

THE CROSSROAD OF HOUSING LOANS FINANCING - CASE OF ALBANIA

Iris SHAHINI

Economic University of Tirana, Accounting Department
irisshahini@gmail.com

Orfea DHUCI

Economic University of Tirana, Accounting Department
odhuci@alpha.gr

Abstract :

The current economic crisis has highlighted that a well-functioning financial system is significantly important for economic growth. This study investigated factors affecting housing finance supply in Albania.

Housing Finance is a major factor determining the quality and tenure of housing consumption, the overall financial portfolio of the public and the stability and effectiveness of the financial system (Diamond and Lea 1992a). Struyk and Turner (1986) and Stephens (2000 & 2002) argued that housing finance plays an important role in shaping each country's wider housing system and the housing system takes important social and economic consequences. Then, it follows that the development of a viable housing finance system is of utmost importance in the developed economies.

For a typical house-owner, the house is a major asset in his portfolio and for many household, the purchase of a house represents the largest (and often only) life long investment and a store of wealth (Goodman 1989; Sheppard 1999; Malpezzi 1999; Bundick and Sellon Jr 2007; Dickerson 2009). In societies like Albania, where social housing is not on the priority list of government, the housing affordability would have to be looked at from the point of view of individual's ability to raise money needed to meet the cost or price of their housing needs. The first source of funding for individual is their income. This is often the cheapest source because there is no payment of extra cost in form of interest. The problem that arises in case of individuals in the emerging economies is that income levels are generally low. The low income means low disposal income which prohibits the individuals to qualify for housing loans.

Keywords: mortgage lending, house market, non performing loans, retail deposits

JEL classification : G01,G21, E51,R31

1. Introduction

The considerably decrease in the purchase/selling transactions of real estates, as well as the decrease in credit supply of construction sector from the bank side, have not influenced in the decrease of home purchase price. In an official declaration of the chief Albanian Association of Banks, Mr.Seyhan PENCABLIGIL, it was emphasized that the real estate prices should be decreased as they are overestimated considering the financial crises of the whole economy, stimulating in such way the housing loan financing. In contrast of what happened in the other economies, especially in the United States where the housing prices decreased considerably, in Albania they stayed almost stable by having the effect that Albania is out of the reality of financial crisis. From the other side the difficulties in the collateral execution from the banks it's a barrier to put pressure in the market price of real estates. According to the Ministry of Finance actually the banks have over 20 milliard ALL frozen in the legal process of non-performing loans. In such a situation the housing loans financing is considerably decreased. As per Bank of Albania data, the outstanding of mortgage loans has decreased for 2012, especially in June and July. The most shrunken was the loan in euro currency, which at the end of 2012 decreased by 3% compared with the end of 2011. The loan in euro currency composes 66% of the mortgage loan portfolio in 2012 from 72% in 2009. The mortgage loan portfolio composes 1/5 of the total loan portfolio of the banking system in December 2012. Up to the year 2008, banks especially the Greek once, were much more aggressive in lending of housing loans mainly in foreign currency. The financial crisis lead to the depreciation of

Albanian currency towards EUR and Albanian banks started to orient the customers to have the loan in the same currency of their incomes in order to avoid the exchange rate risk. On 2009 the loan in euro composed 72% of the total loan portfolio. The decrease in loan finance is argued by the banks as a necessity towards the sharp increase in non-performing loans. As per Albanian Association of Banks the NPL ratio on December 2012 reached 22.5% from 18.8% on December 2011. In the first semester of 2012 the indicator of lost loans increased to 6.58% from 5.7% on December 2011. As per constructors, there are the banks that supply the economy with money and the decrease in selling property is a consequence of loan supply from banks side considering that the individuals that buy an apartment in cash are very few in number. From the other side they argue that it is impossible for them to decrease the selling price of houses as all the constructions of years 2004-2005 have an high construction cost not only due to high cost of raw materials but also due to the high percentage of m.s.q pertaining to the plot owners (almost 40% in Tirana area). The decrease in house prices seems to be danger if we have in mind an Albanian construction industry of infinite debts. If the price of apartments will decrease, the constructors should be obliged to pay more to their suppliers of first materials towards whose they are debtors. Also banks from the other side lose from the lower collateral value securing the loans. The only decrease in housing price occurs when it is purchased in cash. The prices in Tirana area for apartments vary from 380 euro/m.s.q in the suburb to 1,800 euro/s.q.m in the center. Still the real estate market is frozen and the only breath was the homeless loan subsidized from Albanian Government during the years 2011-2012.

2. Literature review

The Loanable funds theory of interest rate argued that economic agents have a certain amount of financial wealth and they can decide to hold the wealth in the form of either interest earning financial assets, or in cash which earns no interest, or a combination of the two (Pilbean 2005; Buckle & Thompson 2005 and Wickens 2008). The quantity of loanable funds available is the stock of interest earning financial assets and is determined by three factors:

1. The amount of savings – an individual's endowment may consist of securities plus human health and the present value of his earnings. If the individual's preferred inter-temporal consumption differs from his time-profile of earning, his consumption might be re-arranged. This is done by purchases of financial securities or early mortgage repayment (Benston and Smith Jr 1976)
2. Switches from money holdings into saving products – There might be switches by individuals and business from holding financial wealth in the form of money to saving products.
3. An increase in loans made by financial institution.

With respect to the supply function a review of the literature reveals that the variables, other than the price variables, most often used to model the supply of mortgage loans include cost of funds, net new savings and past loan commitments. On the supply side, a variety of credit channel models consider how changes in the financial positions of banks (bank lending channel) and borrowers (balance sheet channel) affect the availability of credit in an economy (see Hall, 2001, for a succinct overview). The role of bank's balance sheets in shaping the evolution of credit growth has been subject to debate during the 2008 recession. On one hand, there is evidence that exposition to "toxic" assets has affected some banks' ability to lend (Puri et al., 2011). In evaluating the impact of non-performing loans on the loan supply by banks, there are studies that suggest that credit creation is impacted by both macroeconomic variables that impact loan uptake as well as internal structures such as the composition of a bank's balance sheet and the demand for loans. Baum et al (2002) investigated empirically the link between bank lending and macroeconomic uncertainty using annual and quarterly U.S. bank level data. They concluded that in the presence of greater macroeconomic uncertainty, banks collectively become more conservative, and this concerted action will lead to a narrowing of the cross-sectional distribution of banks' loan-to-asset (LTA) ratios. Calza et al (2001) using the Johansen methodology, identified in their study one cointegrating relationship linking real loans, GDP and interest rates. This relationship implies that in the long-run real loans are positively related to real GDP and negatively to real short-term and long-term interest rates. The financial crisis in the 2007 has caused a slowdown in monetary

expansion. O’Brein and Browne (1992) sited that one factor that can contribute to the slowdown in monetary transaction is a reduction in bank lending. It is understood that a slowdown in loans reflects influences on both the demand and the supply side. On the demand side a slowdown in economic activity and the subsequent loss of purchasing power by many individuals has disqualified them from being able to qualify for access to loans. This has resulted in dramatic fall in loans demanded. According to O’Brein and Browne (1992), on the supply side, the decline in credit is exacerbated by two channels on the supply side i) a deterioration in asset quality and ii) stricter attitudes of regulators, especially through more stringent capital standard.

3.1 Factors affecting Housing Finance Supply in Emerging Economies.

With the magnitude of housing needs in most of the countries in the emerging economy, Buckley and Kalarickal (2004), Hassler (2005) and Merrill (2006) argued that there are requirements that emerging economies must embrace, if they are going to move forward in terms of delivering housing finance. The requirements include stable macroeconomic conditions, a legal framework for property rights, mortgage market infrastructure and funding sources to promote financial intermediation. In this paper we will discuss how the macroeconomic conditions influence in loan supply.

3.1.1 Macroeconomic conditions:

Macroeconomic policies are one of the main factors affecting the Housing Finance Supply in Albania. The macroeconomic policies might be adopted to affect (decrease/increase) the nominal interest rate, or volatility of inflation, which has affected the efficiency of housing finance. A macroeconomic policy framework is one that promotes growth by keeping inflation low, the budget deficit small and the current account sustainable (Fischer 2004 p.123; Hale 2007). Considering that approximately 66 % of the mortgage portfolio is in foreign currency and the incomes of the borrowers are manly in ALL, it is very crucial not to permit the depreciation of local currency. Therefore, the financial regulatory authorities (central banks) in most emerging market economies have used policies like the cash reserve requirement and liquidity ratio as instruments of monetary control. Cash reserve requirement is the percentage of the banks cash asset to be kept in an account with the central bank. In Albania CRR is 10 percent of the bank’s total deposit liabilities. This policy is adopted to control volume of funds available for financial institutions to invest in granting loans. Therefore, any system that is supporting its housing development is contributing to the long-term growth and stability of the country as well as the welfare of its people. With the recent trends in real growth rate in Albania economy put at 5.9 % in 2007, 7.5 % in 2008, 3.3 % in 2009, 3.91 % in 2010, 2.72 % in 2011 and 1.62 % in 2012. The income earned by workers are generally low, with the minimum monthly wage at All 21,000 (EUR 150) and the average monthly income for the public sector ALL 46,665 (EUR 333) and private sector ALL 38,292.2 (EUR 274)

Graph 1: Minimum Base Pay (Euro) – Comparison with region



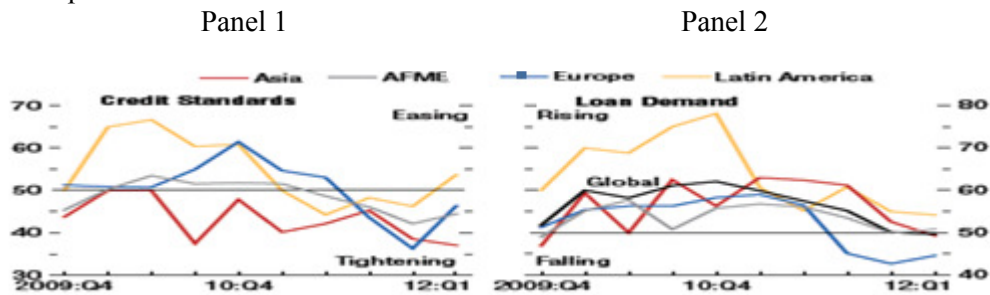
Source: Statistical institutions of each country

4. The overall trend for housing loans in our region and in the world

The tightening of credit standards has been applied usually by reducing the financing amount and asking for additional collateral. Albanian banks have reported that demand of customers has also decreased due to future uncertainty. The same trend has followed also during the year 2012. The demand for mortgage loans has been decreased due to the long run prediction of financial situation for the future from individuals. The decrease in mortgage loan portfolio for 2012 was 0.46 milliard all. The overall increase in retail portfolio was 0.7 milliard all during the year 2012, the lowest in the last ten years.

The same trend regarding the credit standards followed in the European countries (see graph 2, panel 1 and 2). Only after the first quarter of 2012 the banks started to easing the loan supply criteria.

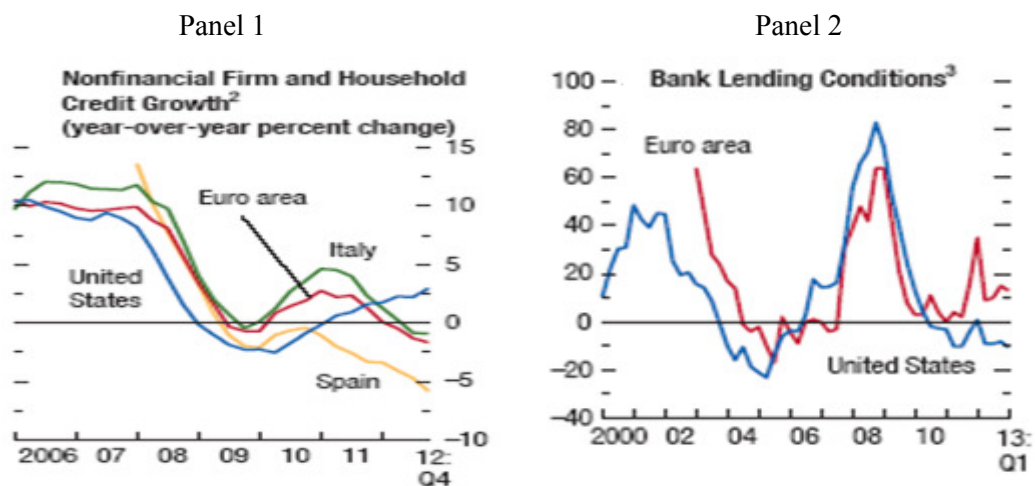
Graph 2: Global trend of Credit Standards and Loan demand



In the United States, the rate of credit growth has been picking up gradually, and bank lending conditions have been easing slowly from very tight levels (Graph 3, panels 1 and 2). Together with lower market risk spreads, this has noticeably eased financial conditions in the USA and Euro area (Graph 4). Financial conditions tightened sharply toward the end of 2011 as the economic outlook deteriorated and tensions rose in the euro area. More recently, market confidence has been bolstered by improved growth prospects and stronger policy actions. Risk spreads have narrowed as a result. Financial conditions are expected to continue easing as global growth continues to gain traction.

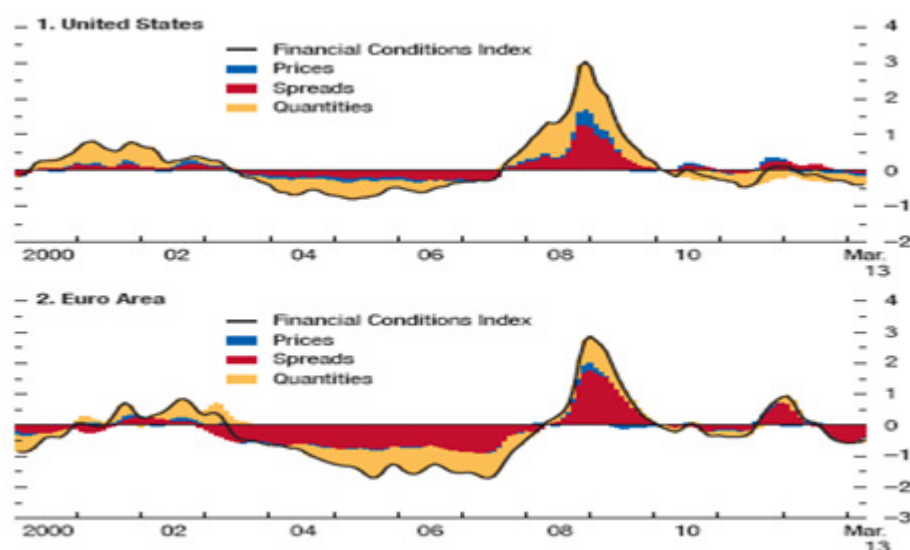
This process is supported by recovering house prices, higher household net worth, and stronger bank balance sheets and profitability. However, many middle-income households continue to face high debt burdens.

Graph 3: Monetary Conditions and Bank Lending



Source: World Economic outlook, April 2013

Graph 4: Financial Conditions Index



Source: World Economic outlook, April 2013

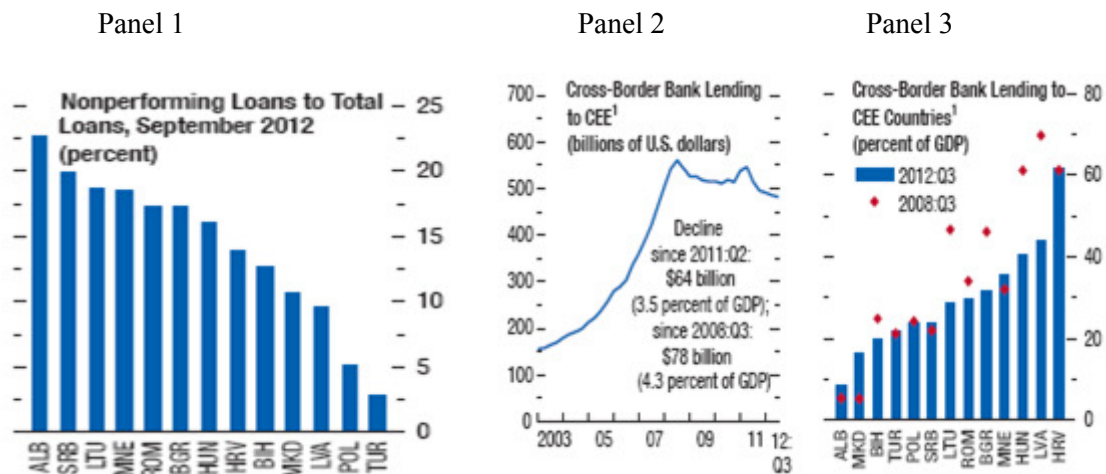
In the euro area, sustained, positive feedback between activity and credit still seems a distant prospect. Euro area credit continues to contract and lending conditions to tighten, reflecting mainly conditions in the periphery economies which includes Greece, Ireland, Italy, Portugal, and Spain, but also the poor macroeconomic outlook for the region as a whole. Companies in the core face an uncertain environment and low.

Emerging Europe

Emerging Europe experienced a sharp growth slowdown in 2012, reflecting spillovers from the euro area crisis and domestic policy tightening in the largest economies in response to new capacity constraints. The intensification of the euro area crisis took a toll on activity in emerging Europe in 2012. Exports decelerated, confidence suffered, and beleaguered western European banks decreased funding for their subsidiaries (Graph 5, panel 1,2 and 3). Compounding these effects were restrictive domestic policies—in Turkey to rein in the overheated economy and in Poland to address above-target inflation and a sizable fiscal deficit. As a result, growth in the region plunged from 5.0 percent in 2011 to 1½ percent in 2012. Several economies in southeastern Europe that had yet to fully emerge from the 2008–09 crisis fell back into recession. Emerging Europe is also burdened by such crisis legacies as high nonperforming loan ratios and incomplete repair of public finances.

Growth in Turkey is projected to accelerate to 3½ percent in 2013 and 3Y percent in 2014—helped by recovering external demand and capital flows. Poland's growth will slow further to 1.0 percent in 2013 before picking up to 2.0 percent in 2014, on account of lackluster private consumption, fragile export demand from key trading partners in core Europe, and a further decline in EU-funded public investment. Southeastern Europe will see the most tepid recovery, reflecting to various degrees entrenched structural impediments and competitiveness problems, a continued rise in nonperforming loans, and challenging public finances. Hungary faces a difficult outlook due to high public and external debt, along with unconventional policies that have eroded confidence and investment. Overall, annual average inflation is expected to remain moderate this year in most of emerging Europe. Elevated rates are projected only for Turkey (6½ percent) and Serbia (9½ percent), largely reflecting inflation inertia. The balance of risks to the outlook is tilted to the downside, though less than in the October 2012

Graph 5. Emerging Europe: A Gradual Recovery from 2012 Slowdown



5. Housing Market Price in Albania

The decline in market prices in Albania due to the crisis are lower than regional declines. The table below illustrates the decline in market prices for some of the regional countries following the house bubble in 2008. The cumulative decline for most of the regional countries (excluding Croatia) is higher than the 20% decline in market price reported for Albanian residential properties. The house bubbles have typically followed house booms caused not only by the widespread rise in house prices, but also by the accession in the European Union, which caused a massive flood of EU buyers in the acceding countries. While in Albania the house boom before the crisis was caused mainly by two factors:

- Remittances of the Albanian immigrants living abroad who invested a large portion of their savings in acquiring apartments in Tirana and other key areas
- The availability of housing loans and the non-restrictive risk policies of the banks, which coupled with rising rents and prices provided an excellent investment opportunity.

The touristic destinations and the capital are the two prevailing areas which have lower decline in prices as a result of the crisis in the regional countries. The key factor to the contained decline in the house prices in Albania relates to the “unwillingness” of the developers/constructors to lower offer prices, especially for apartments, despite the large available stock of apartments. This unwillingness relates to the lack of demand for apartments and real estate in general.

Table 2: Housing market price

Country	Decline on house market prices (real terms)	Prior increase in house market prices
Bulgaria	Cumulative for 2009 – 2011: 45.6%	Cumulative for 2000 – 2008: 300%
Croatia	Cumulative for 2009 – 2011: 16.6%. In 2012 it went down an additional 3.1%	Not available
Czech Republic	Cumulative for 2009 – 2011: 32.6%. In 2012 it is estimated to have declined by c. 4%	Cumulative for 1998 – 2003: 64%
Poland	Cumulative for 2009 – 2011 (on average): 24.3%. In 2012 it is estimated to have declined by c. 2.49%	Cumulative for 2005 – 2008 (in Warsaw): 109%
Romania	Cumulative for 2009 – 2011: 27.1%	Not available
Slovakia	Cumulative for 2008 - 2012: 28%	Cumulative 2006 – 2008: 28% - 70%

Source: AAB report on Factual Findings

Table 3: Rent to purchase price

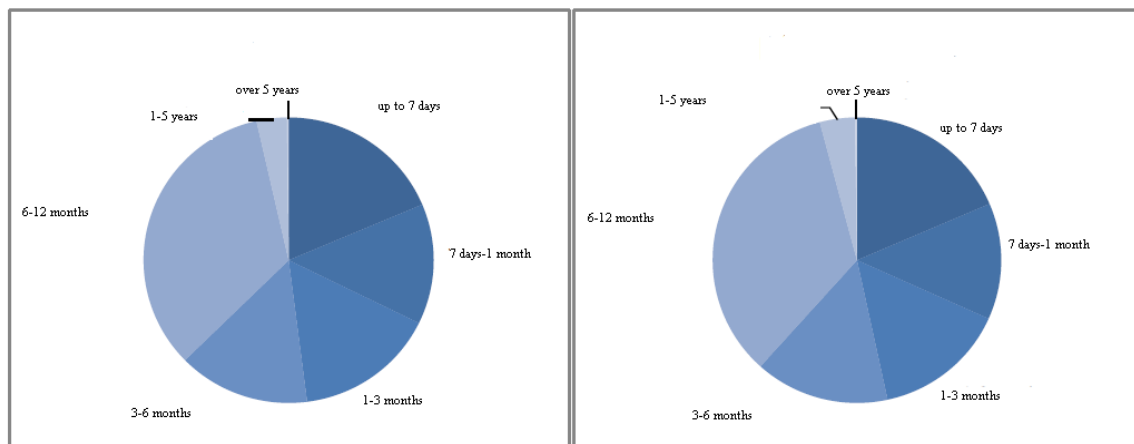
Country, location	Average sales price (EUR/sq.m.)	Average rent (EUR)	Rent to sales price (%)	Mortgage to income ratio (country information)
Italy, Rome	5,305	2,334	44%	99.70
Greece, Crete	6,229	1,472	24%	91.57
Romania, Bucharest	2,526	1,400	55%	143.87
Czech Republic, Prague	3,763	1,430	38%	75.11
Poland, Warsaw	3,546	1,729	49%	111.76
Croatia, Zagreb	2,217	1,244	56%	120.95
Bulgaria, Sofia	1,759	732	42%	102.61
Hungary, Budapest	1,506	1,248	83%	107.54
Turkey, Istanbul	2,386	1,457	61%	81.79
Macedonia, Skopje	1,058	781	74%	199.78
Serbia, Beograd	2,354	1,048	45%	174.60
Albania, Tirana	1,474	411	28%	145.38

Source: Albania Association of Banks

The regional comparison of rents and purchase prices for some of the regional countries, shows that apart from Crete (Greece) for all the other regional countries part of the comparison, the average rent levels are more than 30% of the average sale prices. With respect to Crete, given that it is primarily a touristic destination, the ratio of rent to sales prices can be justified by the fact that all properties are bought for rental purposes. Thus rents are kept at a certain level to attract tourists, but the number of properties is limited so sales prices are high. Albania has the lowest rent to sale price ratio

6. Funding of Mortgage Loans

If the funding of mortgage loans is left primarily to the deposit-taking institutions, they can only supply mortgage loans through deposit mobilized which are short-tenured. As a consequence of the high proportion of short-term liabilities in their deposits, they tend to lend short according to the commercial bank loan theory and the real bill doctrine. The theory stipulates that bank loans should be short-term and self-liquidating because commercial banks usually have short-term deposits. According to the theory, banks should not grant long-term loans such as housing / real estate loans or loans for financing purchase of plant and machinery because they are considered too illiquid (Elliot 1984; Ritter & Silber 1986 as cited by Soyibo 1996). A large percentage of financial institutions in the emerging economies are still adopting the business model used in the era of market-making (1970s-1980s) in the US relying on short-term deposits liabilities to fund long-term mortgages assets (USDHUD 2006; Cho 2007), which are contradictory to the tenets of the commercial bank loan theory. This model had a unique shortcoming under volatile interest rate environment where lenders are borrowing short-term and lending on long-term basis at high interest rates that results in dampened housing finance demand.

Graph 2: Deposits as per maturity
2011

Source: BOA Monetary policy report 2012

A well-functioning primary mortgage market requires adequate funding sources and variety of lenders in the primary market to promote further development. This includes savings mobilization and simple mortgage-backed debt instruments to offer lenders funding alternatives (Roy 2007).

A well-functioning mortgage market is considered by Jaffee and Renaud (1977), Jaffee (2008) and Renaud (2008) to have large external benefits to the domiciled national economy. Quigley (2000), Oloyede (2007) and Warnock & Warnock (2008) are of the opinion that in the absence of a well-functioning housing finance system, there would be inadequacies of market-based provision of formal housing, and any attempt made to provide subsidised housing finance in form of public housing and subsidised interest would be a short-term solution. One of the first set of empirical studies carried out on housing finance in emerging economies was by Deng et al (2005). It is the first rigorous empirical analysis on the earlier performance of residential mortgage market in China. Another recent empirical studies carried out was a Lithuanian study using multiple criteria quantitative and conceptual analysis by Zavadskas et al (2004). Others include Djankov et al (2007) covering 129 countries in both developed and emerging economies using new data on legal creditor rights and private / public credit registries.

Warnock and Warnock (2008) used annual average data from 2001 to 2005 in many developed and emerging economies with emphasis that countries with stronger legal rights, deeper credit information system and a more stable macroeconomic environment have deeper housing finance systems.

7. Methodology and Data

The purpose of this paper is to describe the relation between the mortgage loans supply from banks as a depended variable and the non-performing loans and the deposits of individuals as undepended variables. The period taken in consideration is 2007 up to 2012 corresponding with the beginin of the financial crisis. The data have been taken from different sources as Bank of Albania , Ministry of Finance, Albanian Associassion of banks etc. The time series of these data are on quarterly basis. There is a gap of empirical study of housing finance in emerging economies, which for I used Albania as a case study in this work. Both supply and demand side of survey were taken into context to generate response to the research questions in my PhD study, but in this paper I will analyse only the supply side of housing finance. The aim of this study centred on housing finance supply in Albania, therefore the methodological framework adopted for the supply side of housing finance is two-variable linear Regression. In the case of this study, various independent variables like individual deposits and non performing loans, are used to predict the value of the depending variable which is housing loans (supply of housing finance). EViews and Excel were used for data analysis. EViews is a standard statistical computer program very much suited for regression analysis with time-series data. The descriptive statistics are used to describe the basic features of the data in this study.

The Assessed Model

The conceptualization of a model is to assist in the analysis of the relationship between housing loans (housing finance supply), being the dependent variable, and other factors that may affect it. The methodology adopted need to capture all the variables. These variables include deposits of individuals and non-performing loans.

The supply of housing finance function is therefore expressed as:

$$Y_s = f(X_1 + X_2)$$

Y_s – is the depended variable which represents the mortgage loans supply in Albanian banking sector. This variable will be measured by the new mortgage loans disbursed on quarterly basis

X_1 - is the first independent variable which represents the individuals deposits in our banking g system. We expect to have positive relation between Y_s and X_1 considering that the increase of liquidity of the bank increases its willingness to lend

X_2 - is the second independent variable which represents the non-performing loans (90+ dpd). We expect in our study to have a negative relation between the Y_s and X_2 as the increase in non-performing loans makes banks more cautious in lending.

Using housing loans as the dependent variable, it could be deduced at a point, the effects of independent variables like the individual deposits and non- performing loans

The basic model is as shown below:

$$Y_s = A + \beta_1(X_1) + \beta_2(X_2)$$

The assessed model is:

$$\log(s) = -13.74 + 2.31*\log(x_1) - 0.81*\log(x_2)$$

Dependet Variable:

$\log(s)$ - Mortgage loans supply

Independent Variable

$\log(x_1)$ - individuals deposits

$\log(x_2)$ - Totali i kredive me probleme

$\beta_1 = 2.31$ shows that when the deposits of individuals increases by 1 unit then the supply for mortgage loans will increase by 2.31 units by keeping stable the non performing loans

$\beta_2 = -0.81$, shows that when the total non performing loans increases by 1 unit then the supply for mortgage loans decreases by 0.81 units by having stable the deposits of individuals.

Table 4: Model Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-13.74619	5.220548	-2.633093	0.0181
LOG(X1)	2.318775	0.456265	5.082086	0.0001
LOG(X2)	-0.812577	0.095925	-8.470922	0.0000
R-squared	0.856699	Mean dependent var	8.552315	
Adjusted R-squared	0.838786	S.D. dependent var	0.387776	

Source: author calculations

Pearson Product-Moment Correlation (r)

The Pearson Product-Moment Correlation (r) is the most commonly applied correlation coefficient used in measuring a linear association and it is therefore adopted in this study to build the framework of the conceptual model. Pearson product-moment correlation coefficient (r) ranges from -1 to +1. The indication is that there could be a positive correlation or a negative correlation. A positive correlation exists when dependent and independent variables move in the same direction, that is, when one variable increases and other variable also increase. There is negative correlation when one variable increases and the other variable decreases. Without taken cognisance of the sign, the strength of the relationship could be observed when figures are taken in absolute term. If a correlation of zero is observed, there is no relationship between two variables. However, a perfect correlation of -1 or +1 indicates that the value of one variable can be determined by knowing the value of the other variable. In the regression context, r^2 is a more meaningful measure than r, for the former tells us the proportion of variation in the dependent variable explained by the explanatory variable(s) and therefore provides an overall measure of the extent to which the variation in one variable determines the variation in the other. The coefficient (r^2) ranges from 0 to +1. The r^2 value of

0.85 means approximately 85 percent of the variation in the Y(s) is explained by variation in the X1 and X2. Since r^2 at most can be 1, we can say that the regression line fits our data extremely well;

HYPOTHESIS TESTING:

The theory of hypothesis testing is concerned with developing rules or procedures for deciding whether to reject or not reject the null hypothesis. The stated hypothesis is known as the null hypothesis and is denoted by the symbol H_0 . The null hypothesis is usually tested against an alternative hypothesis (also known as maintained hypothesis) denoted by H_a .

There are two mutually complementary approaches for devising such rules, namely, confidence interval and test of significance. Both these approaches predicate that the variable (statistic or estimator) under consideration has some probability distribution and that hypothesis testing involves making statements or assertions about the value(s) of the parameter(s) of such distribution.

In my study I will refer to the test of SIGNIFICANCE APPROACH in order to define if the finding is statistically significant. To test the significance of the model we will rise the hypothesis based in the Fisher index with the level of significance $\alpha=0.05$ and $(k-1)$, $(n-k)$ df, it is often called the critical F value.

If $F_a > F_{cr}$ then the hypothesis (H_0) is rejected, and the assessed model is statistically significant

For our model we postulate that :

H_0 : The assessed model is not statistically significant

H_a : The assessed model is statistically significant

Performing the calculations with E-Views we reach to the conclusion that actual value of Fisher (F_a) is 47.82 while the critic value of F_{cr} (1,18) is 4.4 concluding that the assessed model is statistically significant thus the H_0 hypothesis is rejected. The model state that the supply for mortgage laons is depended from the non-performing loans and from the deposits of individuals with 95% significance interval.

Testing the Significance of Regression Coefficients: The t Test

The 95% confidence interval for t (17 df).

For β_1 we postulate that:

H_0 : $\beta_1 = 0$ (The β_1 coefficient is not significant)

H_a : $\beta_1 \neq 0$ (The β_1 coefficient is significant)

$t_a = 5.08$

$t_{cr} = t(\alpha/2;n-2) = t_{0.05;17} = 2,1098$

$t_a > t_{cr}$ so that H_0 is rejected. We reash to the conclusion that the β_1 coefficient is significant.

For β_2 we postulate that:

H_0 : $\beta_2 = 0$ (The β_2 coefficient is not significant)

H_a : $\beta_2 \neq 0$ (The β_2 coefficient is significant)

$t_a = 8.4$

$t_{cr} = t(\alpha/2;n-2) = t_{0.05;17} = 2,1098$

$t_a > t_{cr}$ so that H_0 is rejected. We reash to the conclusion that the β_2 coefficient is significant.

Autocorrelation

The term autocorrelation may be defined as “correlation between members of series of observations ordered in time [as in time series data]. In the regression context, the classical linear regression model assumes that such autocorrelation does not exist in the disturbances u_i . Put simply, the classical model assumes that the disturbance term relating to any observation is not influenced by the disturbance term relating to any other observation.

Economic phenomena on time are characterized from a kind of inertia change. They are likely to increase or decrease, thus it seems that the terms of the series of a previous period have lead to the increase of the series to a later period

Durbin–Watson d Test

The most celebrated test for detecting serial correlation is that developed by statisticians Durbin and Watson. It is popularly known as the Durbin–Watson d statistic, which is defined as

$$d = \frac{\sum_{t=2}^{t=n} (\hat{u}_t - \hat{u}_{t-1})^2}{\sum_{t=1}^{t=n} \hat{u}_t^2}$$

In our model the d value 1.87 is around 2, which would suggest that there is no autocorrelation in such model.

Heteroscedasticity Test

An important assumption of the classical linear regression model is that the disturbances term u_i appearing in the population regression function are homoscedastic; that is, they all have the same variance.

This is the assumption of homoscedasticity, or *equal (homo) spread (scedasticity)*, that is, *equal variance*. Symbolically,

$$E(u_i^2) = \sigma^2 \quad i = 1, 2, \dots, n$$

The heteroscedasticity may arise more often in time series dispersion than in those of dynamic series. In case the heteroscedasticity is present in the estimator econometric models than the estimators are linear, unbiased, are not best. For such a reason the significance intervals will be wider and the actual value of t will be smaller than in the absence of heteros. This will increase the possibility that the H_0 hypothesis not to be rejected even though it is not true.

In our final model we will perform the test for heteroscedasticity based on White's heteroscedasticity Test.

For our model we postulate that

Ho: No presence of heteroscedasticity

Ha: Presence of heteroscedasticity

Based of the White's heteroscedasticity Test (Annex I) the estimated model is insignificant and also the coefficients of the model considering the respective probabilities higher than 0.05. We conclude that in our model the heteroscedasticity is not present.

Table 5: White test results

White Heteroscedasticity Test:				
F-statistic	0.083193	Probability	0.986249	
Obs*R-squared	0.441132	Probability	0.978973	
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	29.01466	83.35506	0.348085	0.7330
LOG(X1)	-4.442693	12.99781	-0.341803	0.7376
(LOG(X1))^2	0.166464	0.490668	0.339259	0.7394
LOG(X2)	0.122673	0.742580	0.165198	0.8711
(LOG(X2))^2	-0.005812	0.037255	-0.156020	0.8782
R-squared	0.023217	Mean dependent var	0.020414	
Adjusted R-squared	-0.255863	S.D. dependent var	0.023085	
S.E. of regression	0.025870	Akaike info criterion	-4.250525	
Sum squared resid	0.009370	Schwarz criterion	-4.001988	
Log likelihood	45.37998	F-statistic	0.083193	
Durbin-Watson stat	2.509874	Prob(F-statistic)	0.986249	

Source: author calculations

Jarque–Bera (JB) Test of Normality.

The JB test of normality is an *asymptotic*, or large-sample, test. It is also based on the OLS residuals.

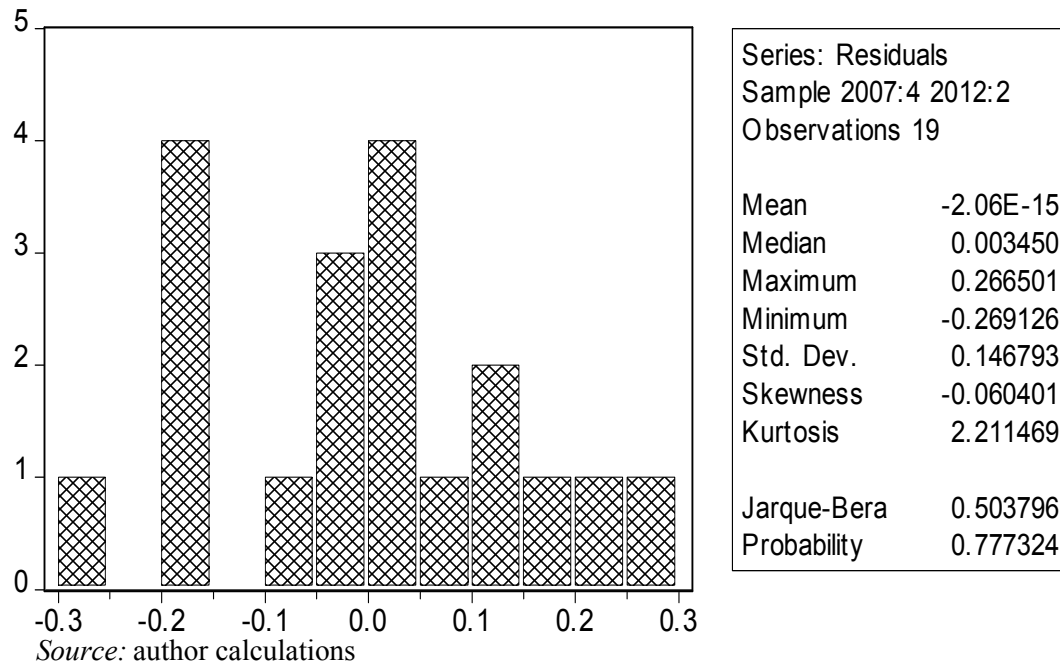
$$JB = n \left[\frac{S^2}{6} + \frac{(K - 3)^2}{24} \right]$$

where n = sample size, S = skewness coefficient, and K = kurtosis coefficient. For a normally distributed variable, $S = 0$ and $K = 3$. Therefore, the JB test of normality is a test of the joint

hypothesis that S and K are 0 and 3, respectively. In that case the value of the JB statistic is expected to be 0. If the computed p value of the JB statistic in an application is sufficiently low, which will happen if the value of the statistic is very different from 0, one can reject the hypothesis that the residuals are normally distributed. But if the p value is reasonably high, which will happen if the value of the statistic is close to zero, we do not reject the normality assumption.

Application of the Jarque–Bera test shows that the JB statistic is about 0.50379, and the probability of obtaining such a statistic under the normality assumption is about 78 %. Therefore, we do not reject the hypothesis that the error terms are normally distributed.

Graph 2: Jarque–Bera (JB) Test of Normality



8. Conclusions

The purpose of this study is to analyze the housing loans financing in Albania. The analyze considers two factors influencing the loan supply, the non-performing loans and the individuals deposits.

Empirically assessing the model a linear regression model was used. For the considered period, years 2007-2012, corresponding with the financial crises, it was reached the conclusion that the supply for housing loan has a strong positive relation with the individual's deposits and a strong negative relation with the non performing loans.

In the last years, the supply for housing loans in Albania decreased in parallel with the increase in the non-performing loans so the banks suffered not only from the unpaid and/or delayed installments but also from the "opportunity cost" of interest from the missing new financing loans.

Macroeconomic policies are one of the main factors affecting the Housing Finance Supply in Albania. Considering that approximately 66 percent of the mortgage portfolio is in foreign currency and the incomes of the borrowers being manly in ALL, it is very crucial not to transmit the depreciation of local currency.

One of the constrains in mortgage lending is that Albanian market is characterized by a high rate of informal buildings which either lack the proper documentation and permits or obtained the proper documentation and permits but were built by infringing a number of rules imposed by the current legislation.

Furthermore based on regional data, Albania has the highest mortgage to- income ratio comparing to other countries in the region. This implies that in an environment of substantially lower funding that the one before the crisis, the demand results to be considerably lower than the pre-crisis period.

9. References

- Bank of Albania,. Yearly report 2007-2012, <http://www.bankofalbania.org>
- Albanian Association of Banks, Credit to the Economy by purpose statistical data 2007 -2012. <http://www.aab.al>
- Berger, Allen N. & Humphry De Young, "Problem Loans and Commercial Banks", Journal of Banking and Finance, Vol. 21, 1997
- US Housing Finance System: A Historical Survey and Lessons for Emerging Mortgage Markets, Office of Policy Development and Research, US Department of Housing And Urban Development, April 2006.
- Osmani. M. (2010) ,Econometry with applications, Voll, pg .77-99
- Albanian Association of Banks Report on Factual Findings Vol 1, pg 24, 2013
- Instat statistics <http://www.instat.gov.al>
- Bhutta, Neil. 2008. "Giving Credit where Credit is Due? The Community Reinvestment Act and Mortgage Lending in Lower-Income Neighborhoods." Board of Governors of the Federal Reserve Finance and Economics Discussion Paper 2008-61.
- Ashcraft, Adam, 2003, "New Evidence on the Lending Channel," forthcoming at the *Journal of Money, Credit and Banking*.
- Kashyap, Anil, Raghuram G. Rajan and Jeremy Stein, 2002, "Banks as Liquidity Providers: An Explanation for the Co-Existence of Lending and Deposit-Taking," *Journal of Finance* 57(1),33-73.
- Paravisini, Daniel, 2004, "Constrained Banks, Constrained Borrowers: The Effects of Bank Liquidity on the Availability of Credit," MIT mimeo, November.
- Elena Loutskina, Philip E. Strahan 2007 "Securitization and the declining impact of bank finance on loan supply: evidence from mortgage acceptance rate
- Ben S. Bernanke 2011, speech on Committee on Banking, Housing, and Urban Affairs