ECONOMIC GROWTH AND INSTITUTIONS: MORTGAGE LENDING IN UKRAINE

by

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Abstract

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by Oleksandr Tsvihun

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Director of the Christian University

The significance of establishing of mortgage system in Ukraine has been considered in the work. The main purpose of the work is to show what would be a potential impact of the mortgage system on the economic growth in Ukraine. The author has built a theoretical concept, which links the mortgage with the real interest rate in the economy, the amount of investment, the financial development and economic growth. Using econometric analysis, the author test the relationship between the real interest rate and economic growth in transition economies, which allows support author’s hypothesis that collateralization (mortgage) will positively impacts of economic growth. Also, using results of regression, author makes an attempt to evaluate a potential impact of mortgage system introduction on economic growth in Ukraine.

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ACKNOWLEDGEMENTS

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GLOSSARY

Appraisal. The placing and estimating of the real or market value of real estate.

Collateral. The specific real property the borrower pledges as security for loan.

First mortgage. A type of mortgage where the property which secures it has no other mortgages with greater rights to the property; a mortgage that is a firstt lien on the property used as security.

Foreclosure. Process by which the holder of a mortgage seizes the property of the homeowner who has not made interest and/or principal payments on time as stipulated in the mortgage contract.

Junior Mortgage. A type of mortgage where the property, which it secures, already has one or more mortgages on it with prior or greater rights.

Mortgage. A contract in which property is used as collateral to secure the performance repaying debt.

Mortgagee. The lender or holder of the mortgage loan.

Mortgager. The borrower who provides the property to secure the debt.

INTRODUCTION

In all countries with a high level of the economic growth there are significant amounts of funds available from banks. The use of available credit funds by the most of economic agents is possible when a price of the capital is low. Thus, the economic growth is a negative function of the interest rate level in the economy, because latter limits an amount of loans to investment projects. Having made the interest rate in the economy even slightly lower, we make possible for many borrowers to benefit from external borrowing, which was inaccessible for them when interest rate was so high. However, a high interest rate is a product of many factor, one of them is a riskiness of the investment projects. To protect their investment from possible losses, lenders impose the first and usual securing measure – they increase interest rates on loans. But such measure very often does not succeed: a high (above some point) level of interest rate negatively affects banks' loans portfolios by pushing the least risky borrowers out of credit market and by stimulating borrowers to undertake riskier projects.

The very situation can be observed in Ukraine: unstable market and administrative infrastructures make many projects very risky. As a result the average lending interest rate is 50-55 %, which is very high, taking into account the fact that average return on unit of costs in Ukrainian economy is equal 5.1%. The branches of the economy with the low risk and return projects are not able to benefits from external financing due to high costs of borrowing. As a result the amount of credits into economy in Ukraine is very small, investment rate is low and, consequently, the growth of the economy has a negative slope. In addition, the large share of unsecured loans in the banks' portfolios and their inability to diversify the risk, makes Ukrainian banking system more risky and prone to

failure, which negatively influences the development of the financial sector, which has "a positive, first-order relationship" with economic growth (Levine, 1997).

The introduction of the mortgage system, which allows pledging a real estate property to provide a guarantee to lenders, could be a remedy to change a current trend of economic development in the opposite direction. The banks, being sure that they will be compensated by the mortgaged property, are able to reduce interest on the loans granted and the amount of loans to economic agent will increase (Jasinskaite, 1996).

According to Campbell R. Harvey's Hypertextual Finance Glossary "*mortgage is a contract in which property is used as collateral to secure the performance repaying debt*". Under term "*introduction of mortgage system*" I mean an establishment of the particular infrastructure, in which the mortgage can provide a reliable security of loans contracts.

The question of the work is "How an introduction of the mortgage system impacts the economic growth in Ukraine?". My hypothesis is that impact should be positive.

Due to the fact, that mortgage lending is in initial level of its development in Ukraine as well as in many transition countries, an absence of appropriate data does not allow directly estimate "mortgage system – economic growth relationship". To test the hypothesis, I have divided the study into two steps. First, I test a relationship between the spread on lending and deposit rates and economic growth in transition countries. I use a spread on lending and deposit rates as a proxy for the real interest rate, both of them are proxies of riskiness of economic environment and, consequently, they both have a negative relation with the amount of investment into the economy. Second, having the data on

differences between interest rates on mortgage and unsecured loans in developed countries, I will be able to calculate an approximate potential effect of mortgage on economic growth in Ukraine.

The result of the empirical study supports the hypothesis that the economic growth negatively correlated with level of the real interest rate. The data on interest rates on mortgage and unsecured loans in developed economies allows me to conclude that properly developed mortgage system also should reduce the real interest rate in Ukraine, increase credits amount into the economy and initiate a positive economic growth.

Ukraine is a unique sphere for analyzing such relationship: the establishing of the mortgage system in the absence of any reliable securing loans system before, will have positive effect, which can be proved even logically. The further development of the mortgage system in Ukraine will provide larger sphere for a subsequent research and testing the concept stated at the work.

In the Chapter 1 I emphasize the importance of mortgage system for Ukraine, illustrating a current situation of two branches of the economy, for which the mortgage system potentially is the most advantageous: the agriculture and residential construction industry. I develop a theoretical concept of "mortgage system – economic growth" relationship in Chapter 2. The empirical part, where I evaluate the impact of introduction mortgage system on economic growth in Ukraine is in Chapter 3. The last chapter analyses how efficiency of mortgage as a securing device depends on economic and institutional environment in the country, particular in Ukraine.

Chapter 1

THE IMPORTANCE OF MORTGAGE SYSTEM FOR UKRAINE

All branches of Ukrainian economy suffer from restriction from both investment sources: external and internal. Internal resources and low profitability of enterprises are subjects of the vicious circle story: low production efficiency is present because of lack of investment and a reason of low investment is low firms' profitability. The other source of investment funds is not assessable for many Ukrainian firms due to very high costs of credits the average level of interest rates corrected for inflation was 53% in 1998[1]. As a result, many of the Ukrainian enterprises could not use borrowed capital, which restricted an investment and, consequently, economic growth. A high return (65-70% in 1998) on government T-bills, which become a source of financing the budget deficit since 1995, distract bank's funds from financing the real sector of Ukrainian economy and it was treated as the main factors of such high costs of capital. However the real interest rate on credits has not decreased when amount of T-bills sold and their return reduced in the last quarter of 1998. According to NBU, the real interest rate on loans kept growing at the end of 1998 – beginning of 1999, when return on T-bills dropped by 50% and amount of T-bill sold reduced by six times. There should be another reasons that cause the high interest rate level in Ukrainian economy. Such factor could be a high risky lending environment and absence of a reliable tool for banks to secure loans. The introduction of the mortgage system as a loan guaranty instrument could reduce interest rates on credits and increase amount of loans to businesses and

[1] Source: National Bank of Ukraine, Herald NBU , #12, 1999, p. 25

individuals, initiating positive economic growth in the country. The introduction of mortgage system is beneficial for all branches of the economy, but it will be the most beneficial for those sectors of economy where stocks of property that can be mortgaged are large. The experience of Western countries evidences that mainly such sectors are agriculture and construction industry (Berger and Johnstone, 1993). At the same time these sectors for which investment needs are large. I describe current situation in the agricultural and the construction industry to illustrate a vital need of a mortgage system for Ukraine.

1.1 Agro-Industrial Complex

Ukrainian agricultural sector produces 25 % of GDP 1998[2], the total number of people working in this sector is 5 million people or 22.5 % of total Ukrainian labour force 1998[3]. The sector experienced the sharpest decline 50%[4] in

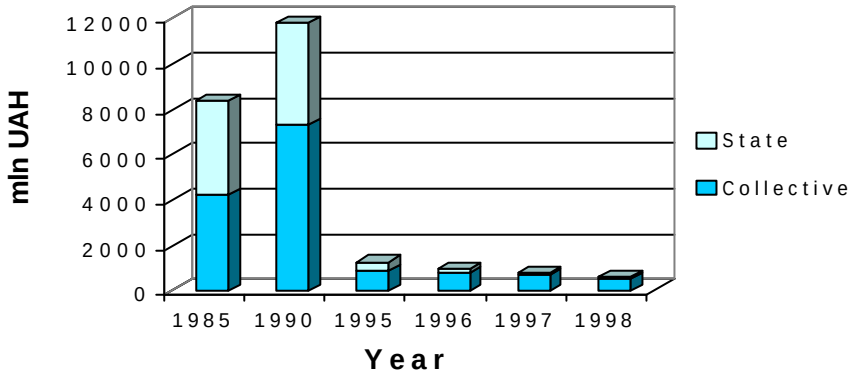

Figure 1. Total capital investment in agriculture in Ukraine (comparative prices)
Source: State Statistic Committee of Ukraine

production among other sectors of economy in 1998.

[2] Source: State Statistic Committee of Ukraine, Statistical Yearbook for 1998 (1999)

[3] Source: State Statistic Committee of Ukraine, Statistical Yearbook for 1998 (1999)

[4] Source: State Statistic Committee of Ukraine, Statistical Yearbook for 1998 (1999)

One of the reasons of such drop in total output is decrease of investment and short-term (seasonal) credits to the sector. Total capital investment in agriculture fell almost 10 times in 1998 compare to 1990 (Figure 1). The government almost stopped subsidizing Agro-Industrial Complex due to limited budget funds - in 1998 state investment was only 1.5 % of amount in 1990. Commercial banks give up to loan to the sector because of two main reasons: 1) low returns of projects compare to other sectors of the economy; 2) a lack of guarantee of debts repayments. The emergency for introduction mortgage system for agriculture is evident. According to the Ministry of Agrarian policy the estimated required investment is $4 billion and the need of Ukrainian agricultural enterprises in short-term credits in 2000 is 2-2.5 billion UAH. The government plans to receive 650 million UAH from commercial banks but only 167 million have been granted. "The lenders unwilling to provide loans because of absence liquid property, which can mortgaged"[5]. The mortgage lending can be an important source of attracting long- and short-term funds into the sector.

1.2 Residential Construction Industry

The introduction of mortgage system as one of the sources of the housing financing is important from social and economic point of view. The investment in the residential construction industry in Ukraine dropped dramatically since 1990 (Figure 2). The collapse of the large state enterprises, which were the main suppliers of subsidized housing for their employees in Ukraine during the socialism era, reducing of central and local government spending on housing resulted in overall decreasing of the state investment in residential building.

[5] Source: The Ministry of Agrarian Policy of Ukraine, Quarterly Report (2000)

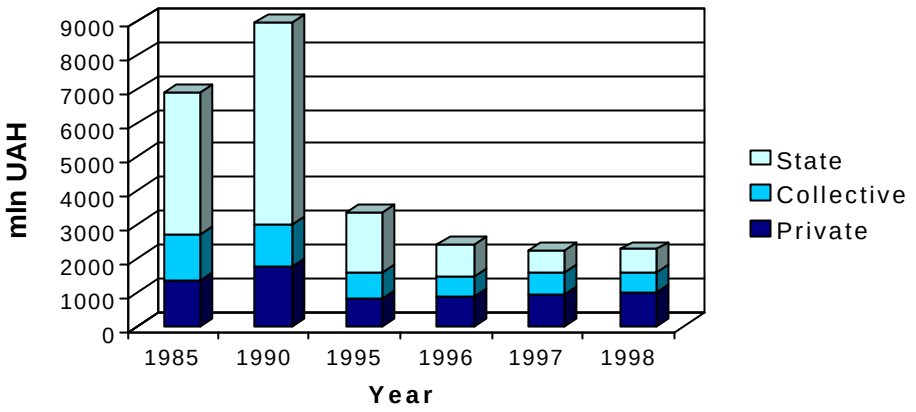

Figure 2. Total capital investment in residential construction in Ukraine (comparative prices)
Source: State Statistics Committee of Ukraine

The result of such drop of the investment was unambiguous: the number of new housing put into operation in 1998 compare to 1980 reduced almost four times (Figure 3). The number of households required the improvement of housing conditions, reached 2 millions[6] in 1998. Only 2.0% and 1.7 % of registered households were able to obtain new housing in 1997 and 1998 respectively, compare to 10,6% in 1985[7].

The depression of the Ukrainian economy and the high unemployment rate (12.2% in 1998[8]) dramatically reduced the real incomes of households, which negatively impacts the demand side of housing market. A decline in housing construction negatively impacts the economy as a whole, the sphere is characterized by probably one of the highest economic multipliers. Enterprises of 32 branches of the national economy, which total output was 14.5% of Ukrainian

[6] Source: State Statistics Committee of Ukraine, Statistical Yearbook for 1998 (1999)

[7] Source: State Statistics Committee of Ukraine, Statistical Yearbook for 1998 (1999)

[8] Source: State Statistics Committee of Ukraine, Statistical Yearbook for 1998 (1999)

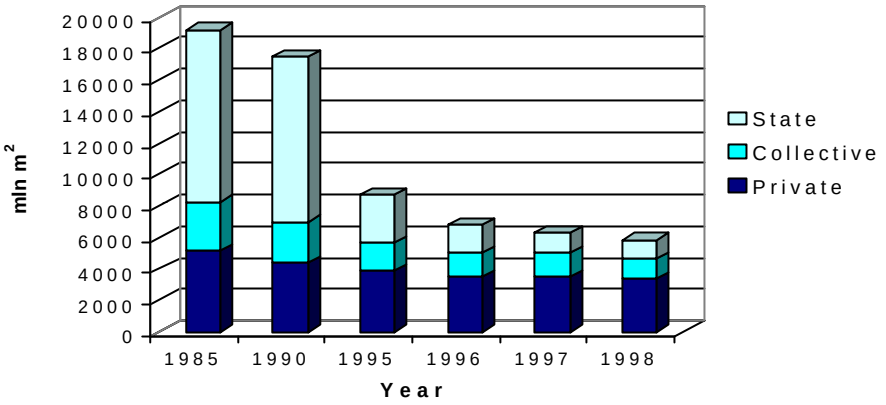

Figure 3.Completed residential buildings in Ukraine
Source: State Statistics Committee of Ukraine

GDP in 1998, carry out direct deliveries to housing construction. The growth of the residential construction industry is also complemented by growth of producers of durable goods, which constitute 4.6% of Ukrainian GDP in 1998.

Thus, the housing construction industry is among those, which development contributes much to the overall economic growth. To initiate such development, the sector needs additional investment, which can be attracted only with new market housing finance schemes. The experience of developed countries indicates the introducing of the mortgage system might be the best strategy to eliminate the housing deficit in Ukraine and improve the housing condition of the citizens.

Chapter 2

MORTGAGE SYSTEM AND ECONOMIC GROWTH: THEORETICAL CONCEPT

2.1 Mortgage as a securing device

The improvement of the credit markets performance to some extends depends on introduction of financial and legal innovations, which should provide qualitative changes in the work of financial institutions (Jasinskaite, 1996). This relationship has been summarized by Levine, (1997) (p. 690) as: "Economic activity and technological innovation undoubtedly affect the structure and quality of financial system…, 'third factors', such as a country's legal system and political institutions certainly drive both financial and economic development at critical junctures during the growth process". Jasinskaite (1996) continues, while financial institutions in developed countries look for novelties for improving financial system performance, transition countries with underdeveloped financial instrument and instruments, have a lot of possibilities for introduction methods that are learned and used in developed countries. One of such instrument is mortgage (Jasinskaite, 1996).

Mortgage lending is widely used to facilitate business investment and housing finance and it could be very useful measure to solve urgent problem arising in credit markets of transition countries through:

- security of loans;
- reliable information about borrowers;
- enforcement of contracts;
- new methods for mobilizing financial resources suitable for investment funding.

Jasinskaite (1996) defined the main economic advantages of mortgage system that can be achieved due to its characteristic features:

i) The system provides **strong enough guarantees to the creditors**, ensures that the amount owed to (interest and principal) them will be repaid. The probability of loan repayment reduces the risk of possible losses by bank and they are able to diversify assets and improve the quality of loan portfolio. This leads to reduction in interest rate at the credit market.

ii) The banks, while allocating collateralised loan, are paying less attention to the financial position of a borrower, but more to the characteristics of the property, market value of it, as well as to the legal status of its ownership. **The property register of collateralised property** is a component of the mortgage system, which contains the all information on property being pledged and also can serve as a **mortgage registration**, which in addition contains some information on borrowers' status. All available **data aggregated in the register open for the public**, which reduce asymmetry in information raised by principal/agent problem. Consequently, the mortgage system creates a subsystem, which reduces "verification costs" of investment activity of financial intermediaries.

iii) Mortgage system prescribes **creditor's priority in full satisfaction of his (her) claim on mortgaged property**. In such a way the loan agreement implementation costs are diminished. Also, this feature guarantees that mortgagee is free from additional burden of careful supervision of borrower's financial position. Both have a positive impact on reduction of interest rate on mortgage loans.

However, creditors sometimes could not be fully protected even under the mortgage system. The value of mortgaged property may change due to market fluctuations or in case of accidents. In addition to these two imperfections, others appears when mortgage lending are tried in transition economies: unclear property

rights and underdeveloped land and real estate property markets, not established evaluation procedures eliminate the attractiveness of such innovation for creditors (Jaffee and Renaud ,1996).

Jasinskaite (1996) stated that mortgage system is not only attractive for creditors but also for borrowers:

i) A mortgage property owner can use this property in the future as a source of personal benefits and profits. So, a mortgage system does not take out the productive assets from the process of value added creation.

ii) The same property can be mortgaged several times. Mortgage system provides a possibility to a borrower to transfer this property to another individuals.

The market of the mortgage bonds or other securities, which are issued to attract funds for mortgage loans should be considered as a positive externality of mortgage system (Jasinskaite, 1996). The mortgage as a source of housing financing is very important for transition economies from social point, where the part of state investment into the sector dramatically dropped and supply of housing reduced (Jaffee and Renaud, 1996) Jaffee and Renaud (1996) proposed a framework for sustainable financial development, where housing finance is considered under "Developing Institutions" section (see Appendix 1).

Levine (1997) organized an analytical framework of the finance-growth link and assesses the quantitative importance of the financial system in economic growth. Financial intermediaries (FI) fulfil two functions: brokerage and assets-transformer functions (Saunders 1999). Levine (1997) (p.690) does not consider the second function: "In arising to ameliorate transaction costs, financial systems serve one primary function: they facilitate the allocation of resources across space and time, in uncertain environment". Levine (1997) breaks this function into five components:

Thus, financial systems:

- facilitate the trading, hedging, diversifying, and pooling of risk,
- allocate resources,
- monitor managers and exert corporate control,
- mobilize saving, and
- facilitate the exchange of goods and services.

Two channels though which each financial function affects economic growth: capital accumulation and technological innovation are considered (Appendix 2).

1) Risks. According to Levine (1997) there are two types of risk: liquidity and idiosyncratic (individual) risk. The link between liquidity and economic development arises because some high-return projects require a long-run commitment of capital, but savers do not like to be engaged in control of their savings for long period (Levine 1997). The financial system reduces this risk and provides more investment into long-term projects through capital markets (markets of bonds and stocks). Besides a liquidity risk, financial systems may also mitigate the risks associated with individual projects, firms, industries – individual risk, which in addition to capital markets can be reduced with other financial innovations (Levine 1997).
2) Allocation of resources and monitoring costs. These costs create incentives for financial intermediaries to emerge (Diamont, 1984). Levine (1997) (p.695) continues: "because many firms and entrepreneurs will solicit capital, financial intermediaries… are better at selecting the most promising firms and managers will induce a more efficient allocation of capital and faster growth". Besides reducing costs of acquiring information, financial services, instruments, intermediaries may arise to decrease the information acquisition and enforcement costs of monitoring firms ("verification costs"). Based on analyses made by other authors Levine (1997) concludes that financial innovations reduce "verification costs" and remove the impediments concerning investment decisions.

3) Mobilizing of saving. This involves the aggregation of capital from many savers for investment. Financial systems that are more effective in collecting the individuals savings can intensely affect economic development. Besides the direct effect of saving on capital mobilization, better saving mobilization can improve resource allocation and stimulate technological innovation (Levine, 1997).

4) Exchange of goods and services. Financial arrangements that lower transaction costs can promote specialization, technological innovation, and growth (Levine, 1997). The financial system reduced transaction costs which arisen when buyers and sellers started interacting at the market (money exchange vs. barter) The introduction of more complicated innovations by financial intermediaries (letters of credits, trade credits, etc) can add to economic development even more. However, the economic growth may also impact financial development, that is a reverse effect can be considered here (Levine, 1997).

2.2 Mortgage and loan interest rate

I will start construct a concept "mortgage – economic growth" with consideration how a mortgage (in general case a collateral) allows to decrease interest rate on loans. For this purpose (and for some others in further discussion) I will use the single-period model developed by R. Barro[9].

A loan of amount L is made from a lender to a borrower at the beginning of a period and the full principal plus interest comes due at the end of the period. The expected repayment value for lender without collateral is:

$$Le^{rl} = (1-p)Le^{r} \qquad (1)$$

where:

[9] For more details see Robert Barro (1976)

p - default probability;

r - explicit interest rate;

Le^r - amount due at the end of the period (principal and interest)[10];

Le^{rl} - amount that lender expects receive art the end of the period.

Dividing both sides of (1) by L, I obtain the anticipated interest factor:

$$e^{rl} = (1-p)e^r \qquad (2)$$

When a borrower provides collateral to lender, the expected repayment value and anticipated interest factor are respectively: $Le^{rlc} = (1-p)Le^{rc} + p(1-g)\tilde{C}$ and

$$e^{rlc} = (1-p)e^{rc} + p(1-g)\tilde{C}/L \qquad (3)$$

where:

Le^{rlc} - amount that lender expects to receive at the end of the period, when loan secured with collateral;

Le^{rc} - amount due at the end of the period, when loan is secured with collateral;

g - transaction costs taken as a fraction of collateral and which depends on type of collateral, legal and institutional factors determining these costs.

$\tilde{C}$ - value of collateral.

Under assumption of perfect competitive lending industry $e^{rl} = e^{rlc} = e^r$ where e^r denotes anticipated lender return at alternative risk- and transaction-free lending and borrowing rate and ρ denotes risk free interest rate at the loan market

Having equalized (2) and (3) we obtained:

$$(1-p)e^{rc} + p(1-g)\tilde{C}/L = (1-p)e^r \qquad (4),$$

where $p(1-g)\tilde{C}/L \geq 0$, which implies that $(1-p)e^{rc} \leq (1-p)e^r$. This inequality unambiguously shows that interest rate on loans secured with collateral are lower that on loans without any collateral given, all other conditions hold unchanged: $e^{rc} \leq e^r \Rightarrow rc \leq r$.

[10] e^r is an approximation of (1+r) in this single period model.

Note, that expression (3) indicates other important point, which will arise in further analysis: when g increases under given $\tilde{C}$ the lender has to increase rc. Barro showed with calculus, that: $\frac{\partial(e^{rc})}{\partial g} > 0$[11]. So, high collateral transaction costs could eliminate benefits from proposed collateral and did not reduce interest rates on loans.

There is another way to look how introduction of mortgage system affects the interest rate on loan market (Figure 4). Assume a competitive lending industry in which competitive interest rate coincides with the rate r^{max} which provides E_{comp} – a competitive, zero profit return to the lender[12].

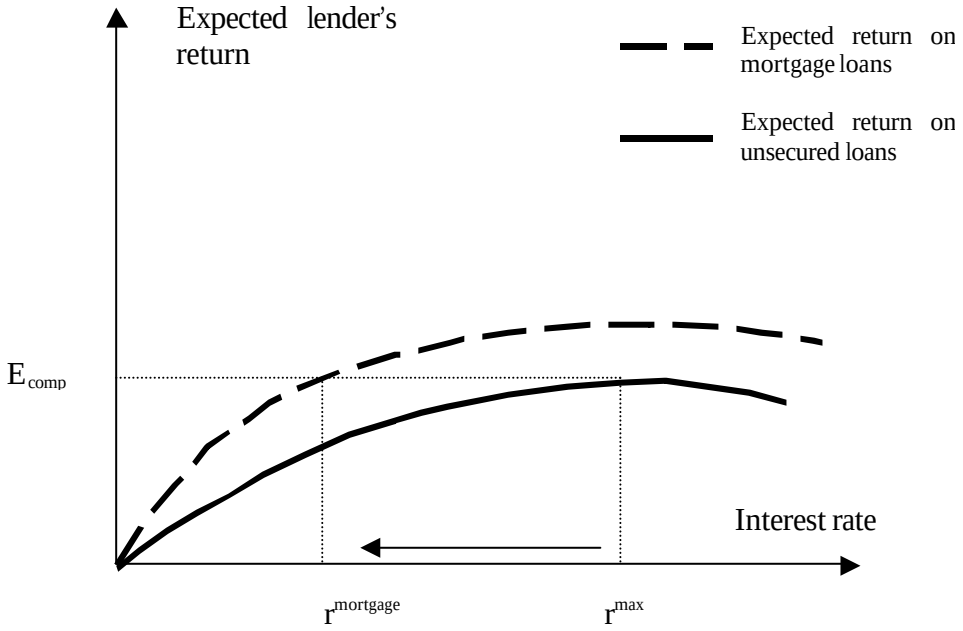

Figure 4 Effect of mortgage on interest rates at the loan market
Source: Jasinskaite (1996)

[11] For more details see Barro (1976), p.450

Increasing interest rate has direct effect on bank's return, but there arises adverse selection effect of lowering bank's profit that could outweigh direct effect. Bank's profit is maximized at such interest rate r^{max} at which $\frac{\partial E}{\partial r} = 0$. Assume that bank's return is a function of only two variables: 1) interest rate on loans – changes in this variable depicted along bank's return curve; 2) a guarantee in a form of mortgage (this shifts expected return curve up when loan is secured). So, $E = f(r; m)$, where r – interest rate on loans, m – guarantee in the form of collateral for mortgage loan. The expected return will be higher for mortgaged loan compare to unsecured loan at each level of interest rate keeping all other things the same. So, introduction of mortgage system, which makes possible for banks to have mortgage loans in portfolio, shifts their expected return curve upward. In competitive market banks will not be able to continue to charge r^{max} and obtain higher return, because mortgager could ask for loan in competitors at lower r, knowing that mortgage loan provides higher expected return than unsecured one. Thus, the interest rate on mortgage loan reduces to $r^{mortgage}$ (see Figure 4), providing long-run zero level profit for banks. Note, that degree how much the expected return curve shirts upward and, consequently, interest rate will be reduced, depends on type of collateral, on its transaction costs, which determined by institutional environment of economy.

2.3 Mortgage and loans amount

Having proved that mortgage (collateral) reduces interest rate on loans, I propose to look how mortgage (collateral) affect supply of loanable funds at the market. For this purpose I use a usual supply-demand framework, where r is a price of borrowed funds[13] (Figure 5). The initial equilibrium at the loan market is at point 1, where interest rate and amount lent are respectively r_0 and L_0. The introduction

[13] See Mishkin, Frederic (1997)

of mortgage as securing device shifts supply curve to the right, reducing interest rate at the market ($r_0 \rightarrow r_m$) and increasing total amount of loans ($L_0 \rightarrow L_m$), where r_m and L_m are interest rate and amount of credits granted with using mortgage as securing tool.

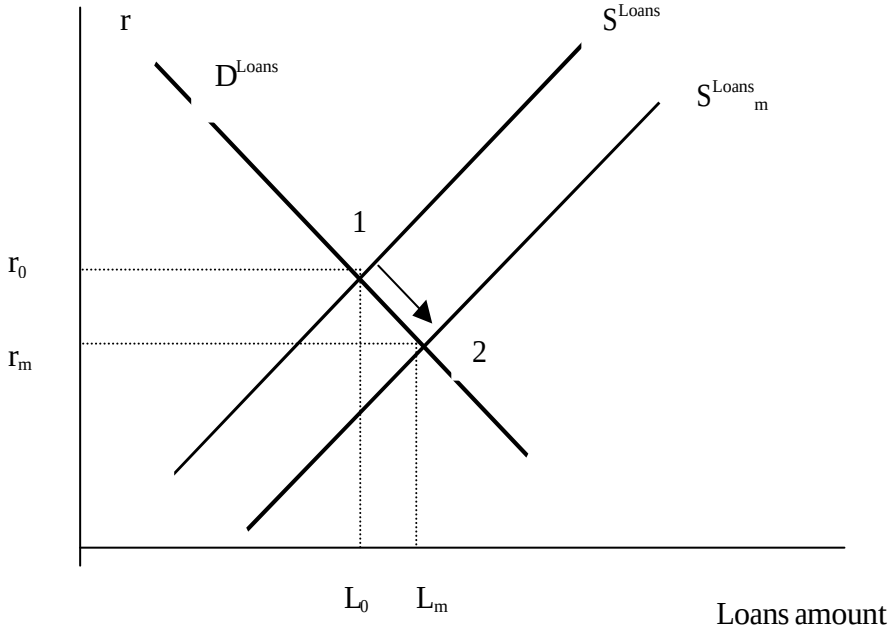

Figure 5. The effect of mortgage on loans amount and interest rate at the loan market
Source: Mishkin (1998)

This shift can be divided in two steps:

1) Interest rates on loans decrease because of reasons described in Section 3.1. A guarantee in the form of collateral reduces banks' losses rate and allows them to reduce interest rates – the fist and usual protection measure (Jasinskaite, 1996). At the same time, banks are willing to invest more in secured loans, knowing that their potential losses will be compensated by real estate property.
2) However, lenders should have inexpensive source of capital to increase lending at lower rates. Mortgage system makes possible for banks to accumulate large amount of comparative cheap funds because mortgage

bonds or deposits backed by secured assets become more attractive that nonbearing profit cash. Savers know that FI deal with secured by mortgage property investments and agree to transfer their savings to banks at lower interest rates. So, similar shift of savings supply can be observed at financial resources market, amount of borrowed funds increase, interest rate on them decreases.

The exact additional amount of loans granted to the firms and individuals as result of introduction mortgage system depends on interest rate demand elasticity.

Thus, due to securitization of banks' assets with mortgaged property, the interest rate on credits decreases and amount of credits granted to economy increase. However, only under an assumption of efficient use of extra investment (L_m-L_0), we can conclude that introduction of the mortgage system enhances economic growth.

2.4 Mortgage System – Financial Development - Economic Growth linkages

In addition to the relation between reduction of interest rates on mortgage loans and increase amount of investment to real sector, there are other links, which positively connect introduction of mortgage system and economic development. To generalize these relationships, I use a theoretical framework developed by Levine (1997), he proved that financial system affects economic growth through the following functions[14]: 1) risk reduction; 2) allocation of resources and decreasing of monitoring costs; 3) mobilizing of saving; 4) exchange of goods and services. I have considered how features of mortgage system fits the Levine's scheme and developed framework which qualitatively proves "mortgage system–growth" nexus (Appendix 3).

[14] See for more details Levine (1997) pp. 690-700

1) Risk reduction function. Mortgage can be a tool that enhances the role of financial system in attracting the investment in high-return long-term projects through providing long-term reliable guarantee. Interest rates on loans are reduced, amount granted to real sector and households increases (see Section 3.2) Mortgage system also reduce individual risk of particular projects, allow to diversify banks' assets portfolios. Consequently, the reliability of banking sector increases and it enhances the economic development.
2) Decreasing of information and monitoring costs. To avoid asymmetric information between mortgagees and mortgagors concerning collaterized property, mortgage system should include property or/and mortgage register, which is available to public (Jasinskaite, 1996). Besides information on his/her property ownership, registers can also contain additional information on borrower financial and business status. Thus, mortgage systems reduces "verification costs" in two ways: a) a larger portion of creditor time shifts from projects' assessment and monitoring to mortgaged property evaluation, on which information is less costly; b) due to mortgage registers features the borrower-lender relationships are more transparent. The analytical and empirical study of Levine (1997) allow me to accomplish that mortgage system through property/mortgage registers adds to financial sector development and, consequently, to economic growth.
3) Mobilizing of saving. First, mortgage agreement makes borrower more obliged to repay the debt. The incentive to accumulate particular amount requires borrower a higher propensity to save. For example, long-term individuals mortgage contracts commit households to repay fraction of their monthly income, which would have been spent if there had not been mortgage contract. Secondly, having made the banking assets side more reliable, mortgage system attracts more funds into the financial sector in the form of deposits. Moreover, the further development of mortgage lending requires design of specialized mortgage lending institutions, which mobilize

resources through issue of "mortgage bonds". Mortgage-backed securities have high rating at the capital markets of developed countries and, like government securities, are safe investment possibilities for private savers (Saunders, 1999).

4) Exchange of goods and services. This link does not fit Levine's approach exactly. There is a reversal relationship between mortgage and real estate markets. First, mortgage system is a form of real estate and land market financing, which promotes transactions to allocate land and other real assets more efficiently. Second, the well-developed real property market is a necessary condition of provision of the mortgage system main function - security of loan contracts. When land and real estate markets are not developed, transaction costs of selling mortgage property are too high and the advantage of mortgage lending could be eliminated (see Section 2.2). Such two ways effect can be well observed in Ukraine. On the one hand, mortgage system does not work as a guarantee device because land and large share of productive real estate are not privatized yet. On another, land privatization[15] is slowed down by absence of financial tools developed by banks to smooth buyer's large amount expenditures for land purchasing over time.

We have showed in this section that use of real property as collateral reduces interest rate on loan market, provides additional investment into the economy, which positively impacts financial development. Levine's stated and tested concept of "financial system development - economic growth" nexus allows us to conclude that introduction of mortgage system positively influences economic growth.

However, to be efficient as a securing tool mortgage needs a particular environment, which determined by particular factors, economic and institutional. The efficiency of these factors is discussed in the following chapter.

[15] Privatization of non-agricultural land plots under Presidential Decree #32/99

Chapter 3

EFFECT OF MORTGAGE SYSTEM ON ECONOMIC GROWTH: EMPIRICAL PART

The question of this work is: "How an introduction of the mortgage system impacts the economic growth in Ukraine?". Using a general financial theory I have proved that mortgage system reduces risks, which allows a decrease in interest rates at the loan market and increase credits (investment) in economy. Supported by Levin's (1997) theory and his empirical evidence on the positive relationship of the financial development on economic growth, I made a conclusion that mortgage system enhances economic growth (Figure 6). So, my hypothesis is: "Mortgage system will have positive effects on economic growth in Ukraine". Due to that, mortgage lending is in initial level of its development in Ukraine as well as in many transition countries, an absence of data does not allow directly estimate "mortgage system – economic growth relationship" empirically.

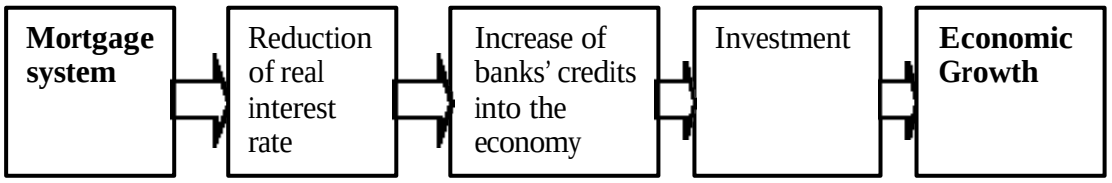

Figure 6 The links of "mortgage system - economic growth"

I propose to divide this study into two steps. First, I study the impact of spread between lending and deposit rates on economic growth in transition countries. It would be better to use the real interest, but due to inappropriate data on inflation level in the countries it is not possible to do. The spread is closely positively

correlated to the real interest rate because both reflect the degree of riskiness in the economy. Also, they negatively influence the amount of credit into the economy, that slowed down economic growth. Second, having data on differences between interest rates on mortgage and unsecured loans in developed countries, I will be able to assume that mortgage reduces the average interest rate in the economy and then calculate approximate potential effect of mortgage on economic growth in Ukraine.

3.1 Effect of riskiness of lending environment on economic growth in transition countries.

To provide the evidence that economic growth in transition countries negatively depends on risskiness of the lending environment, I run a cross-country regression on the average data on 14 transition countries in 1995-98 (Appendix 3):

$$RGDP = \alpha_0 + \beta_1 Spread + \varepsilon_i$$

Where,

RGDP – dependent variable, average country's growth of GDP, measured in percentage changes to previous period;

Spread – independent variable, average country's spread on lending rate and deposit rate in national currency, a proxy for the riskiness of lending infrastructure in the country, %

Data comes from International Monetary Statistics database, IMF (2000). Using data on 14 transition countries in 1995-1998 on real GDP, lending and deposit interest rates I calculate an average numerical value of corresponding indicator for each country. Then I found the value of spread as difference between lending

and deposit rates (see Appendix 3). I use a spread as an indicator of riskiness of economic environment. At the same time spread is an proxy of credit funds amount to the real sector, because the higher spread, the higher interest rata on loans, the less amount of credits is granted to firms. In this sense, this indicator is close to real interest rate, which was difficult to estimate due to inappropriate data on inflation level.

H_0: $\beta_1 < 0$, the higher spread between lending and deposit rates means the riskier environment for banking sector and particular for a lending industry in a country, so I expect negative effect of this variable on economic growth, and

H_1: $\beta_1 \geq 0$

Table 1 demonstrates the results of regression model.

Table 1 Results of regression.

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Dependent Variable: RGDP				
C	**5.625594***	**1.042758**	**5.394917**	**0.0002**
SPREAD	**-0.230169***	**0.062564**	**-3.678956**	**0.0032**
R-squared	0.530052	S.E. of regression	2.366706	
Adjusted R-squared	0.490889	F-statistic	13.53472	
Durbin-Watson stat	2.471721	Prob(F-statistic)	0.003155	

* Significant at 1% level

We can see from the table 1 that results are significant. I found a support of the hypothesis that the economic growth in transition countries very sensitive to the spread between lending and deposit interest rates, because level of interest rate determines the level of investment in the economy. The estimated equation is:

RGDP = 5.62 - 0.23**Spread*

A decrease in the spread between lending and deposit interest rates by 1% increase economic growth by 0.23%. This demonstrates a very strong impact of decrease of interest rate in the economy and, consequently, availability of additional banks' loan on economic growth in transition economies.

3.2 Conclusion for Ukraine

Having estimated that real GDP growth is very sensitive to spread between lending and deposit rates and taking into account that mortgage allows reduce interest rate on loans, we can estimate a potential impact of mortgage system on economic growth.

First, I check how model is successful to fit the actual data on Ukraine. I substitute in the regression equation $RGDP = 5.62 - 0.23*Spread$ available data on spread in Ukraine $Spread_{Ukraine} = 40.4\%$ (Appendix 3). Estimated GDP growth equal: $RGDP = 5.62 - 0.23*40.4 = -3.67\%$. The model slightly underestimates the actual value of GDP growth (-4.4%), but its estimating power is pretty good for such small number of observations.

Based on data on differences in interest rates on mortgage and unsecured loans in Germany and United Kingdom (Appendix 4), I can evaluate to which degree introduction of mortgage system reduce average interest rate on loans in Ukraine. Thus, average mortgage interest rate in Germany consists only 5.8%/10.11%=0.57 of unsecured interest rate; in United Kingdom this ratio is 0.44. Average of this both ratios is (0.44+0.57)/2=0.5, so average interest rate on mortgage loans is a half as a level of interest on unsecured loan. Assume that at least half of the loans in banking systems portfolios in these countries are mortgaged and the rest are unsecured. This means that factor, by which overall

average level of interest rate in economy is reduced due to mortgage, is equal: (0.5+1)/2= 0.75 (the average level in the country).

I need to do another very strong assumption that introduction of mortgage in Ukraine immediately reduces the average interest rate in the country by the same factor as in developed countries - by 0.75. In the next chapter I consider the effect of transaction costs, which reduce the advantage of mortgage in transition countries due to undeveloped infrastructure in which mortgage lending operates. It will take quite long period of time to fully benefit from mortgage system. But I neglect now this effect to estimate a possible effect of the mortgage system on growth in Ukraine. The actual average nominal interest rate in Ukraine in 1995-1998 is 76.5%. Multiplying it by factor 0.75 we obtain average lending interest rate in Ukraine in 1995-1998 if there would had been the mortgage system introduced: 76.5%*0.75=57.3%. Also assume that mortgage would had not influenced deposit rate in the country. A new spread is equal: 57.3%-36.1%=21.2%. Substituting 21.2% into the regression equation, we obtain the real GDP growth if the mortgage system would had been introduced; $RGDP_{estimate}$=5.626 – 0.23*21.2 =0.75%.

According to my estimation, Ukraine would manage to achieve positive economic growth, which could be approximately 0.75% annual, instead of negative –4.4% that country actually experienced in 1995-1998. This supports my hypothesis that introduction of mortgage system through reduction of interest rates and increasing of credits from banking sector positively impacts economic growth in Ukraine. However, despite the fact that the results are very appealing, one should take into account numerous assumptions and relative simplicity of the model.

Chapter 4

EFFICIENCY OF MORTGAGE LENDING INFRASTRUCTURE

4.1 Mortgage lending infrastructure in Ukraine

Mortgage as a securing tool to great extend depends on infrastructure in which it operates. An extreme case of inappropriate environment for mortgage can be a situation when mortgage cannot be used as a guarantee at all. A prime example of such situation is Ukraine. To make possible to use mortgage as a tool, which reduces level of risk and interest rate in the economy and enhancing positive economic growth, the mortgage should operate in particular environment. This environment determined by complex of factors, which can be divided into two groups: economic and institutional (Table 2). Institutional factors I divide into two sections: legal and organizations infrastructure.

Table 2 Characteristics of mortgage lending infrastructure in Ukraine.

FACTOR	HOW IT AFFECTS THE EFFICIENCY OF MORTGAGE LENDING	EVALUATION OF THE FACTOR IN UKRAINE
	ECONOMIC FACTORS	
Interest rate level in the economy	• low return projects are unattractive for lenders • undervaluing of real estate price, which limits amount of mortgage credit granted	High
Inflation level	Makes lending activity less attractive for lenders	High
Level of income in the economy	• low value of mortgager's real estate assets - reduces max amount of mortgage loan; • low level of saving in the economy – sources of mortgage loans are limited • high probability of loan default	Low

INCTITUTIONAL FACTORS

LEGAL

Real estate and land property rights	Inability of mortgagee to realize his/her rights on mortgage property	Very limited
Registration of real estate (Land Books)	Information on property ownership is not available or it is difficult to obtain it	Not available
Foreclosure procedure	A deprivation of property is not possible when borrower defaults	Not clearly defined
Evaluation procedure	• Max amount of mortgage loan depends on value of collateral • When property is overvalued a mortgager is better off to default	Not established
Moratorium on a bankruptcy for agricultural enterprises	An initiating of bankruptcy procedure to agriculture enterprises is prohibited	Exists

ORGANIZATIONS INFRASTRUCTURE

Cadaster service	Determine Land boundaries and land titling; supplement information available in "Land Book"	Developed
Notarial service	Provide legalization of property registration, selling and transferring	Developed
Stock exchange	Support mortgage bonds issue and transactions	Not well developed
Register of rights and charges	Provide quick and reliable information on mortgaged property	Not well developed

Source: Based on evaluations of Stepan Kruchok, National Agrarian University

The Table 2 demonstrates that both: economic and institutional infrastructures do not support mortgage lending in Ukraine. The most influential factors are institutional: real estate and property right, registration of land ownership ("Land Book"), foreclosure and evaluation procedure. The main obstacle of the mortgage system development in Ukraine is a limited property rights. Without well-defined property right on land and real estate property, the mortgage does not provide a guarantee to the lender. Thus, the first necessary conditions of using mortgage as securing device are a private property for land. The lack of land ownership registration, foreclosure and evaluation procedures is also a factor that could

reduce or even eliminate the benefits from the mortgage. The measure of efficiency of institutional environment, could be an interest rate on mortgage loans. When the interest rate does not differ from interest rate on unsecured loans, one can conclude that transaction costs caused by the undeveloped infrastructure are high[16]. So, the proxy for a mortgage infrastructure operation is a difference between interest rate on mortgage and unsecured loans.

4.2 The analysis of the efficiency of the mortgage lending infrastructure

I want to show, that difference between interest rates on mortgage loans and unsecured loan is large under proper developed infrastructure and, consequently, the impact of mortgage on economic growth is more significant. So, to benefit from the introduction of the mortgage, transition countries, including Ukraine, should build a prudent efficient infrastructure: land property rights and their registration, foreclosure and evaluation procedures.

I will represent differences in interest rates in selected developed (United Kingdom, Germany) and in transition countries (Estonia, Hungary, Latvia and Ukraine). In UK and Germany the mortgage lending infrastructures are developed and I expect large dissimilarity in interest rates; in transition countries, which are at various stages of mortgage reform, these differences expected to be insignificant.

Two types of interest rates are used: on individual mortgage loans and on unsecured consumer loans. The data have been taken from central banks official publication located on banks' web sites. All loans are denominated in national currencies (except Estonia, where loans are denominated in DEM). There has not been available data on long-term mortgage loans for individuals in Ukraine. I observed the interest rates on loans proposed by some lending institutions in Kiev (Appendix 6). These loans are short-term (up to 1 year) and secured mostly by the most liquid real estate property – private flats. These loans could be called "semi-

[16] Recall from Barro's (1976) that high transaction costs cause a high interest rate on loans even secured with collateral

mortgage", because only feature that distinguishes them from usual consumer credits is they are backed by real property. Results are represented in Appendix 5. They support the idea that interest rates on mortgage loans are significantly lower than rates on unsecured loans in developed countries where a mortgage-lending infrastructure is well developed. In observed transition countries such differences are not so significant. In Ukraine interest rates on unsecured loans are even slightly lower than on "semi-mortgage" loans according to available data[17].

[17] Explanation is that proxy of interest rates on unsecured loan is taken an average interest rate on total loans. This amount includes loans under the state guarantee, loans to banks' employees, which have usually lower interest rate that market rate.

CONCLUSIONS

This work provide some evidence that mortgage is not used in Ukraine due to complex of factors, which increase transaction cost and eliminate the advantage of mortgage as a guarantee. It was found that mostly undeveloped institutional factors influence transaction costs of mortgage, such as property rights, registration, evaluation and foreclosure procedures. A difference in interest rates on mortgage and unsecured loans was chosen as a proxy of transaction costs caused by factors including institutional. A comparison of interest rates in selected countries support the hypothesis that transition economies have higher transaction costs caused by specific factors which could be institutional.

Based on theoretical concept of Levine's (1997) "financial development – economic growth" nexus of positive relationship between mortgage and economic growth, an empirical study was conducted. The results of regression allow proving that the institution of mortgage lending is an important factor, which weakness reduces economic growth. The mortgage system is an important component of transition process and a securing tool that decreases interest rate at the loan market. In its turn, this is a precondition of increasing the level of investment into the economy, enhancing financial sector development. Major channels that provide this link are:

i) loan contracts risk reduction;

ii) reduction of asymmetric information;

iii) saving accumulation;

iv) activating of the land and real estate markets.

The model allows to predict the potential impact of mortgage system introduction in transition economy. It was estimated that GDP growth would have amounted to 0.70% annually if due to improvement of institutions of lending the lending rate decreases. The mathematical concept that proves this impact was discussed as well. The set of factors that contributed to weak effectiveness of mortgage system in Ukraine are systemized into three groups: economic, legal and organizational.

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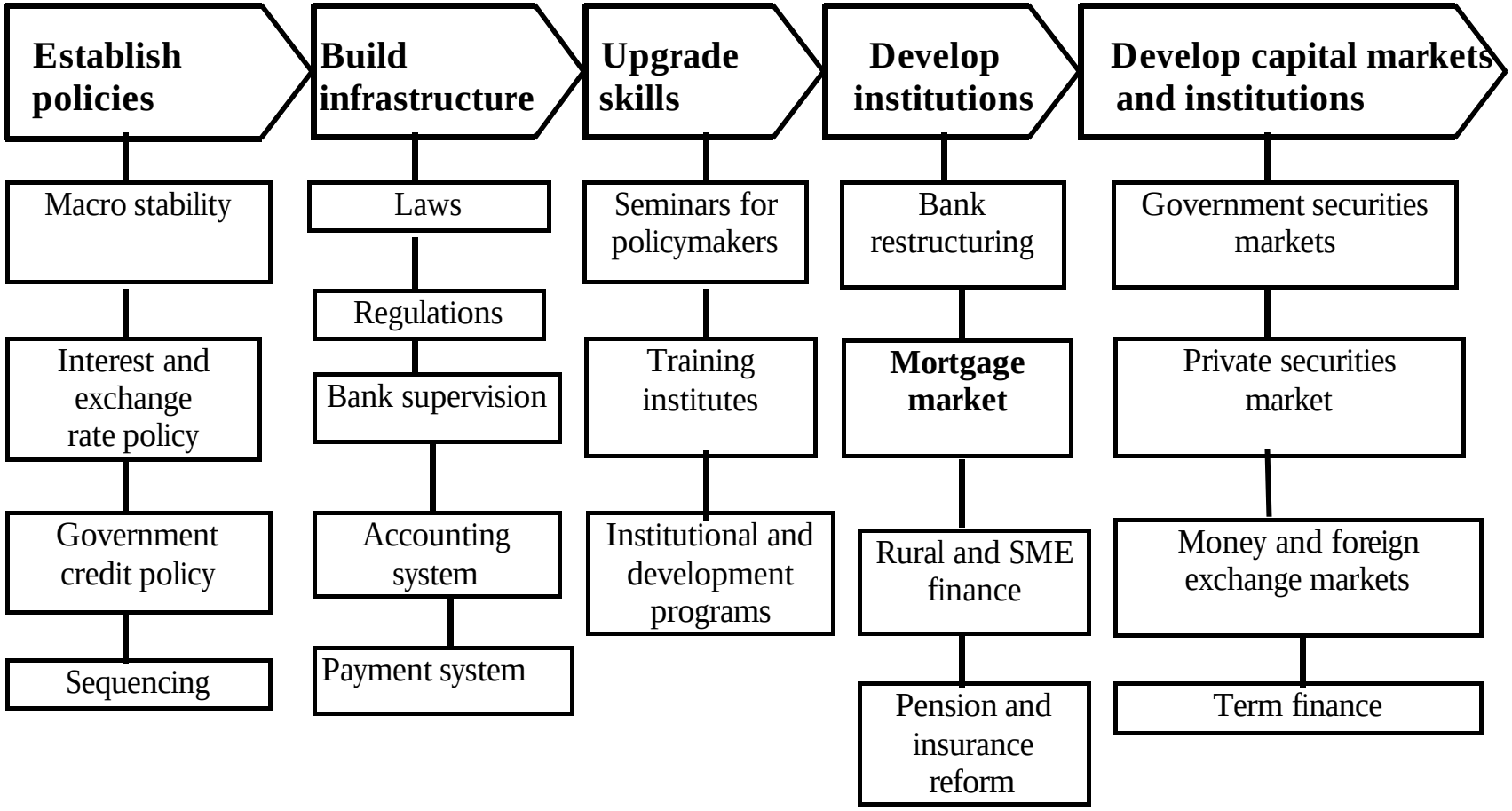
APPENDIX 1

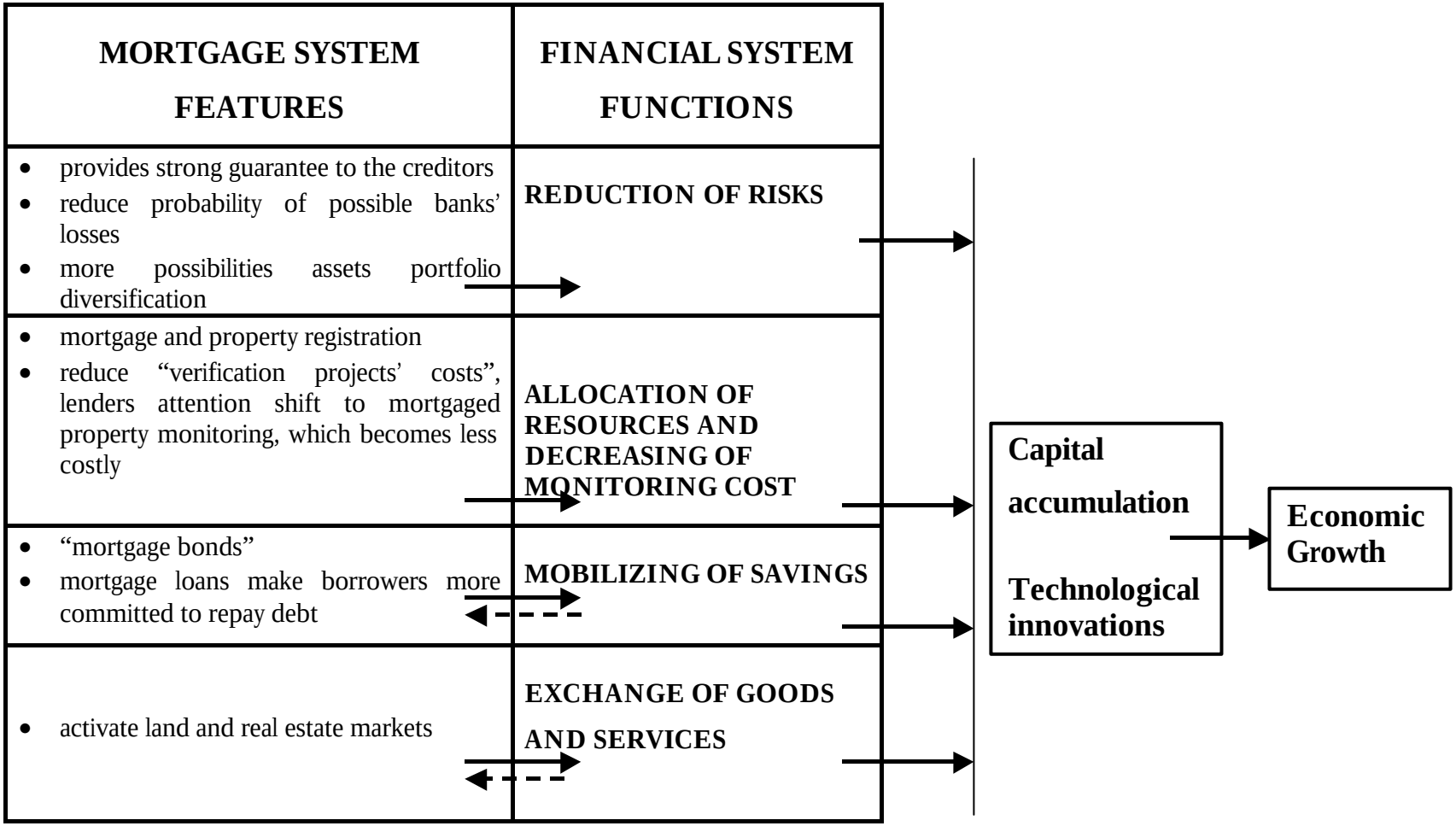
A framework for sustainable financial development*



* Source: World Bank, 1996

APPENDIX 2

Mortgage System, Finance and Economic Growth*



* Based on Levine's approach (1997)

APPENDIX 3 Data On Average Real GDP Growth, % And Average Lending, Deposit Rates, % In Transition Countries In 1995-1998*

	Real GDP, %	Average deposit rate, %	Average lending rate, %	Spread, %
Bulgaria	-2,17	40.0	69,8	29,8
Croatia	5,45	5,0	18,5	13,5
Czech Rep	1,80	7,4	12,9	5,5
Estonia	5,08	7,3	16,5	9,3
Hungary	3,10	21.0	25,5	4,5
Latvia	3,95	9,4	22,5	13,0
Lithuania	5,25	11,9	18,8	6,8
Poland	6.00	21,2	27,4	6,2
Sovakia	5,50	12.0	17,7	5,7
Sovenia	4,20	13,5	20,4	6,9
Ukraine	-4,40	36,1	76,5	40,4
Kyrgystan	3,35	28,7	50,3	21,5
Kazahstan	-2,05	25,7	36,2	10,8
Makedonia	1.00	9.0	20,5	11,5

*Source: IMF, International Monetary Statistics

APPENDIX 4 Data On Nominal Interest Rates On Mortgage And Unsecured Loans In Developed Countries, 1999-2000

GERMANY

Period	Interest rates on mortgage loans, %	Interest rates on unsecured loans, %	Difference
Apr 99	5,58	10,17	4,59
May	5,50	10,07	4,57
June	5,53	10,06	4,53
July	5,64	10,05	4,41
Aug	5,72	10,11	4,39
Sept	5,77	10,09	4,32
Oct	5,92	10,15	4,23
Nov	5,94	10,09	4,15
Dec	5,97	10,14	4,17
Jan 00	6,11	10,18	4,07
Feb	6,20	10,18	3,98
Average	**5,80**	**10,11**	**3,90**

Source: Deutsche Bundesbank

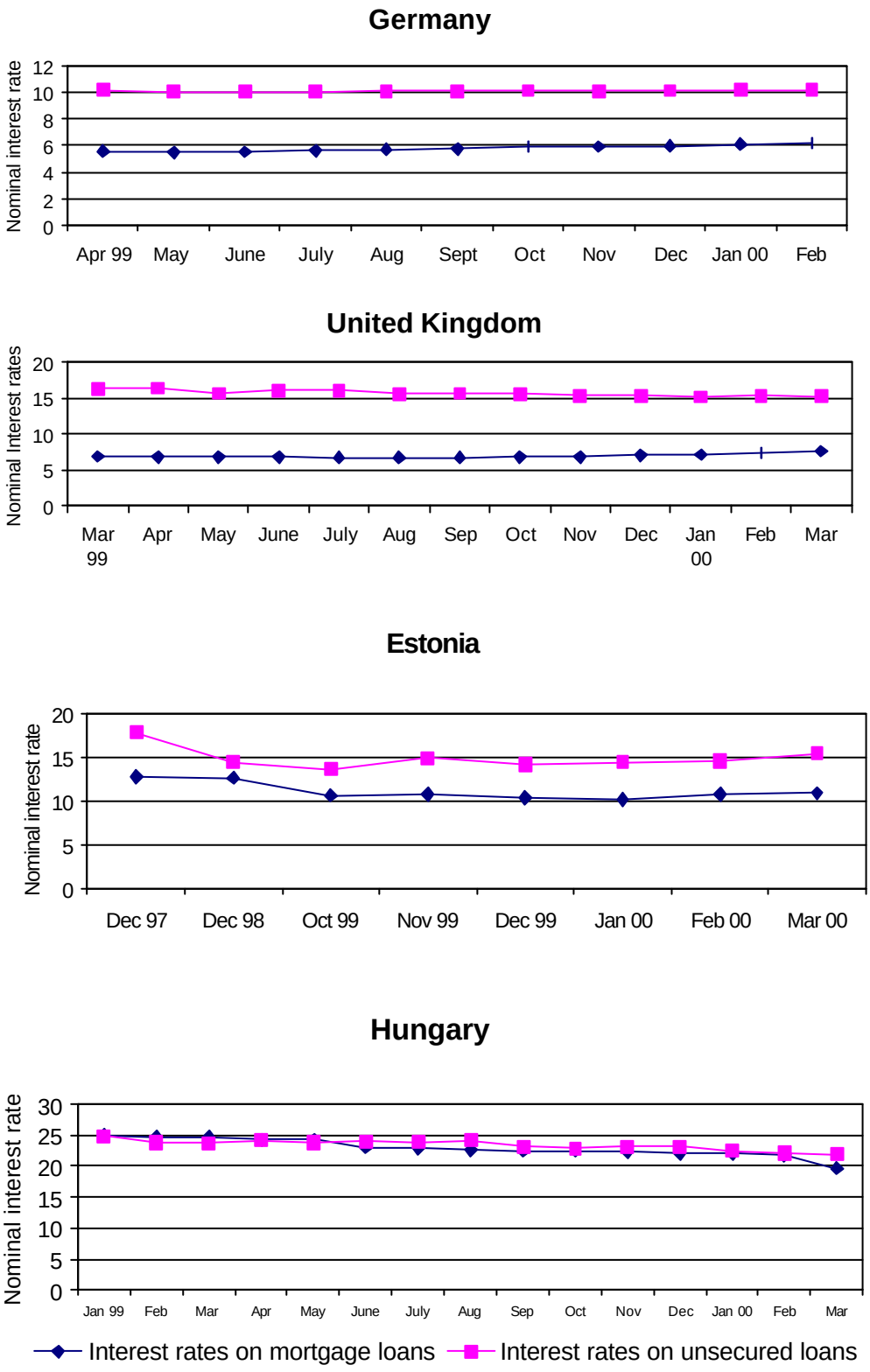
UNITED KINGDOM

Period	Interest rates on mortgage loans, %	Interest rates on unsecured loans, %	Difference
Mar 99	6,9	16,35	9,45
Apr	6,86	16,42	9,56
May	6,81	15,69	8,88
June	6,8	16,1	9,3
July	6,77	16,11	9,34
Aug	6,77	15,62	8,85
Sep	6,76	15,7	8,94
Oct	6,86	15,59	8,73
Nov	6,88	15,39	8,51
Dec	7,1	15,35	8,25
Jan 00	7,14	15,19	8,05
Feb	7,38	15,36	7,98
Mar	7,65	15,32	7,67
Average	**6,97**	**15,70**	**8,73**

Source: The Bank of England

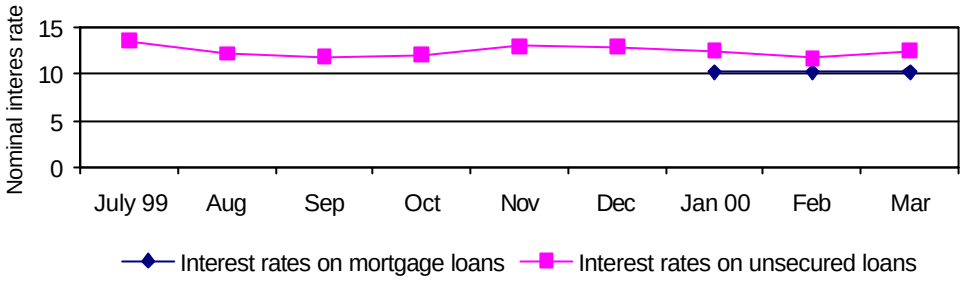
APPENDIX 5

Differences In Interest Rates On Mortgage And Unsecured Loans In Selected Countries*

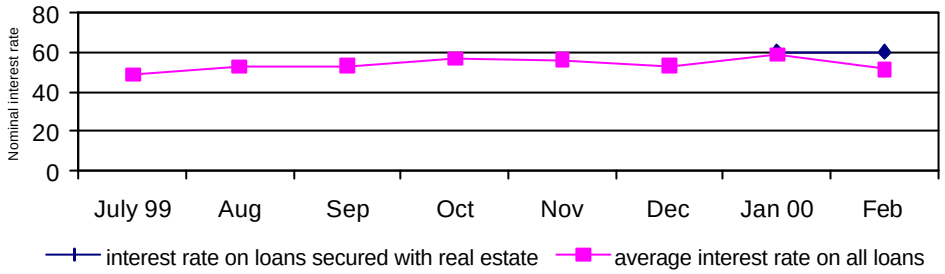


* Sources: Central Banks, Latvian Mortgage and Land Bank, author's calculations

Latvia



Ukraine



APPENDIX 6

Information on Collateral Lending in Kiev*

Lender	Types of Collateral	Maximum amount of Loan	Maximum Maturity Of Loan (months)	Explicit Interest rate on Loan (yearly)	Loan to value ratio
FC **"Ssudi"**	Apartment	$ 4,000	6 (or 6+)	30% ($)	0.4
	Car	$ 4,000	6 (or 6+)	30% ($)	0.4
FC "Albi"	Apartment	UAH 10,000	12	60% (UAH)	0.5
	Garage	30% of value	12	60% (UAH)	0.3
JSB* "Kievinvestbank"**	Apartment, Private Building (in Kiev)	50% of value	12-24	36% ($)	0.5
	Car (Kiev registration)	50% of value	12	36% ($)	0.5
JSB "Mriya	Apartment, Private Building (in Kiev)	50% of value	12 (possible more)	50% UAH	0.5
	Car (Kiev registration)	50% of value	12 (possible more)	50% UAH	0.5
JSB "Vostochno-Europeysky Bank"	Apartment, Private House (in Kiev)	50% of value	12	70% (UAH)	0.5
Average		50% of collateral value	12 months	33%($) 60% (UAH)	0.455

* Source: Author's calculations

** FC – financial company

*** JSB – joint stock bank