusing on EMI in East Asia.

This book is well written and provides valuable a significant addition to the literature. The covered topics range from the general debates about EMI to regional policy responses. Specially, the main parts being thoroughly developed are the following:

- The status and prospects of energy market integration in East Asia
- A regional public goods approach toward energy market integration in East Asia
- Energy market integration and economic convergence
- Promoting energy market integration between China and the Association of Southeast Asian Nations through trade facilitation

Overall, this book should be of interest to a wide audience such as academia, business analysts and policy makers.

Book Review by Christos Genitsaropoulos, RSI J

GUIDELINES

for the Writers & a format model for the articles submitted to be reviewed & published in the journal

Regional Science Inquiry Journal

(EconLit, Scopus, RSA I) – www.rsijournal.eu

Guidelines for the Writers & a format model for the articles submitted to be reviewed & published in the journal

The Title of the paper must be centered, and the font must be Times New Roman, size 12, in Uppercase, in Bold

For the writers' personal information use the Times New Roman font, size 11, in bold, and centered. Use lowercase for the first name and uppercase for the last name. The line below the name includes the professional title and workplace; use the Times New Roman font, size 10, centered. In the third line write only the contact e-mail address in Times New Roman 10, centered.

Name LAST NAME
Professional Title, Workplace
E-mail Address

Name LAST NAME
Professional Title, Workplace
E-mail Address

Abstract

The abstract consists of a single paragraph, no longer than 250 words. The font must be Times New Roman, size 11. The text must be justified. The title "Abstract" must be aligned left, in Times New Roman, size 11, in bold. A space of one line must be left between the title and the text of the abstract. The abstract must contain sufficient information, be factual, and include the basic data of the paper.

Keywords: Use 3 to 5 keywords, separated by commas

JEL classification: We kindly request that you classify your paper according to the JEL system, which is used to classify articles, dissertations, books, book reviews, and a variety of other applications. The use of the JEL classification is necessary so that your paper be properly indexed in databases such as EconLit. Select the codes that represent your article and separate them by commas. You can find information on the JEL system here: https://www.aeaweb.org/jel/guide/jel.php

1. Introduction

All articles must begin with an introduction, a section which demarcates the theoretical background and the goals of the paper.

The present document provides the necessary information and formatting guidelines for you to write your article. We recommend that you copy this file to your computer and insert your own text in it, keeping the format that has already been set. All the different parts of the article (title, main text, headers, titles, etc.) have already been set, as in the present document-model. The main text must be written in regular Times New Roman font, size 11, justified, with a 0.5 cm indent for the first line of each paragraph.

We recommend that you save this document to your computer as a Word document model. Therefore, it will be easy for you to have your article in the correct format and ready to be submitted. **The only form in which the file will be accepted is MS Word 2003**. If you have a later version of Microsoft Office / Word, you can edit it as follows:

- Once you have finished formatting your text, create a pdf file, and then save your file as a Word "97-2003" (.doc) file.

- Compare the two files – the pdf one and the Word "97-2003" (.doc) one.
- If you do not note any significant differences between the two, then – and only then – you can submit your article to us, **sending both the pdf and the Word "97-2003" (.doc) files** to our e-mail address.

If you use a word processor other than Microsoft Word, we recommend that you follow the same procedure as above, creating a pdf file and using the appropriate add-on in order to save your document in MS Word "97-2003" (.doc) form. Once you compare the two files (and find no significant differences), send us both.

2. General Guidelines on Paper Formatting

2.1. Body

The body of the text consists of different sections which describe the content of the article (for example: Method, Findings, Analysis, Discussion, etc.). You can use up to three levels of sections – sub-sections. For the Body of the text, use the default format style in Word, selecting the Times New Roman font, size 11, justified, with a 0.5 cm indent for the first line of each paragraph (this is further detailed in the section "Paragraphs").

2.2. References

The references included in the paper must be cited at the end of the text. All references used in the body of the paper must be listed alphabetically (this is further detailed in the section "References").

2.3. Appendices

The section "Appendices" follows the section "References".

3. Page formatting

3.1. Page size

The page size must be A4 (21 x 29,7 cm), and its orientation must be "portrait". This stands for all the pages of the paper. "Landscape" orientation is inadmissible.

3.2. Margins

Top margin: 2,54cm
Bottom margin: 1,5cm
Left and right margins: 3,17cm
Gutter margin: 0cm

3.3. Headers and Footers

Go to "Format" → "Page", and select a 1,25cm margin for the header and a 1,25cm margin for the footer. Do not write inside the headers and footers, and do not insert page numbers.

3.4. Footnotes

The use of footnotes or endnotes is expressly prohibited. In case further explanation is deemed necessary, you must integrate it in the body of the paper.

3.5. Abbreviations and Acronyms

Abbreviations and acronyms must be defined in the abstract, as well as the first time each one is used in the body of the text.

3.6. Section headers

We recommend that you use up to three sections – sub-sections. Select a simple numbering for the sections – sub-sections according to the present model.

3.7. First level header format

For the headers of the main sections use the Times New Roman font, size 11, in bold and underlined, and leave a size 12 spacing before the paragraph and a size 6 spacing after the paragraph. The header must be aligned left. Use a capital letter only for the first letter of the header.

3.8. Second level header format

For second level headers, follow this model. Use the Times New Roman font, size 11, in bold, and leave a size 12 spacing before the paragraph and a size 3 spacing after the paragraph. Select a 0.5 cm indent. The header must be aligned left. Use a capital letter only for the first letter of the header.

3.8.1. Third level header

For third level headers, follow this model. Use the Times New Roman font, size 11, in bold and italics, and leave a size 6 spacing before the paragraph and a size 0 spacing after the paragraph. The header must be aligned left, with a left indent of 1 cm. Use a capital letter only for the first letter of the header.

4. Paragraphs

In every paragraph, use the Times New Roman font, size 11, with single line spacing. We recommend you modify the default (normal) format style in Word and use that in your text. For all paragraphs, the spacings before and after the paragraph must be size 0, and the line spacing single. Use a 0,5cm indent only for the first line of each paragraph. Leave no spacings nor lines between paragraphs.

4.1. Lists

In case you need to present data in the form of a list, use the following format:

- Bullet indent: 1,14cm
- Text:
    - Following tab at: 1,5 cm
    - Indent at: 1,5cm

Use the same format (the above values) if you use numbering for your list.

1. Example of numbered list 1
2. Example of numbered list 1

5. Figures, images, and tables

5.1. Figures and images

Insert your figures and images directly after the part where they are mentioned in the body of text. They must be centered, numbered, and have a short descriptive title.

Figures put together "as they are", using Office tools, are absolutely inadmissible. The figures used must have been exclusively inserted as images in Word, in gif, jpg, or png form (with an analysis of at least 200dpi), and in line with the text. The width of an image must not exceed 14,5cm so that it does not exceed the margins set above.

The images, figures, and tables must be inserted "as they are" in the text, in line with it. **Figures and images which have been inserted in a text box are absolutely inadmissible.**

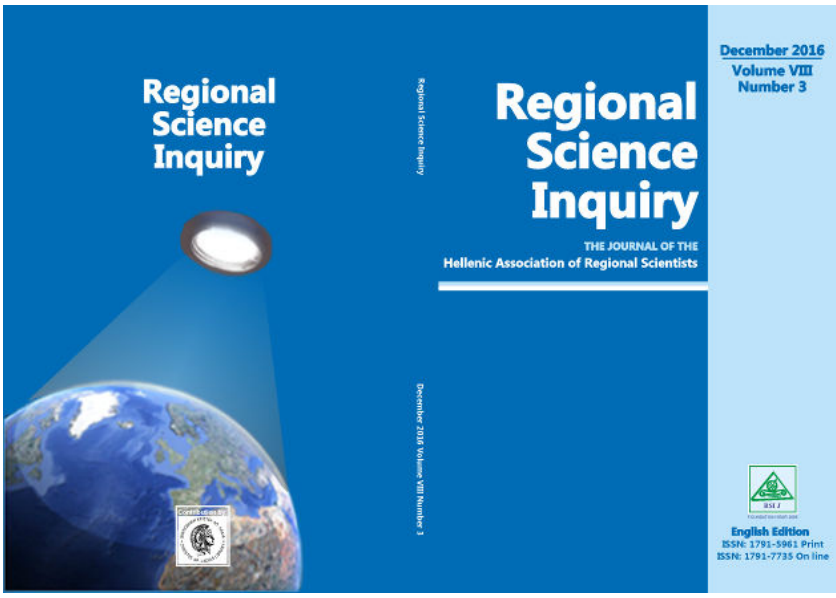
5.1.1. Reference inside the text

Avoid phrases such as “the table above” or the “figure below” when citing figures and images. Use instead “in Table 1”, “in Figure 2”, etc.

5.1.2. Examples

A model of how to format figures/images follows. For the title, use the Times New Roman font, size 10, in bold. Write the title above the figure, and set a size 6 spacing before the title and a size 0 spacing after it. The line spacing of the title must be 1.5 line. Both the image and its title must be centered.

Image 1: Title



Source: cite the source

Directly below the figure you must cite the source from which you took the image, or any note regarding the figure, written in Times New Roman, size 10. Write it below the figure, leaving a size 0 spacing before and after it, use a line spacing of 1.5 line, and make it centered.

5.2. Tables

For the title, use the Times New Roman font, size 10, in bold. Write the title above the table, and set a size 6 spacing before the title and a size 0 spacing after it. The line spacing of the title must be 1.5 line. Both the table and its title must be centered. The width of the table must not exceed 14,5cm so that it does not exceed the page margins set.

Table 1. Example of how a table must be formatted

Age	Frequency	Percentage %
Under 40	44	32.1
40 - 49	68	49.6
Over 50	25	18.2
Total	**137**	**100.0**

Source: cite the source

If the table needs to continue on the next page, select in the “Table properties” that the first line be repeated as a header in every page, as in the above example of Table 1. **Tables (or figures or images) which are included in pages with a “Landscape” orientation are absolutely inadmissible.**

Every table must have horizontal lines 1 pt. wide at the top and bottom, as shown in the example. The use of vertical lines and color fill at the background of the cells is strictly prohibited.

Directly below the table you must cite the source or any note regarding the table, written in Times New Roman, size 10. Write it below the table, leaving a size 0 spacing before and a size 6 spacing after it, and make it centered.

6. Mathematical formulas

There is a variety of tools in order to insert and process mathematical formulas, such as the "Mathematics", found in the most recent editions of Word, "Math Type", "Fast Math Formula Editor", "MathCast Equation Editor", "Math Editor". Since it is impossible for us to provide you with compatibility with all these tools in all their editions, **we can only admit your paper if it contains mathematical formulas solely in the form of images.**

Keep a continuous numbering for the mathematical formulas and center them in the page, as shown in the following example:

$$y = ax^2 + bx + c \tag{1}$$

The same stands for formulas or particular mathematical symbols you may have integrated in your text. For instance, if you want to use the term ax^2 in your text, you must insert it as an imaged, in line with the text. The images containing the mathematical formulas must be legible (at least 300dpi).

In the exceptional case of a text which may contain a great number of mathematical formulas, the writer may send it to us in TeX form if they so wish.

7. References

We recommend that you use the Chicago Manual of Style Author-Date system, as it is recommended by the AEA (American Economic Association) for the journals included in the EconLit database, and it is the dominant style of bibliography in the field of Economics. For more information you can go to the following links:

- https://www.aeaweb.org/journals/policies/sample-references
- http://www.chicagomanualofstyle.org/tools_citationguide.html
- http://libguides.williams.edu/citing/chicago-author-date#s-lg-box-12037253

7.1. Online references (internet citations)

Check your links again before sending your file, to confirm that they are active.

Avoid long internet links. Where possible, also cite the title of the website operator-owner. Return the font color to black, and remove the hyperlink. Links such as the following are impractical and distasteful, therefore should be avoided.

Example of an inadmissible hyperlink

https://el.wikipedia.org/wiki/%CE%9F%CE%B9%CE%BA%CE%BF%CE%BD%CE%BF%CE%BC%CE%B9%CE%BA%CE%AC

7.2. References Formatting

For your list of references, use the Times New Roman font, size 10, with single line spacing. The paragraph format must include a size 0 spacing before the paragraph and a size 0 spacing after it, aligned left. Use a 0,5 cm indent only for the first line of each paragraph. Leave no spacings or lines between paragraphs.

7.3. Example of how References must be formatted

Bureau of Labor Statistics. 2000–2010. "Current Employment Statistics: Colorado, Total Nonfarm, Seasonally adjusted - SMS08000000000000001." United States Department of Labor. http://data.bls.gov/cgi- bin/surveymost?sm+08 (accessed February 9, 2011).

Leiss, Amelia. 1999. "Arms Transfers to Developing Countries, 1945–1968." Inter-University Consortium for Political and Social Research, Ann Arbor, MI. ICPSR05404-v1. doi:10.3886/ICPSR05404 (accessed February 8, 2011).

Romer, Christina D., and David H. Romer. 2010. "The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks: Dataset." American Economic Review. http://www.aeaweb.org/articles.php?doi=10.1257/aer.100.3.763 (accessed August 22, 2012).

Ausubel, Lawrence M. 1997. "An Efficient Ascending-Bid Auction for Multiple Objects." University of Maryland Faculty Working Paper 97–06.

Heidhues, Paul, and Botond Kőszegi. 2005. "The Impact of Consumer Loss Aversion on Pricing." Centre for Economic Policy Research Discussion Paper 4849.
Zitzewitz, Eric. 2006. "How Widespread Was Late Trading in Mutual Funds?" http://facultygsb.stanford.edu/zitzewitz.