Market-Based Housing Finance Efficiency in the Czech Republic

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Abstract: *The article aims to analyze the housing finance efficiency in the Czech Republic, especially so called 'intermediation efficiency'. The 'intermediation efficiency' is understood as a set of institutional factors, the interest, credit, liquid and other risks, government subsidies and legislative conditions, which may contribute to higher costs of intermediating housing loans. The methodology of the research was based on combination of quantitative and qualitative surveys among mortgage lenders and buildings savings banks in the Czech Republic, including an analysis of secondary data. The purpose of the research was to get an idea about how efficient the market-based housing finance in the Czech Republic is and to point out its potential weaknesses and shortcomings. Despite several shortcomings described in this article the "intermediation" efficiency of financial institutions providing housing loans in the Czech Republic could be considered relatively high.*

Key words: housing finance – transition economies – finance efficiency

Introduction

The structure of market-based housing finance system significantly differs among countries. The differences arise from local housing finance traditions, macro-economic performance, accessibility of funds, sources of capital for loan extensions, variety and types of mortgage products, variety of interest rate fixing, level and content of state interventions and others (Stephens 2003, Coles, Hardt 2000, Hardt, Manning 2000, Low, Sebag, Dübel 2003, Hegedüs, Struyk (eds.) 2005, Allen, Gale 2000, Levine 2002, Hegedüs 2002, UN/ECE 1998). For example, if we consider classification just according to fund raising, at least four systems can be distinguished (UNECE 2005, 15-19, adjusted):

a) Deposit-based housing finance system
    a. operated by universal banks;
    b. operated by specialized "housing" banks;
b) Housing finance system with predominant role of bond financing (mortgage banking);
c) Housing finance systems based on loan securitization;
d) Housing finance systems with predominant role of state "housing" banks or funds.

Each type of fund raising is connected with specific costs of lenders that may predetermine the costs of loans and the efficiency of the system as a whole.

Deposit-based housing finance system is based on activities of universal and specialized "housing" banks. Universal banks obtain most of their funds through ordinary deposit accounts (additionally these banks may collect finance needed for lending by issuing bonds and by securitizing their loan holdings), they pool large amounts of deposits with different maturity, yield (interest), and serve as intermediaries taking on mismatches between the deposit sources and the loans granted in terms of amount, credit risk and duration. The cost of funds in case of deposit-based housing finance systems depends mainly on the costs of deposits obtained, i.e. on interests paid to depositors (however, there could be other additional cost connected with administration of the deposit accounts or collecting of funds).

Housing savings scheme operates on the following basis: the provider obtains deposits from the clients, usually at a below-market interest rate, and extends the housing loan to them at below-market interest rate once the sum of deposits taken reaches certain level. Originally the system was designed as "closed", i.e. the loans were funded only by means of mutual savings of participants (depositors). Present housing savings schemes are mostly "open" to the intent that besides participants (depositors), who intend to take a loan, also depositors who do not intend to take a loan in the future participate in the system. The presence of such "friendly" clients assures sufficient funds for loans and the whole system is more stable. The cost of funds in case of housing savings is, as in the case of deposit-based financing, determined by interests on savings. However, there may be additional public costs: "friendly" clients have to be motivated to participate in the system and most countries offer direct or indirect subsidies to attract them. The subsidies differ among countries; usually state premium is offered (i.e. some additional amount of money granted by state to depositors) and/or the interest paid from deposits could be exempted from income tax.[1] The schemes may be operated either by universal banks (France, Poland, Slovenia) or banks specialized exclusively on housing savings (Austria, Germany, Czech Republic, Slovakia, Hungary and others).

[1] If state subsidies are set too high, the scheme could even become very high financial burden for state budget – it could serve under such circumstances rather as attractive saving instrument than a tool for collecting funds used for granting housing loans.

Mortgage banking is the process of raising funds through sales of bonds. The issuance of mortgage bonds is the second most important type of funding method after retail deposits. There are generally two ways to raise funds from capital markets: by issuing mortgage bonds or mortgage-backed securities. Mortgage bonds, more traditional type of using capital markets to finance housing loans, are usually issued by specialized mortgage banks but, at present, in many countries they can be issued also by universal banks. Mortgage bonds are securities which have as collateral the corresponding bundle of mortgage loans and represent guaranteed claims against the issuer. The cost of funds in this case depends on the profit required from the potential investors to the purchase of mortgage bonds. Usually, the profit required from holders should be lower for mortgage bonds than for other commercial bonds due to the fact, that mortgage bonds are secured not only by the assets of the issuer but also by collateral of the corresponding bundle of mortgage loans. Besides, the issuance of mortgage bonds is usually highly regulated activity, requiring special legislative and supervisory provisions to lower the risk for investors.

Whereas the issues of mortgage bonds occur on-balance-sheet of banks, the issues of mortgage-backed securities occurs off-balance-sheet of banks. The separation of securities and underlying loans from the lenders balance has the advantage of lower requirements for capital adequacy. This type of securitization, well known from the USA, is not widely spread among European countries. As general advantage of securitization could be considered the fact, that the lender can make more efficient use of capital, as the risk involved in the mortgage lending activity is sold to the third parties. The lender is not obliged to have sufficient funding over the duration of the loan, has, therefore, higher liquidity and can use the funds for further lending. The costs of funds are defined in a same way as in the case of bond financing.

Housing finance systems with predominant role of state “housing” banks or funds can be based either on direct involvement of banks or funds established by state in order to provide housing loans or on state guarantees, interest subsidies or grants allocated to loans of private banks or specialized mortgage institutions. The direct involvement of state banks or funds into the provision of housing loans could be advantageous when the funds required can be obtained cheaper than through private financial institutions; however the trade-off effect should be always considered. For this type of fund raising the costs of funds may be defined as the interest costs on government bonds, which are mostly used to cover government debt.

With the exception of securitization, all above mentioned types occurred in transition (post-communist) countries. It is clear from Table 1 that the growth in residential mortgage debt is much faster in the post-communist countries nowadays (2005) than is the annual growth in developed countries (EU 15, USA).

Table 1: Overview of EU residential mortgage markets 2005

	Value of Residential Mortgage Debt, € million	Growth in Residential Mortgage Debt (%)	Residential Debt to GDP Ratio (%)	Per Capita Residential Mortgage Debt, €
Serbia	307	244,9	1,4	n/a
Ukraine	1 670	242,7	0,4	36
Turkey	7 387	204,0	2,5	103
Russia	5 072	151,7	0,8	35
Latvia	2 509	97,2	19,6	1 088

Bulgaria	1 006	97,2	4,7	130
Lithuania	2 268	80,2	11,0	662
Romania	1 449	76,1	1,8	67
Estonia	2 618	74,5	24,8	1 944
Czech Republic	6 016	63,4	6,1	589
Slovenia	1 301	62,7	4,8	651
Poland	14 646	51,9	6,0	384
Cyprus	2 144	44,2	16,0	2 862
Slovakia	3 078	40,1	8,1	572
Iceland	10 553	39,8	82,9	35 895
Greece	45 420	33,4	25,1	4 101
Croatia	3 803	31,0	12,7	856
Ireland	98 956	28,5	61,7	24 082
Spain	475 571	23,6	52,6	11 050
Malta	1 519	22,9	33,8	3 773
Hungary	9 205	21,3	10,5	912
Italy	243 622	18,1	17,2	4 167
France	503 600	16,5	29,4	8 316
US	7 144 201	13,8	71,2	24 102
Luxembourg	10 006	13,7	34,1	21 991
Finland	65 946	13,5	42,5	12 593
Norway	125 260	12,9	52,7	27 193
Denmark	195 762	12,3	94,0	36 176
Belgium	98 060	11,9	32,9	9 387
Netherlands	487 322	11,9	97,1	29 887
Austria	53 815	11,9	21,9	6 558
Portugal	79 452	11,7	53,9	7 546
EU 25	5 138 835	10,7	47,5	11 184
EU 15	5 014 078	10,4	48,9	13 011
UK	1 414 386	9,5	80,0	23 560
Sweden	159 025	9,3	55,2	17 647
Switzerland	262 433	5,5	88,9	35 392
Germany	1 162 588	0,5	51,7	14 092

Notice: above mentioned countries were sorted descending according to Growth of Mortgage Debt (%).
Source: European Mortgage Federation (http://www.hypo.org/content/default.asp?PageID=202)

Considering the boom of mortgage markets in transition countries after 2000 the question arise of how efficient are housing finance systems in these countries? The methodology of housing finance system efficiency measurement has been discussed by several comparative studies. Low, Sebag, Dübel (2003) described the development of mortgage markets in selected EU countries (Denmark, France, Germany, Italy, Netherlands, Portugal, Spain, and Great Britain). They evaluated the efficiency of mortgage markets by evaluating different institutional aspects of the systems, using selected performance indicators like: state interventions (subsidies) on the mortgage markets (forms, extent and influence on the market), market competition (measured by market shares of lenders) and variability of mortgage products (variability of interest rate setting and fixing, variability of loan-to-value ratios and loan maturities, variability of fund raising, existence of specific products like interest-only mortgages and equity withdrawal and equity release mortgages). In this respect they draw main attention to the *complexity of market* comprising two components: 1) the variability of products and services that satisfy different needs and preferences of clients (borrowers); 2) availability and affordability of these products and services to broad spectrum

of consumers. The authors finally calculated aggregate index of the complexity of markets in selected countries.

The efficiency of housing finance systems may be considered also from different point of view. In the UNECE (2005) study providing guidelines on housing finance establishment in transition societies it is pointed out that "in order to be competitive, national housing finance systems must mobilize and allocate capital efficiently" (p. 41). According to the authors two steps in evaluating systems should be considered: 1) *analyzing goals of the participants in the financial intermediation process* (the term "intermediation process" is however not exactly defined); 2) *setting number of indicators to measure the performance of participants in relation to their stated goals*. According to authors there are three main participants on the housing finance market: borrowers, lenders and government. Following aspects should be taken into account from the viewpoint of borrowers: the supply of credits, the credit availability and the credit affordability.

The indicators for evaluating credit supply are as follows: existing housing credit portfolio of lenders, the continuity of new lending, the market shares in the financial sector and the loan amounts with their periods of redemption. Housing credit portfolio measures the outstanding housing loans as a percentage of the outstanding loan portfolio (or the total assets of the financial institution). Continuity of new lending means the ability of lenders to grant loans without high variations in times of economic recession or economic peak (and connected development of key macroeconomic indicators). High market shares can under certain circumstances be an indicator of limited offer and competition. The loan amount and the requested redemption period have significant influence on the loan affordability for borrowers due to the impact on interest rate of loan and further charges to be paid.

Credit availability is strongly affected by collateral requirements that are usually connected with the appraisal value of the asset (realty), which should serve as security of the loan granted. Loan-to-value ratio (LTV) is another significant aspect of credit availability from the borrower's point of view. Low LTV secures loan providers in case of falling prices, but it requires highly valued assets or significant down-payment from borrower. Income ratios (payment to income – PTI and loan to income – LTI) are connected with the rating of the creditworthiness of the client.

Credit affordability is to a large part determined by the cost of borrowing. Such cost includes nominal mortgage rates, commissions and administration fees, valuation and insurance. Nominal rates should be "compared to prime rates (spreads) and inflation rates (real interest rates) and should be evaluated in view of possible risks which may occur after borrowers have received their loans" (UNECE 2005, 46). As the study points out, gross borrowing costs could be substantially higher than nominal interest rate due to the fact that borrowers have to bear administration costs, losses, tax payments, a contribution to reserves, in some countries also mortgage default insurance. Credit affordability is dependent also on the liquidity risks and interest rate risk. The liquidity risk from the borrower's point of view could be evaluated of how easily borrowers can obtain information about the loan value and about the term when the loan will be paid out. The level of interest rate risk beard by borrowers may also differ: in the Bausparkasse system (housing savings scheme) it is limited by contract design, while on the mortgage market it depends on period of interest rate fixing.

Due to the fact that the evaluation of intermediation efficiency (see below) for the Czech Republic was made especially from the borrower's point of view, we will not describe

possible efficiency indicators from the lender's and government's point of view here. Instead of this we will describe the approach of system efficiency measurement adopted by Diamond and Lea (1992).

The analysis conducted by Diamond and Lea (1992) focuses on the efficiency with which the different mortgage markets deliver mortgage credit to home buyers. Diamond and Lea (1992) define efficiency explicitly as the intermediation efficiency (Diamond and Lea 1992, p. 4), i.e. they attempt to answer the question "Which country is pursuing institutional, transitional, transactional, subsidy and risk allocation arrangements with the lowest total public and private costs of providing housing credit?" As they state further, intermediation efficiency is measured by the actual all-in societal costs of providing housing finance relative to the minimum achievable in the absence of distortions and subsidies. According to their methodology the analysis of intermediation efficiency starts with the society cost of providing housing finance. The authors use as simplest notion of such cost the interest rate paid by borrowers under a specific mortgage contract in a given country. They point out, that to the interest rate have to be added origination fees and the costs to society of subsidies. This amount, annualized, constitutes the gross societal cost of that mortgage contract. Authors then compare this gross societal cost of providing mortgage loans with the theoretical minimum achievable costs – i.e. the cost to the government of issuing sovereign debt, cost of government bonds.

In order to make the comparison among countries reliable they make some adjustments to standardize the measurements of the above mentioned costs. First, the sovereign debt should be the same duration as the mortgage debt. Second, because there are differences in the options connected with the mortgage debt among contracts within and among countries (like the prepayment penalties, the possibilities of prepayment etc.) the mortgage rate should be adjusted by the value of these options. Third, there may be significant differences among types of lenders; authors therefore point out that comparisons should be made among similar lenders.

The authors use two types of measurements of intermediation efficiency: gross spread (or gross margin) defined as the average difference between mortgage-to-government bond yield, and adjusted spread calculated as follows (Diamond and Lea 1992, 7):

Adjusted spread = Mortgage rate – Government rate + Origination fees – Value of options + Cost of subsidies

Authors draw attention to two major drawbacks of this approach. First one is connected with lack of data or data difficulties that allow estimates of certain adjustments only "with heroic assumptions". Second major drawback is the fact, that this measurement of efficiency captures only efficiency in the subsidy system and in operations and fund raising. The adjusted spread does not reflect the variety of statutory and regulatory distortions in the provision of different mortgage contracts, in the origination process and in the contractual treatment of prepayment or credit risks. With respect to the drawbacks authors adopted additional methodology based on use of quantitative and qualitative information to evaluate "indicia" of the degree of efficiency of each key aspect of the mortgage market, including the allocation of each type of risk, as well as intermediation processes and subsidies. The "qualitative analysis" was conducted in order to prove the results of adjusted spread analysis, and to capture key distortions on the market that cannot be quantified or were omitted in the adjusted spread.

The approach of Diamond and Lea (1992), combining quantitative measurement of gross and adjusted spreads (margins) and qualitative assessment of "market complexity" (affordability and availability of products to borrowers) is probably the most elaborated approach to housing finance assessment now. Their analysis of the "intermediation" efficiency may be important especially for emerging systems in transition countries. Transition countries had to adopt a number of administrative and legislative rules in order to introduce new finance systems (see below for more details for the Czech Republic). This process occurred during limited time-period which necessarily led to "imperfections". With respect to the negative development of macroeconomic conditions in the beginning of transition (high inflation rates, slow growth of real wages, and high unemployment rates in some countries), the start of market-based housing finance was "delayed"[2] and connected with the introduction of large-scale government subsidies. The form and extent of such subsidies differed among countries (see Hegedüs, Struyk 2005). They helped on one side to "fuel" the boom of mortgage markets in the late 1990s, but on the other side their generosity might create new market distortions (crowding-out effect, high level of government spending, monopolization of markets and high "spreads" between cost of loans and cost of funds). The "intermediation" efficiency is the best reflection of how successful the effort in establishing new market-based housing finance systems has been and how competitive new markets are.[3]

This article is therefore focused on an evaluation of "intermediation" efficiency of market-based housing finance system in the Czech Republic. It attempts to answer the question what factors on the institutional side, the management of interest, credit, liquidity and other risks, government subsidies and legislative conditions, make the costs of granting housing loans (i.e. loans from mortgage banks and from building savings banks) higher. The goal of the paper was to get information of how efficient is the market-based housing finance market in the Czech Republic. Using knowledge about the way housing finance systems work in the advanced countries, together with efficiency testing methods used there, its goal is to point out the potential weak points and shortcomings of the system.

The article is divided into six chapters. The first chapter describes the history of "establishment" of housing finance system in the Czech Republic. In the second chapter the brief overview of overall economic performance and mortgage market performance in the Czech Republic as well as the comparison of the level of household indebtedness in the Czech Republic and selected European countries are provided. The third chapter contains the description of the research methodology and used data sources. The fourth chapter shows the main results of analysis of market-based housing finance efficiency for mortgage lenders and the fifth chapter shows the same for housing savings banks. Conclusions are summarized in the sixth chapter. We found that despite the relatively high degree of concentration of the

[2] Another reason for such delay could also be in different attitudes of potential borrowers: people prevent from long-term liabilities (like mortgage loans) as they are afraid of unstable economic situation and, which may be more important, they were not accustomed to this kind of housing acquisition (during former regime it was mainly the state who was responsible for housing provision and who often allocated flats with low rents and strong "quasi-homeownership" tenure protection free-of-charge).

[3] Such information is crucial mainly for the transition countries that became "super-homeownership" states due to the massive privatization of public housing. The state of housing finance system there influences the financial affordability of housing for major part of new households and has a direct impact on labour mobility. However, the importance of this kind of efficiency assessment has been also stressed in transition countries where privatization of public housing has been slower and partial – for example in the Czech Republic by the Czech National Bank (Pašaličová, Stiller 2004).

market on housing finance in the Czech Republic, despite "product concentration" due to the fact that mortgage lenders and housing savings banks are often members of one financial group, there are clear signs of relatively strong market competition. These signs were proved, among others, by the comparison of costs of funding and gross margins of mortgage lenders in the Czech Republic and selected developed countries. Some shortcomings of the market on housing finance in the Czech Republic were identified, but overall efficiency of financial institutions providing housing loans in the Czech Republic could be considered as being at relatively high level.

History of "establishment" of housing finance system in the Czech Republic

Owing to the sharp withdrawal of the state from financing new housing construction in the early 1990s, which manifested itself, among other ways, in a decline in housing construction, it became necessary to establish conditions conducive to the introduction of standard financial market-based housing finance instruments. The first such instrument was the *housing savings scheme*, introduced as early as in 1993, which represents a combined savings and credit product. The state supports the saving part of the scheme by state premium – its amount decreased since 2004 when the Amendment to the Act on Building Savings was approved. The value of state premium amounts to 15% of annual deposit up to the limit of CZK 3,000 (approx. EUR 105) [4] nowadays (25% of the sum of annual deposit up to CZK 4,500 (EUR 158) before 2004). Housing savings scheme became a very popular for household general savings. The consequence is that the payment of state premiums became the substantial financial burden for the state. The amount of state support grew from just under CZK 0.3 billion (EUR 10.5 million) in 1993 to CZK 15 billion (EUR 527.4 million) in 2004. The public expenditures on state premiums represent more than half of all direct state housing expenditures now.

The housing savings scheme operates as a "closed" system like in Germany or Austria (*Bausparkasse*), where loans are funded from deposits of banks´ clients. In other words, housing savings banks don't use any additional funding (except the yields gained on the financial market due to investments of free financial resources into secure assets specified in law on housing savings scheme). The participation in the housing savings scheme could be divided into three basic phases – saving, granting of loan and repayment of loan. In the first phase clients accumulate deposits on their accounts in housing savings banks. In the case when client doesn't want use a loan, the minimum savings period to be eligible for the state premium (calculated as stated above) is six years. When client wants to take a loan from the scheme, the minimum savings period is two years (but the client must meet some further conditions set by the housing savings bank if he/she wants to use the loan so early). The client may also obtain so called "bridging" loan sooner than "regular" loan (i.e. even immediately when he/starts to save). The difference between the deposit interest rate and "regular" loan interest rate (the interest margin for housing savings banks) can not exceed three percentage points. During the third phase the loan is paid back in annuity instalments and interest rate is fixed for the whole maturity of the loan. There is a legal right for prepayment anytime during the maturity without any prepayment penalty. Interests paid from building savings loan could be deducted from income tax base (tax relief).

During the last three years, housing savings bank started to use the potential of mortgage financing by offering special "mortgage" products – loans with long maturity extended to the

[4] Average exchange rate for the period from January to September 2006 published by Czech National Bank (Central bank) was used for calculation (1 EUR = 28.441 CZK).

clients immediately, i.e. even in the case that the client does not have a saving account in the bank. In fact, those "mortgage" products are the combination of bridging loan and regular loan from the housing savings scheme. The bridging loan is usually granted for higher interest rate than the "regular" loan. The clients pay back only interests of the bridging loan and at the same time they save deposits in order to meet criteria for granting of the "regular" loan. In the moment, when the criteria for the granting of the "regular" loan are met, the principal of the bridging loan is paid off by the regular loan.

Mortgage loan is clearly the most common mean used to finance the construction or purchase of a flat or house in developed countries. In the Czech Republic the necessary legislation for the extension of mortgage loans was passed in 1995. Mortgage financing did not spread as quickly as it was previously expected. This was mainly due to the macroeconomic situation, particularly inflation and high nominal interest rates on mortgage loans (in 1995 the nominal mortgage interest rates were around 11% and in 2000 they were still around 8.5%), but there were also psychological reasons: people were wary of taking on a large debt for a long term (and unsure about their capacity to repay in the future), the future course of interest rates was uncertain, and there was still a feeling that living in debt is somehow immoral (Lux et al. 2005).

Since 1995, the state provided *interest subsidies* for mortgage loans extended to physical persons for the purpose of acquiring their own housing (at first this applied only to newly constructed housing, but later it was extended to apply to acquiring ownership of older housing by young first-time buyers) to tackle the "tilt" problem.[5] The subsidy was directly linked to the development of interest rates in the economy. More precisely, the value of the interest subsidy was set for a given year according to average nominal interest rate from newly granted mortgage loans to physical persons during the previous year.

Since 1995 to January 2001 the interest subsidy on mortgage loans extended to new housing construction or purchase of new housing amounted to four percentage points, since 2001 to January 2002 it amounted to two percentage points and since 2002 to January 2003 to one percentage point.[6] The amount of the mortgage loan that could be subsidised was limited (the aim was not to subsidise luxury houses or flats). With respect to the fall of interest rates (below 7%) the subsidy was cancelled in 2003.

In 2002 the interest subsidy on mortgage loans for young first-time buyers was also introduced. The applicants for the subsidy could not own other flat or house (except the flat or house that should be subsidised) and the subsidy might be used only to acquire older housing (at least two years from the official approval of a flat for use). The subsidy amounted to three percentage points since 2002 until January 2003, to two percentage points since 2003 until January 2004 and to one percentage point since 2004 until January 2005. This subsidy was cancelled in 2005. Borrowers are also entitled to *tax relief*. They can deduct the volume of annually paid mortgage interests (up to the limit of CZK 300.000, EUR 10.548) reduced by the potential state subsidies from their tax base (for the purpose of personal income tax). It

[5] „Tilt" problem refers to the situation of high nominal interest rates in inflationary environment: annuity repayments are high in nominal values and thus create the mortgage loan affordability barrier during the first years of loan repayment.

[6] The interest subsidy amounted to four percentage points during the years when the average interest rate from newly granted mortgage loans was higher than 10%, to three percentage points during periods when the average mortgage interest rate was equal or higher than 9% and lower than 10%, to two percentage points during periods when the average mortgage interest rate was equal or higher than 8% and lower than 9% and to one percentage point during periods when the average mortgage interest rate was equal or higher than 7% and lower than 8%

would be interesting to see the influence of direct or indirect government subsidies on the development of mortgage market but the analysis would have to estimate the situation (development) without such subsidies, which is hardly possible. Figure 1 shows that the influence of interest subsidy on the volume of mortgage loans granted (or on the volume of outstanding mortgage debt) was probably quite limited.

The housing finance system in the Czech Republic can be thus classified as deposit based housing finance system comprising of both universal and housing savings banks. Under current legislation the universal banks can also issue mortgage bonds (be active in mortgage banking) and they use this option. In summary, the lenders use retail banking (deposits), housing savings and sale of mortgage bonds to raise funds for mortgage (housing) loans. In 2005 there were eight universal banks in the Czech Republic that had the licence to extend mortgage loans and additional two banks had such a licence and were specialized exclusively on mortgage financing (mortgage banks). Altogether there were ten mortgage lenders. Additionally, there were six housing savings banks that extend the fixed-interest rate housing loans.

Current state-of-art

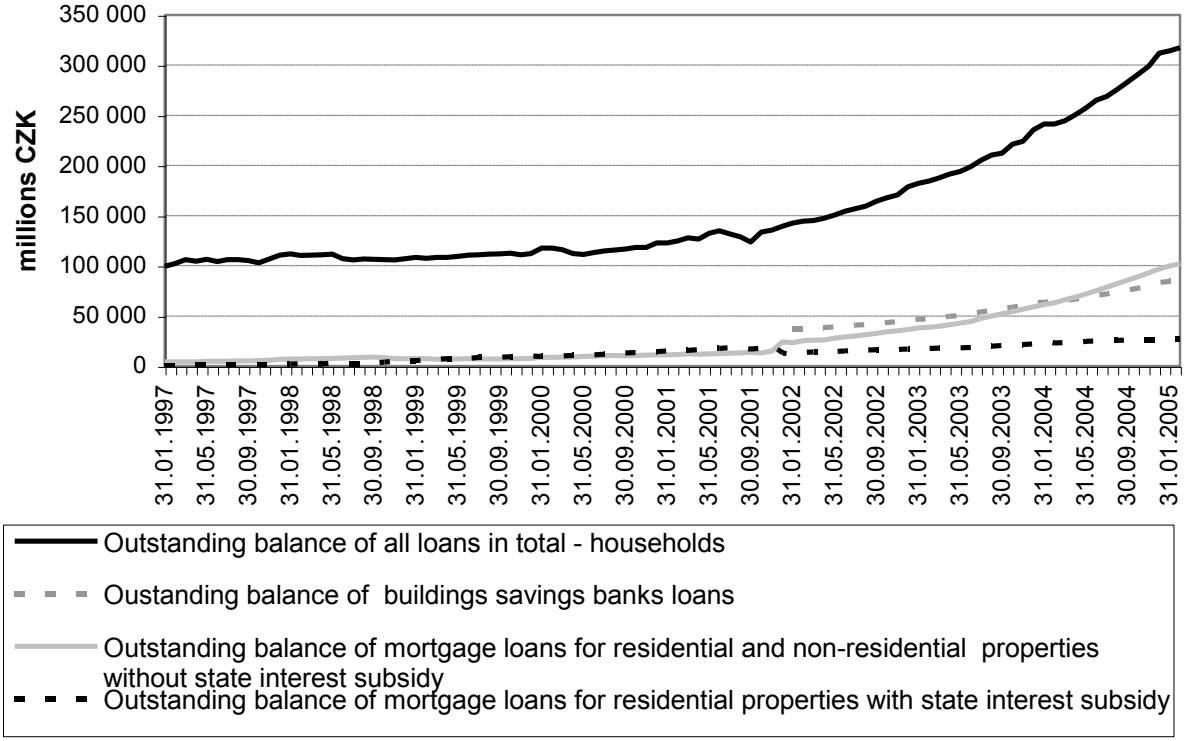
According to the official statistics (see Figure 1) the level of Czech household indebtedness started to grow sharply from the beginning of 2000 (after the end of economic recession in 1997 – 1998). The increase in household indebtedness was closely connected with the growing volume of outstanding housing loans. In January 1997 the outstanding mortgage balance amounted only to 4.4% of total volume of outstanding loans. In February 2005 this share (including the outstanding balance of housing savings banks) has been already equal to 67.4%. The rapid increase in levels of outstanding housing loans was connected especially with the economic upturn, i.e. falling nominal interest rates, inflation, growing household disposable income and growing GDP (see Table 2).

Table 2: Basic macro-economics indicators in the Czech Republic 1996-2005

Indicator	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
GDP growth (%, y/y, real terms)	4.0	-0.7	-0.8	1.3	3.6	2.5	1.9	3.6	4.2	6.1
CPI (%, y/y, average)	8.8	8.5	10.7	2.1	3.9	4.7	1.8	0.1	2.8	1.9
Average interest rates, new credits (households, in %)	12.96	12.51	11.46	9.99	9.51	9.38	8.83	9.13	n/a	n/a
Average interest rates, residential loans (households, in %)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	5.24	4.51
ILO unemployment rate (%, average)	3.9	4.8	6.5	8.7	8.8	8.1	7.3	7.8	8.3	7.9
Gross disposable income (CZK, bil., constant prices of the year 2000)	2,068.3	2,054.9	2,107.0	2,121.8	2,152.6	2,217.0	2,277.0	2,361.5	2,429.5	n/a
Gross disposable income (EUR[a)], bil., constant prices of the year 2000)	58.1	57.7	59.2	59.6	60.4	62.3	63.9	66.3	68.2	n/a
Net disposable income (CZK, bil., constant prices of the year 2000)	1,677.3	1,650.9	1,688.8	1,688.6	1,701.1	1,750.7	1,790.7	1,858.8	1,907.3	n/a
Gross disposable income (EUR [a)], bil., constant prices of the year 2000)	47.1	46.4	47.4	47.4	47.8	49.2	50.3	52.2	53.6	n/a

Notice: a) Average exchange rate for 2000 published by Czech National Bank was used for calculation (1 EUR = 35.610 CZK).
Source: Czech Statistical Office (Macroeconomic indicators, http://www2.czso.cz/eng/redakce.nsf/i/macroeconomic_indicators), Czech Statistical Office, Czech National Bank (interest rates).

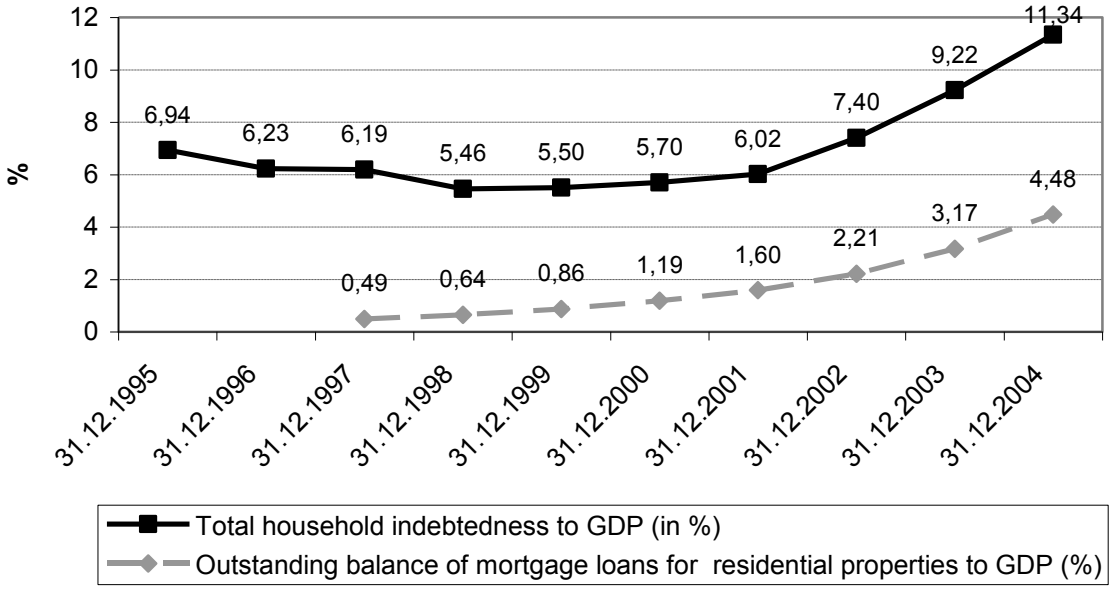
Figure 1: The level and structure of outstanding loans granted to Czech households in 1997-2005 according to the type of loan



Source: Czech national bank (loans to households in total (residents) in CZK and foreign currencies).
Notice: the figure presents values of outstanding loans to the end of each month, i.e. initial values plus the volume of new granted loans less the repayments of previously granted loans. The interest subsidy was directly linked to the development of interest rates in the economy, with respect to the fall of interest rates the general subsidy was cancelled in 2003. This pertains to the interest subsidy provided for mortgage loans for new housing. The interest subsidy for mortgage credit for young people up to the age of 36 was in 2004 1 percentage point and might be used to acquire older housing (at least 2 years from the official approval of a flat for use). The interest subsidy for young people was cancelled in 2005.

Figure 2 shows the relation between the total household indebtedness to GDP and the development of ratio of outstanding mortgage balance to GDP during 1995 – 2004. Despite the fact that the household indebtedness in the Czech Republic has been quickly risen since 2000, as shown above, the final values are still low in comparison with the situation in other developed EU countries (Table 3). The share of outstanding loans for residential purposes from the total outstanding loans granted to households almost doubled between 2002 and 2004 but it is still quite far from the average ratio known from EU 15 member states. It is necessary to mention, that in the Czech Republic mortgage loans could not have been used for other than housing purposes till 2003, whereas in EU countries equity withdrawal mortgages are common already for almost one decade. The residential debt on GDP in comparison with the situation in selected European countries (Figure 3) is still relatively low (7.6%).

Figure 2: The total indebtedness of households and outstanding mortgage balance to GDP in 1995 - 2004



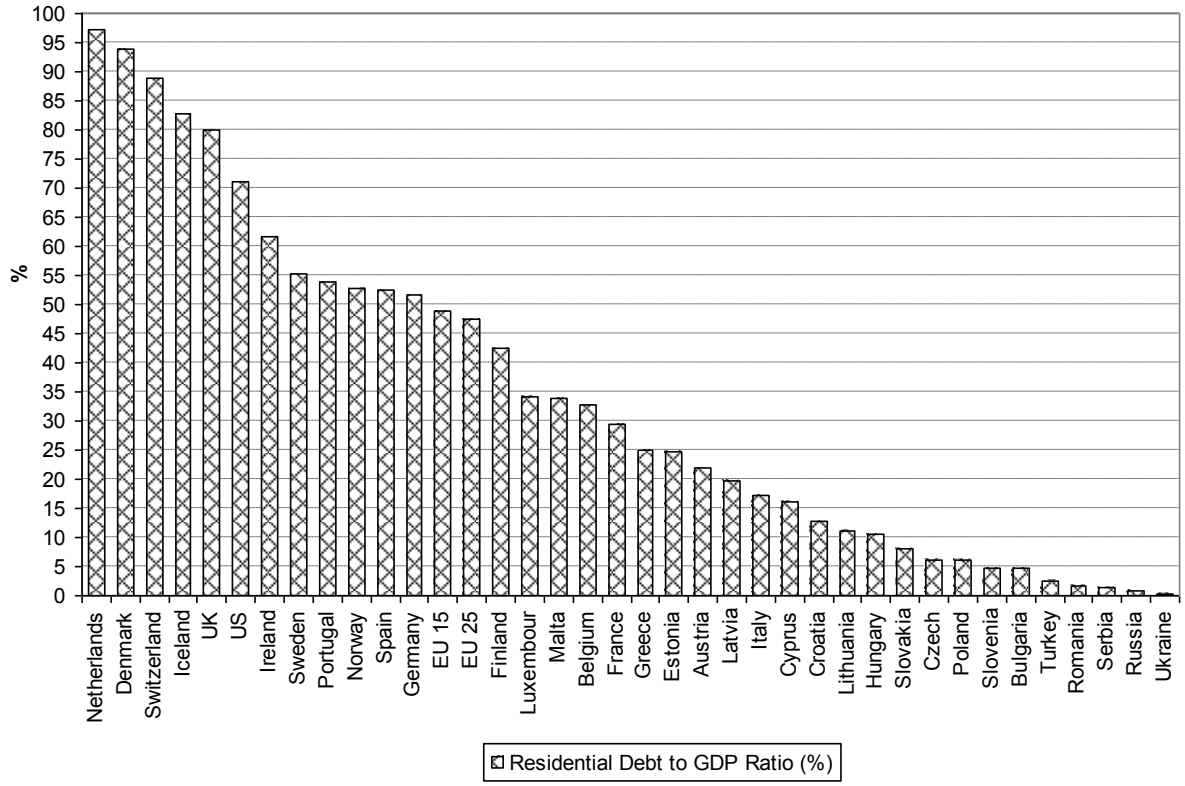
Notice: figures represent the ratio of outstanding household loans to GDP in current prices in a given year. The statistics of the Czech National Bank doesn't allow distinguish the volumes of outstanding mortgage loans for residential and non-residential properties. The outstanding buildings savings loans were not included in the calculation because the Czech National Bank provides the data only since 2002.
Source: Czech Statistical Office (GDP), Czech National Bank (volumes of outstanding loans).

Table 3: The household indebtedness in the Czech Republic and EU countries in 2002 – 2004 (%)

	2002		*2003*		*2004*	
	CR	EU	CR	EU	CR	EU
household loans / total loans	19.9	44.8	24.7	45.5	30.8	47.1
household loans for residential properties / total loans	**11.0**	**27.2**	**15.1**	**27.9**	**20.4**	**29.2**
consumption household loans / total loans	5.8	6.5	6.4	5.7	6.8	5.8
household loans / private consumption*)	14.6	89.2	18.4	92.5	22.9	96.2
consumption household loans / private consumption*)	4.3	12.8	4.8	11.6	5.1	11.8

Source: own computations according to Monthly Bulletins of European Central Bank, Czech Statistical Office data and Czech National Bank.
*) In the case of Czech Republic expenditures on individual household consumption in current prices.

Figure 3: Residential Debt to GDP ratio in 2005



Source: European Mortgage Federation (http://www.hypo.org/content/default.asp?PageID=202).

Research methodology and data sources

The research methodology was based on a combination of quantitative and qualitative methodology of finance efficiency assessment and on a combination of quantitative and qualitative data collection techniques. The methodology followed Diamond and Lea (1992) and UNECE (2005). The quantitative assessment of the housing finance system was conducted, firstly, by measuring the spread between average costs of extended mortgage loans (i.e. the average interest rate) and average costs of funding mortgage loans (i.e. rates on mortgage bonds, deposits, own capital) and secondly, following the methodology employed by Diamond and Lea (1992), by measuring the average value of gross margin defined as the interest spread between the costs of mortgage loans and costs of government bonds (as almost risk-free assets with lowest issuing costs). The average gross margin was calculated as the difference between the average weighted[7] interest rate from mortgage loans granted by banks in 2000–2004 and the average annual gross yield of five-year government bonds during the same period. Due to the lack of data we were forced to limit the analysis of intermediation efficiency based on the spread calculation (Diamond and Lea 1992) only to gross margin measure specified above.

It is necessary to mention, that the spread measured as a difference between the average costs of funds[8] and costs of housing loans indicates rather the efficiency of the lenders, whereas the

[7] The weights were the banks' shares in the total amount of residential loans granted to citizens up to 31 December 2004.

[8] We used the average costs of funds because the majority of mortgage loan providers in the Czech Republic use funds from deposits and mortgage bonds issuance for financing mortgage loans. We used two methods of calculation of the spread between the costs of funds used by banks for financing mortgage loans and the average

gross margin calculated as the difference between the costs of housing loans and the average annual gross yield of government five-year bonds refers rather to efficiency of the whole housing finance system (as we compare the costs of loans granted with the theoretical lowest costs of funds which can be obtained by issuance of bonds). Computation of both figures may thus give us more complementary ground for an evaluation.

The analysis of margins is complemented by the analysis of 'effective' interest rate (the share of "hidden" costs connected with setting up and administering of the loan besides the published interest rate), market concentration, development of both maximum and average loan-to-value ratio (LTV), prepayment penalties and bank performance: operation costs, net profits per employee, return on average assets and return on average equity.

Secondly, the qualitative assessment of the system has been realized. As a part of it we concentrated mainly on following aspects of the system:

1) **Funding** - the research question was, whether lenders see any specific obstacles preventing the accumulation of cheap capital that can be used to fund housing loans and/or obstacles preventing the effective allocation of capital according to the will of investors. We asked the representatives of lenders to answer the questions on the following topics: what are the main sources for funding housing loans, why is the particular predominant type used, what are the costs of funding and what could contribute to reducing those costs, to what degree do the banks experience insufficient resources for funding and/or have problems acquiring them on financial and capital markets. In other words, the question was, whether lenders in the Czech Republic see any specific obstacles preventing the accumulation of cheap capital that can be used to fund housing loans and/or obstacles preventing the effective allocation of capital according to the will of investors.
2) **Credit risk** – we examined an effort of banks to minimise this type of risk and approaches of the banks how to secure them against it. This type of risk generally refers to the breach of the agreed loan terms by a client. The research examined an effort of banks to minimise this type of risk and approaches of the banks how to secure themselves against it (e.g. by means of higher interest margins, mortgage insurance, prepayment penalties, differentiation of interest rates for loans with different LTV etc.). According to foreign studies (Diamond and Lea 1992, UNECE 2005) evidence of a high credit risk is poor access to housing loans combined with a high LTV, a conservative approach to granting loans to only a relatively limited number of clients, and excluding first-time buyers of owner-occupied housing from the market in connection with their lack of an adequate volume of resources of their own to obtain a housing loan and acquire owner-occupied housing (*down payment*).
3) **Interest risk -** i.e. the risk stemming from unfavourable developments in market interest rates. We focused on the question to what extent banks in the Czech Republic pass on the interest risk to their clients and to what extent they use various types of interest risk management Also an access to a range of mortgage products with different interest rate settings (variable, fixed), different repayment terms and prepayment options was examined.
4) **Liquidity risk** – i.e. generally the ability of the bank to obtain additional sources to fund growing demand for housing loans. Housing loans providers were asked on the

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cost of mortgage loans (i.e. average interest rate). In the first case were cost of deposits approximated by 5 years interest swap. In the second case we used as an approximation of (alternative) costs of deposits average yield to maturity of 5 year government bonds.

attitudes towards the liquidity rules established by the central bank and whether a relaxation of those rules would in their opinion help make mortgage more widespread and less expensive. Also the variation in options of solving liquidity problems was examined.

5) **Operation costs** - i.e. the costs associated with obtaining resources and granting housing loans as a criterion of intermediary efficiency. We aimed to identify processes that contribute at most to higher level of operation costs. The level of costs is usually indirectly affected by regulatory measures and market and institutional structures. Foreign studies (Diamond and Lea 1992, UNECE 2005) have shown that potential sources of inefficiency in this sphere may be an oligopolistic market structure, the absence of behaviour designed at maximising profit, etc. Especially the possibilities in reduction of level of costs connected with the process of loan procurement were discussed.
6) **Government intervention and institutional arrangements** (or generally any kind of external regulatory intervention, not necessarily just from the government) – the distortional effect of these interventions on the market was discussed, as well as the optimal role of the state on the housing finance market.

The major representatives from all commercial and savings banks providing housing loans were asked to fill in a short standardised questionnaire containing information that is not easily accessible from the official statistics. The qualitative survey was conducted later on by roughly one-hour interviews, during which major representatives of banks were asked to answer more detailed semi-standard questions on mortgage loan processing in their respective banks. The main goal of the qualitative survey was to get the better overview of mortgage industry performance. The results were used exclusively for qualitative assessment of the housing finance system efficiency. Both the quantitative and qualitative surveys were carried out in June and July 2005.

With the exception of two mortgage lenders having relatively small share of the market (from the perspective of the volume of outstanding mortgage loans) the representatives of all other banks, including leading mortgage lenders, were kindly participating in the survey. In the case of housing savings banks there was very low willingness to take part in the survey, and we only managed to make successful contact with three out of the total six banks operating in the Czech Republic. The housing savings banks were at the time of survey under investigation of the Czech Antimonopoly Bureau. The reason of this investigation was a suspicion of the oligopoly behaviour. This was the main articulated reason why they refused to participate in the survey.

Market-Based Housing Finance Efficiency – Mortgage Lenders

According to data of the Czech Banking Association the number of mortgage loans granted to citizens reached 137,275 with total nominal value of CZK 154.4 billions (EUR 4.84 bill.)[9] up to the end of 2004. Mortgage loans for residential purposes form 91.6% (i.e. 125,690 loans) from the total number of mortgage loans and 88% (CZK 135.9 billions, EUR 4.26 bill.) from total loan volume. The outstanding mortgage balance amounted to 77.5% of the principal of

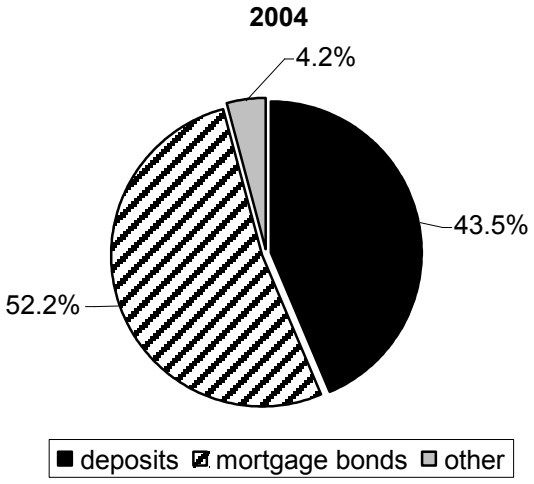
[9] Average exchange rate for 2004 published by Czech National Bank was used for calculation (1 EUR = 31.904 CZK).

granted loans. In the first quarter of 2005 banks granted 8,406 mortgage loans with total volume of 11.1 billions CZK (0.37 billions EUR)[10].

Funding

According to the results of the qualitative survey the Czech mortgage lenders are not experiencing a lack of resources or a need for additional financial arrangements that could enable them to obtain further sources to finance mortgage lending (secondary mortgage market facilities). In order to make mortgage loans less expensive it would help them to reduce the yield required by investors into mortgage bonds. According to the comments of some representatives of mortgage banks, Czech investors do not yet appreciate the higher security of the mortgage bond resulting from the fact that mortgage bonds are secured by assets of the issuer as well as by the value of the property. Short-term money (i.e. deposits) is according to the opinion of providers of mortgage loans cheaper than emissions of mortgage bonds, therefore universal banks providing retail banking are in favourable position in comparison to specialized mortgage banks. The Figure 4 shows the structure of financial resources used by the Czech mortgage lenders.

Figure 4: Structure of financial sources used for financing of mortgage loans (weighted average) in 2004



Source: Mortgage loans in the CR survey, own calculations.
Note: The weights were the banks' shares in the total amount of residential loans granted to citizens up to 31 December 2004.

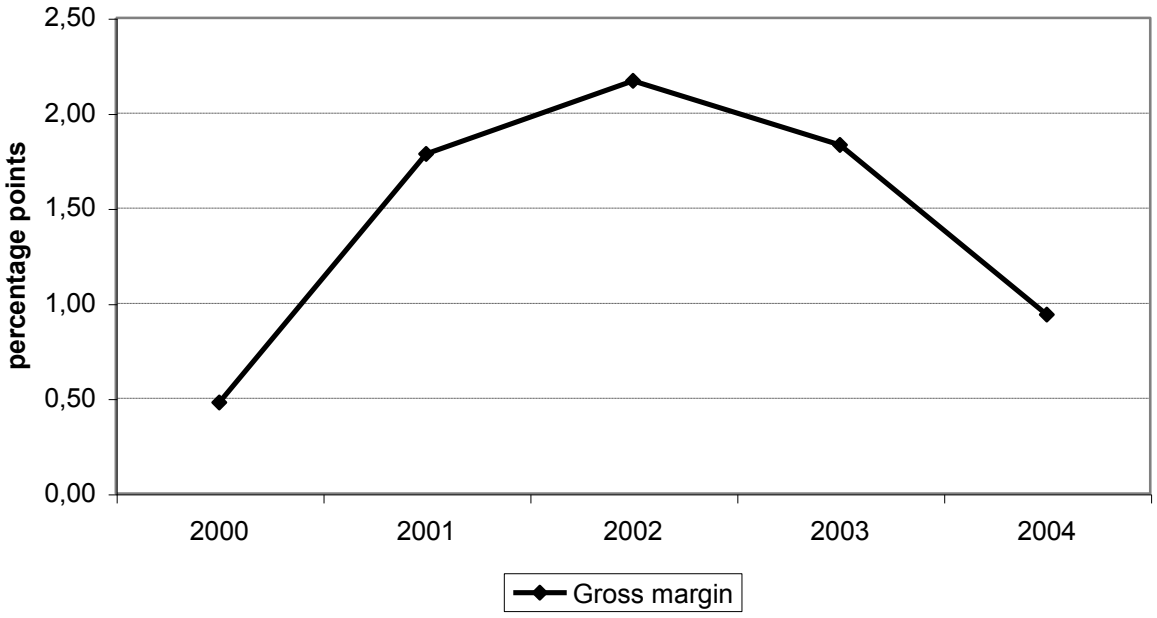
The quantitative assessment of the efficiency of the housing finance system has been realized in several ways. Firstly, we measured the spread between average costs of extended mortgage loans (i.e. the average interest rate) and average costs of funding mortgage loans (i.e. rates on mortgage bonds, deposits, own capital). Secondly, following the methodology employed by Diamond and Lea (1992) we tried to explore the average value of gross margin defined as the interest spread between the costs of mortgage loans and costs of government bonds (as almost risk-free assets with lowest issuing costs).

The spread between the average cost of mortgage loans granted in 2004 (i.e. the average mortgage interest rate) and (weighted) average costs of funding of mortgage loans (i.e. rates

[10] Average exchange rate for the first quarter of 2005 published by Czech National Bank was used for calculation (1 EUR = 30.014 CZK).

on mortgage bonds, deposits, own capital) is surprisingly low - equal to between 1.07 and 1.35 percentage points.[11] The average gross margin, which was calculated as the difference between the average weighted[12] interest rate from mortgage loans granted by banks in 2000–2004 and the average annual gross yield of government five-year bonds during the same period was 1.44 percentage points, with the margin falling over time to a value below one percentage point in 2004 (Figure 5).

Figure 5: Gross margin as the difference between the interest rate from mortgage loans granted and gross yield on five-year government bonds



Note: The so-called gross margin was calculated in the Czech case as the difference between average weighted[13] interest rate from mortgage loans granted by banks in the individual years between 2000 and 2004 and average annual gross yield of state five-year bonds during the same period.

From a comparison of this value with values of gross margins in countries with advanced mortgage markets (Table 3) it can be claimed somewhat cautiously that the Czech mortgage loan market is very efficient and that its efficiency in the monitored period increased. It is necessary to notice that the comparability of figures in Table 3 is somewhat disputable, because Diamond and Lea (1992) calculated gross margins for selected countries for the period of the 1980s and the beginning of 1990s, whereas the figure for the Czech Republic relates to the period 2000–2004. The situation on the housing and mortgage markets in these two periods was significantly different.

[11] We used two methods of calculation of the spread between the price of funds used by banks for financing mortgage loans and the average cost of mortgage loans (i.e. average interest rate). In the first case were cost of deposits approximated by 5 years interest swap - IRS (the spread was 1.07 percentage points in this case). In the second case we used as an approximation of (alternative) costs of deposits average yield to maturity of 5 year government bonds (the spread was 1.35 percentage points in this case).

[12] The weights were the banks' shares in the total amount of residential loans granted to citizens up to 31 December 2004.

[13] The weights were banks' shares in the total amount of residential mortgage loans provided to citizens up to 31 December 2004.

Table 4: Comparison of gross margins among selected countries

Country	*Interst and maturity of mortgage loan*	*Benchmark*	*Period*	*Gross margin (basic points)*
Denmark	Fixed (20 years)	10 year government bond	1986-91	128
Germany	Fixed (10 years)	10 year government bond	1982-91	147
	Variable	Yield curve	1982-91	215
	Fixed (10 years)	5 year government bond	1982-91	-221
	Variable	1 year government bond	1982-91	276
France	Fixed (15 years)	10 year government bond	1987-91	232
	Fixed (15 years)	10 year government bond	1986-90	234
Great Britain	Variable	Yield curve	1987-91	165
	Variable	3 months government bond	1987-91	151
USA	Fixed (30 years)	1 year government bond	1982-87	223
			1988-91	207
	Variable	10 year government bond	1988-91	-
Czech Republic	Fixed (5 years)	5 year government bond	2000-2004	144

Source: Diamond and Lea (1992), own calculations (Czech Republic).

Credit risks

The Czech mortgage industry offers already relatively large scale of different products characterised by broad variety of repayment methods, maturities, values of LTV, interest rate settings etc. The mortgage loan could be used until 2004 only for limited set of purposes connected with housing needs of the applicant; these purposes have to be proved by client. Since May 2004 according to changes in the legislation the mortgage loan is defined as every loan secured by real estate (the real estate has to be placed in the Czech Republic, other EU member state or within the European economic area). The maturity ranges usually between 5 and 30 years, the loan has to be paid off before the client reaches 65 years. The interest rate of mortgage loan could be fixed or variable. Fixed interest rate is constant for a fixed period (usually 1, 3, 5, 10 or 15 years) according to client's will. Variable interest rate is linked to financial market interest rate development (usually annual Prague Interbank Offered Rate – PRIBOR). Its value is calculated as a sum of PRIBOR rate and surcharge determined by bank. The surcharge is fixed for a certain period (usually 5 years); the loan interest rate varies annually according to changes of PRIBOR.

The maximum LTV ratio ranges between 70% and 100%, the loan can be applied for by up to 4 persons (also from different households). The repayment of loan can be in form of annuity installments (most used option), progressive payments (offered usually to persons younger than 36 years) or degressive payments. On the Czech mortgage market the following 'special' products appeared: the mortgage loan without additional fees connected with setting up and administering a loan, mortgage loan on co-operative housing, mortgage loan combined with housing savings or with life insurance (combined mortgage loan, "interest-only" mortgage loan) and mortgage loan without proof of solvency. In case of mortgage loan without additional fees connected with setting up and administering a loan the fees are incorporated to interest rate. Mortgage loan on co-operative housing allows use of mortgage loan for financing the purchase of co-op housing. The loan has to be always secured by other property than flat in co-operative ownership. Combined mortgage loan is similar to interest-only mortgage product: clients pay back only interests and principal of the mortgage loan (or its part) is repaid from the housing savings or life insurance later on. In the case of mortgage loan without proof of solvency bank doesn't require the client income declaration. Since 2003

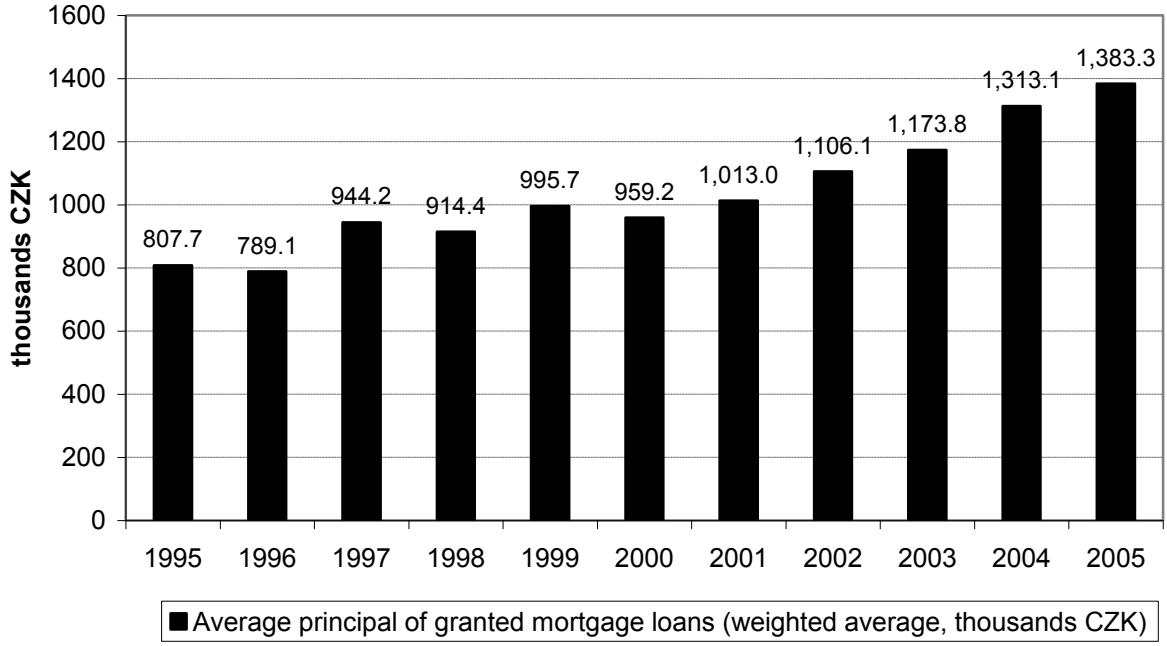
there is an option to use mortgage loan for equity withdrawal. In comparison with 'classic' mortgage loan, the equity withdrawal loan is granted under more stringent conditions (like lower LTV – usually up to 70%, lower maturity – up to 20 years, higher interest rate, limited maximum value, etc.). The equity withdrawal mortgage loan can be paid off anytime during its maturity without prepayment penalty or additional charges.

Czech mortgage lenders, unlike the situation in countries with advanced markets, do not offer any advantages targeting first-time buyers. The solvency criteria are applied more or less across the board to all applicants, and the banks are trying to make loans accessible only by means of added security (a co-applicant), the supply of a broad range of interest rate fixings, and various promotional activities in the form of discounts on the fee for a setting up a loan. This fact makes loans less accessible, especially to young people, who, as the *Housing Attitudes Survey 2001* shows (Lux et al. 2003), constitute the main body of potential clients for mortgage lenders. The complexity of the market (the variability of different loan products) and the effective assessment of risk (the projection of some of the client's "weaknesses" into the risk premium when the interest rate is being set) are weaker than in countries like UK or Denmark, and therefore for many potential clients loans continue to remain unaffordable. The average age of mortgage loan applicant is around 36, and it does not appear to have gone down significantly in recent years.

The Czech mortgage loan market still lacks some specific mortgage loan products (flexible mortgages, reverse mortgages, etc.) combined with a more elaborate supply of consultancy services on the part of specialised institutions, which could explain to clients the principles involved in various products, their advantages and disadvantages, and would help them to obtain the loan best suited to their needs. The alternatives to the traditional and by far the mainly applied model of mortgage loan with fixed annuity payments are not adequately marketed to the public and mortgage lenders thus argue about the low demand for such alternatives.

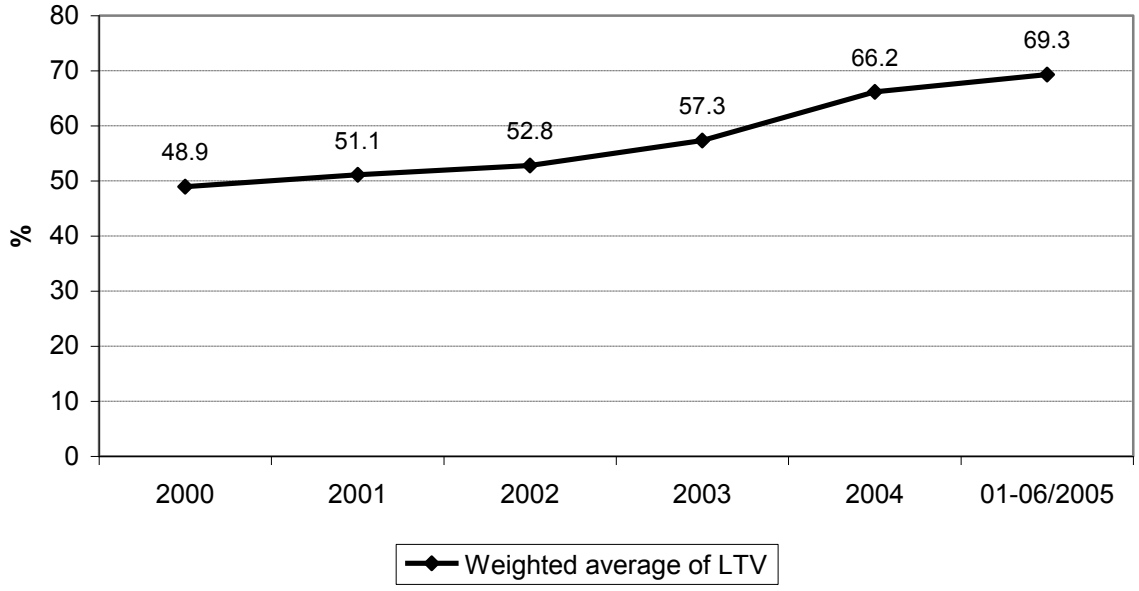
The banks generally underestimate the price risk, which is projected into the methods used to revalue mortgages, methods that are not convincing or transparent, which are usually restricted only to real estates of high nominal values or for foreclosure in the case of problem loans. It seems that banks rely on relatively conservative initial appraisals (when loans are extended), high price appreciation (experience from the past till 2003) and low value of average LTV in precedent years. In recent years there has been continuous and constant (without any major deviations) growth in the volume of granted home mortgage loans (Figure 6), and rise in both the maximum and the average LTV rates (Figure 7). The default rate is low (in the period between 1995 and 2005 was around 1%).

Figure 6: Average principal of granted mortgage loans during 1995 – 2005



Notice: corresponding values in EUR are as follows (for calculations was used nominal exchange rate for a given year): 1995 – 23,500 EUR, 1996 – 23,200 EUR, 1997 – 26,400 EUR, 1998 – 25,300 EUR, 1999 – 27,000 EUR, 2000 – 26,900 EUR, 2001- 29,700 EUR, 2002 – 35,900 EUR, 2003 – 36,900 EUR, 2004 – 41,200 EUR, 2005 – 46,400 EUR.
Source: Mortgage loans in the CR survey.

Figure 7: Weighted average LTV for residential mortgage loans granted to physical persons in 2000 – 2005



Source: Mortgage loans in the CR survey.
Note: The weights were the banks' shares in the total amount of residential loans granted to citizens up to 31 December 2004.

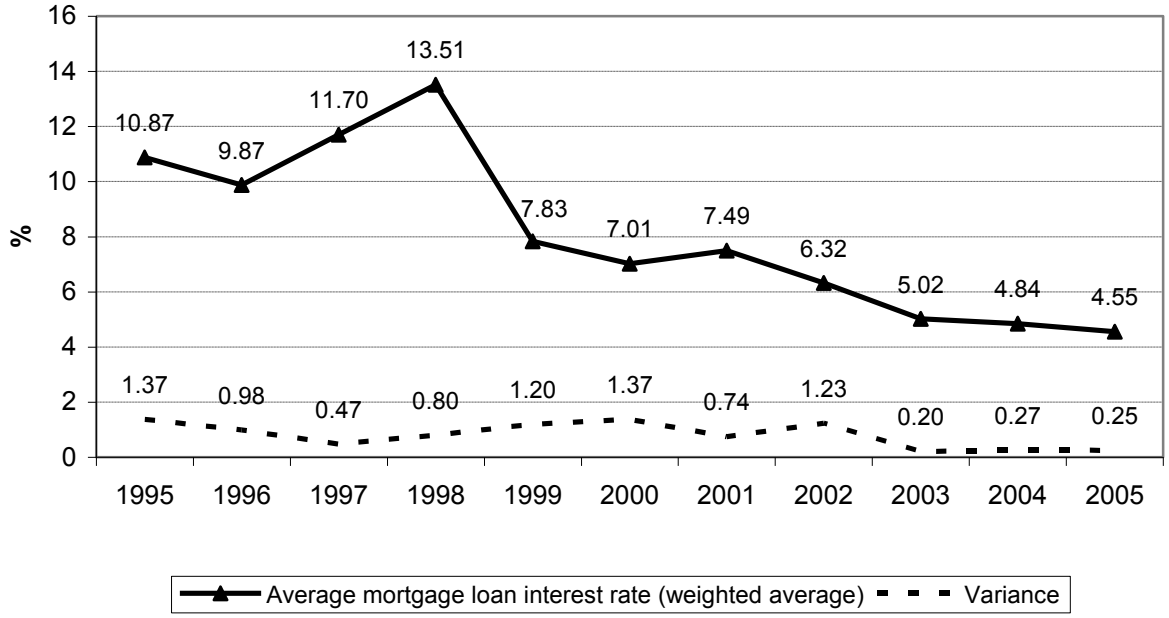
Interest rate risk

Prepayment penalties for fixed interest-rate loans are intolerably high (about 10% of the outstanding principal), and under the circumstances of rising interest rates very hard to defend. These sanctions raise the cost of re-financing existing mortgage loans in the case of property sale, they reduce the competition (the client is bound to one bank throughout the entire period for which the interest rate is fixed) and motivate clients to engage in riskier behaviour (clients are "pressed" into fixed rates for the short term so as to avoid entirely forfeiting the option of mortgage loan prepayment).

The competition between banks at present is focused mainly on obtaining new clients, while competition over clients transferring between individual banks is practically insignificant. This results in high transaction costs for clients in connection with the move to transfer from one bank to another (the need to again assess the client's credibility, make property appraisal and pay substantial fees connected with setting up a loan, etc.). Due to the difficult re-financing the existing bank clients are left in a position of insecurity about how the new interest rate will be set after the agreed fixed-rate term is over. The actual practice is that the "new" interest rate for another fixed term is even one percentage point higher than is the interest rate granted under the similar loan conditions for new clients. There is therefore a room both for the use of methods to provide the client with greater security and for higher competition between lenders (in the form of easing the procedure of refinancing, establishing clear rules how new interest rates will be set when the period of fixed rate finishes etc.).

In recent years there has been continuous and constant (without any major deviations) decrease in average mortgage loan interest rates (Figure 8).

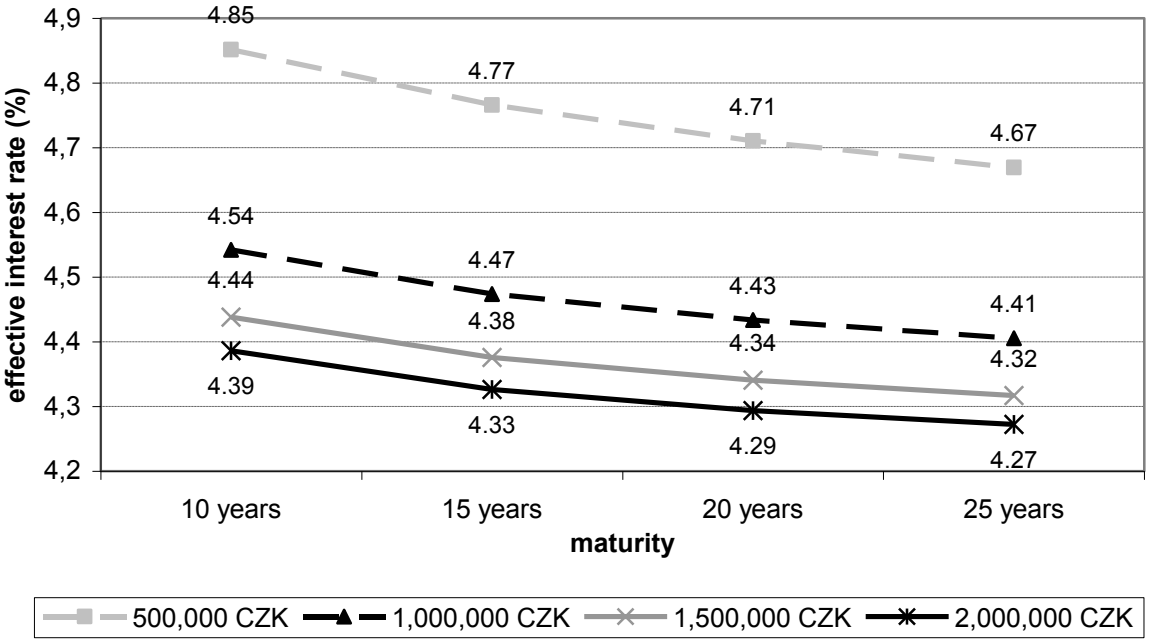
Figure 8: Average mortgage loan interest rate 1995–2005



Source: Mortgage loans in the CR survey.
Note: The weights were the banks' shares in the total amount of residential loans granted to citizens up to 31 December 2004.

Taking into account the additional fees connected with setting up and administering a loan into the computation of "effective" interest rate the average nominal interest rate would increase by up to 0.4 of a percentage point for CZK 1 mil. loan. A substantial portion of the interest costs therefore remain, from the client's perspective, "hidden", which decreases market transparency and reduces the quality of the services offered.

Figure 9: The "effective" interest rate on mortgage loans in relation to loan maturity and size



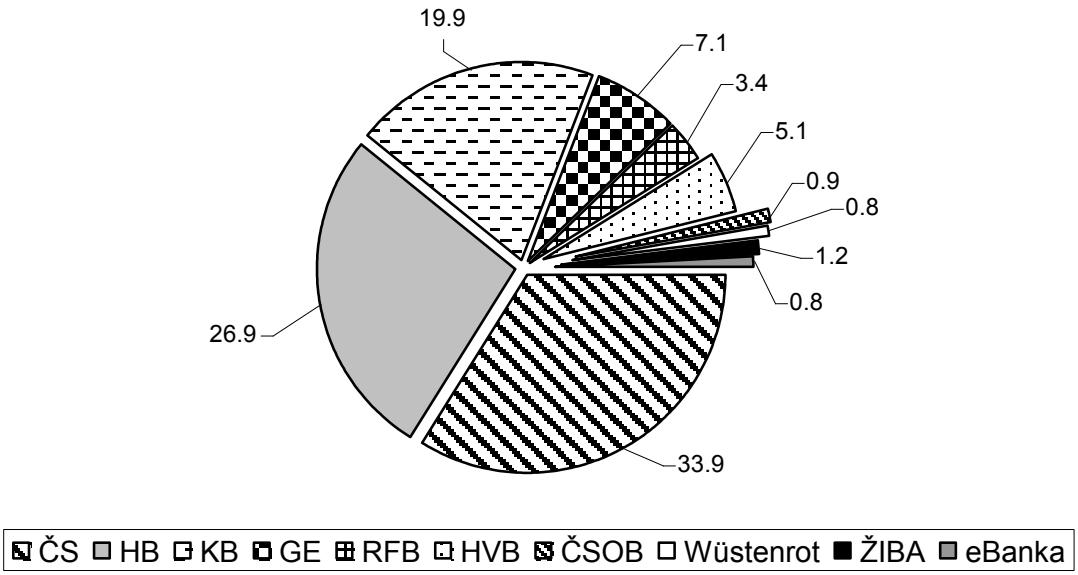
Source: Mortgage loans in the CR survey, own calculations.
Note: Figure 9 was constructed with the assumption of a nominal annual interest rate of 4.09% (corresponding to the average interest rate offered by banks in a 5-year fix and the 70% LTV in May 2005), a one-time fee for setting up the loan set at 0.8% of the loan's nominal value, and a monthly fee of 150 CZK (5 EUR) for operating the bank account. The tax break (the possibility of deducting unpaid interest on the loan from the taxation base in personal income tax returns) was not taken into consideration in the calculations.

Liquidity risk

There is a relatively high degree of mortgage market concentration in the Czech Republic but in comparison with other transition economies it is one of the lowest. The five largest providers of residential mortgage loans (measured by their share on total volume of outstanding mortgages at the end of 2004) control 96.3% of the market, and the value of the Herfindahl index[14] (2,359 points) is also relatively high in comparison with Western countries. However, with a dose caution it can be claimed that the mortgage market in the Czech Republic is not, given its size, seriously negatively affected by monopolistic or oligopolistic behavioural features. Figure 10 shows the division of the mortgage market among main mortgage lenders. As we may see, three main mortgage lenders keep almost 81% of the total volume of outstanding mortgage loans.

[14] Herfindahl index (or Herfindahl-Hirschman Index, HHI) is defined as the sum of the squares of the market shares of each individual bank.

Figure 10: Mortgage lenders according to share on total volume of outstanding mortgages at the end of 2004 (in %)



Notice: The abbreviations in the legend of the figure means: ČS – Česká spořitelna [Czech Savings Bank] (now member of financial group of Erste Bank), HB – Hypoteční banka [Mortgage Bank] (owned by ČSOB), KB – Komerční banka [Commercial Bank] (now part of Société Générale Group), GE – GE Money Bank, RFB – Raiffeisenbank (member of RZB Group and a subsidiary company of Raiffeisen International Bank-Holding AG), HVB – HVB Bank (member of UniCredit Group), ČSOB – Československá obchodní banka [Czech and Slovak Commercial Bank] (now a member of the Belgian KBC Group), Wüstenrot – Wüstenrot hypoteční banka [Wüstenrot Mortgage Bank] (owned by Wüstenrot & Württembergische, AG), ŽIBA – Živnostenská banka [Trade Bank] (a member of UniCredit Group), eBanka (a member of Raiffeisen International Bank-Holding AG).
Source: Czech Banking Association.

Operation costs

The performance cost indicators improved in 2004 when compared with the situation in 2003: the ratio of operating costs to net profit decreased in average from 2.22 to 1.79, the rentability of average equity ROAE increased from 19.9% to 20.1%, the rentability of average assets ROAA increased from 1.2% to 1.4% and net profit per one employee increased from CZK 748.3 thousands (23.5 thousands EUR) to CZK 1,007.4 thousands (31.6 thousands EUR) (the comparison of average performance indicators between mortgage loan providers and building savings banks can be found in Table 5 below).

Government intervention and institutional arrangements

According to the representatives of banks, there are two things that increase credit risk and loan costs: slow work of courts during the foreclosure and slow work of the property register (delaying mortgage bonds emissions even by several months). Representatives of mortgage lenders do not perceive housing savings banks as direct or unfair competitors. Although occasionally it was mentioned that state premium directed to housing savings puts the banks into a slightly more disadvantaged position, it was not seen as a fundamental problem. It may also be due to the fact that most leading mortgage lenders are members of higher financial groups that also contain own housing savings bank (a model similar to the German system of market-based finance). The competition within these powerful financial groups can be limited by the specific internal rules of the groups. Naturally this "product concentration" can

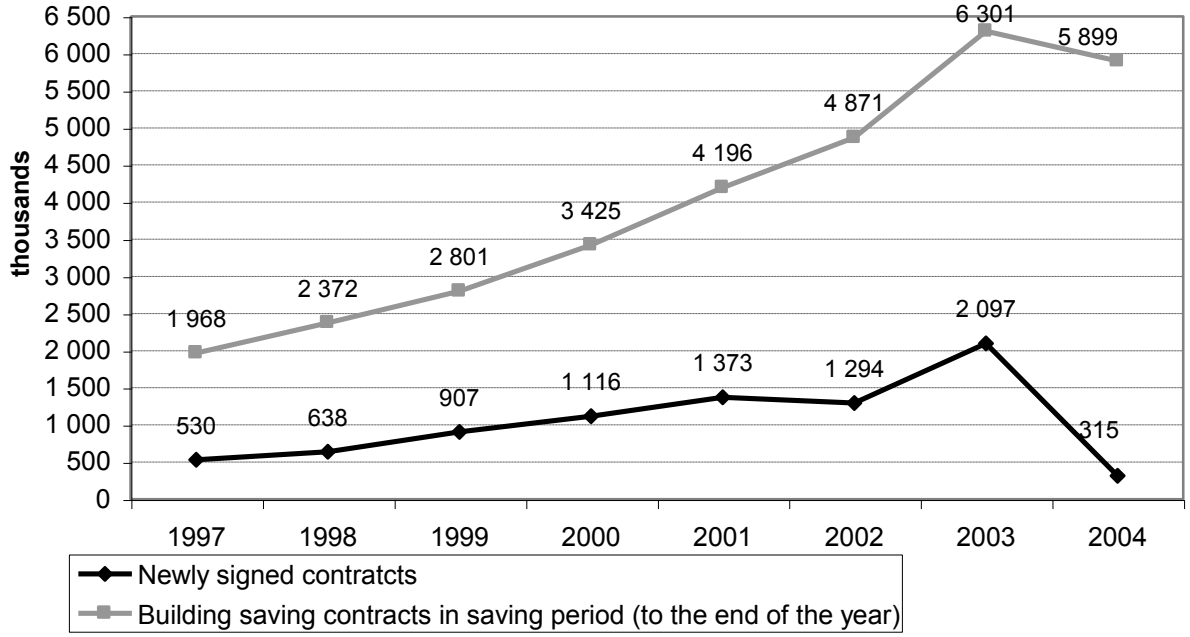
produce a certain degree of inefficiency, but that particular point is not examined in the scope of this article.

Market-Based Housing Finance Efficiency – Housing Savings Banks

The analysis of the efficiency of housing savings system was complicated due to very limited willingness of saving banks to participate in the survey (see above). Therefore we had to use only official data from the Ministry of Finance and official annual reports of particular saving banks.

Figures 11 and 12 show basic performance indicators of housing savings scheme in the Czech Republic, i.e. the number of valid savings contracts, number of newly concluded contracts during the period 1997–2004, total volume of savings and total volume of granted loans. In 2004 the trend of growth in the number of newly signed contracts and contracts in the saving stage was interrupted as a result of a reform[15] that came into effect in 2004 (see Figure 11).

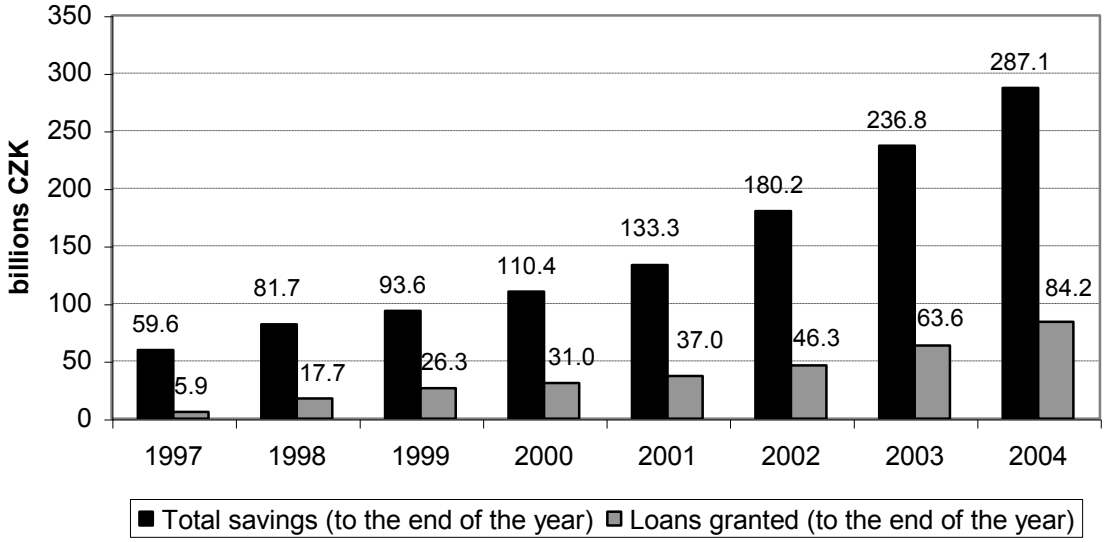
Figure 11: Number of housing savings contracts



Source: Ministry of Finance of the Czech Republic.

[15] The main aspects of the reform were the reduction in state premium (see above for more details) and the extension of the saving period from five to six years.

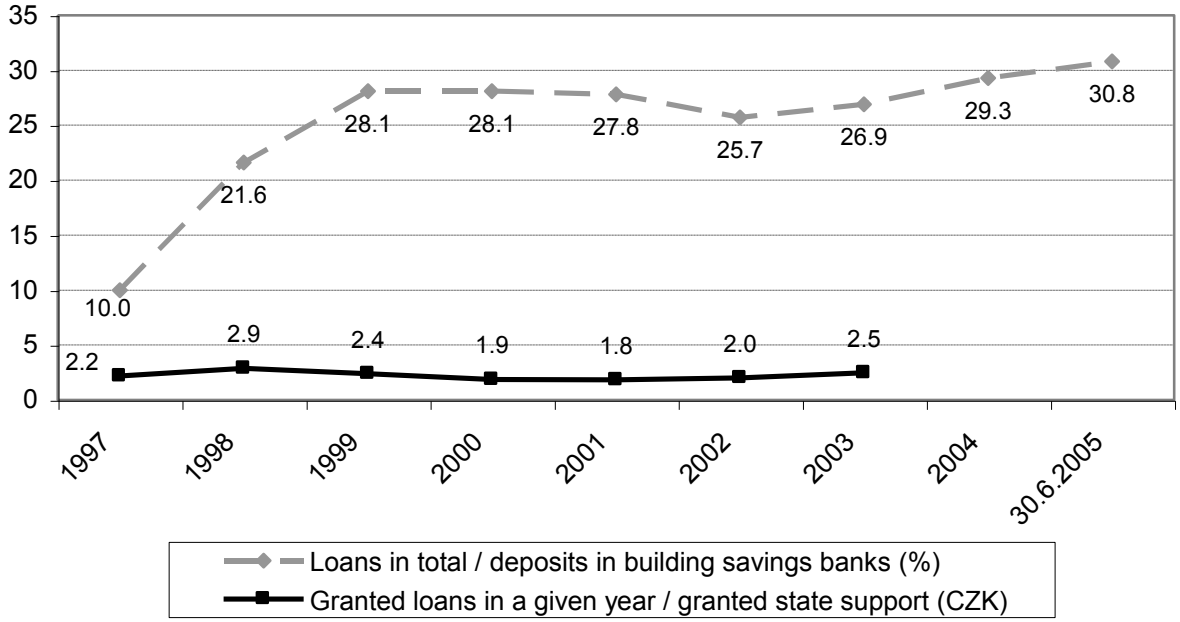
Figure 12: Total savings and volume of granted loans in the period 1997 – 2004



Notice: corresponding values in EUR are as follows (for calculations was used nominal exchange rate for a given year): 1997 – 1.7 bill. EUR (savings) and 0.2 bill. EUR (loans), 1998 – 2.3 bill. EUR and 0.5 bill. EUR, 1999 – 2.5 bill. EUR and 0.7 bill. EUR, 2000 – 3.1 bill. EUR and 0.9 bill. EUR, 2001- 3.9 bill. EUR and 1.1 bill. EUR, 2002 – 5.8 bill. EUR and 1.5 bill. EUR, 2003 – 7.4 bill. EUR and 2.0 bill. EUR, 2004 – 9.0 bill. EUR and 2.6 bill. EUR.
Source: Ministry of Finance of the Czech Republic.

The value of the coefficient of the outstanding loan-to-savings balance (the share of the balance of loan accounts to the balance of savings accounts) in the system reached only 30.8% by 30 June 2005. Although from 2002 (after stagnation and a slight decline in 1999 – 2002) the value of this indicator shows an increasing tendency, it is still below the level in developed countries with similar system of housing savings (Austria, Germany), where it ranges between 70% and 80%. The reason for the low value of the loan balance in the Czech Republic may be, in addition to the short period of time since the system of building savings was introduced, the too "generous" state support, which attracts an excessively large number of clients ("good brothers") into the system. The high public costs and not very clear and transparent outcomes of the whole system is often defended by argument that housing savings schemes were introduced not to support housing consumption but more to support household saving behaviour.

Figure 13: Loan activity of building savings banks



Notice: the grey dashed line shows the share of the outstanding loans granted in a given year to savings (deposits) on the savings accounts of housing savings banks in a given year, in % (i.e. the coefficient of the outstanding loan-to-savings balance). The black line shows the share of total loans granted in a given year to total state support (state premium) granted in a given year (i.e. the amounts of granted loans in CZK per one CZK of state premium granted).
Source: Ministry of Finance of the Czech Republic, own calculation.

Funding

As Figures above have shown the housing savings banks definitely do not lack the resources (savings) for their loan activities; more the opposite is the fact. The funding of loans is exclusively from savings of other participants in the system and repayments of older extended loans. Due to limited willingness of representatives of housing savings banks to participate in the survey we were unable to compute spread (or gross margin) in the same way like in the case of mortgage providers. Because loans from housing savings are financed primarily from savings on client accounts the spread should be calculated as a difference between the average interest rate on regular loans from the scheme and average interest rate on savings. Data on average interest rates from granted loans are not available; for the purpose of spread calculation we used therefore rates that banks quote on web pages. Real average interest rates on granted loans are probably higher, so the calculated spread is only approximation and could be underestimated. The weighted[16] average spread amounts 2.69 percentage points. The value of the spread for housing savings banks is probably significantly higher than for mortgage banks. The reasons behind that could be the lower volume of granted loans, fixed interest rate for the whole period of loan repayment and the possibility to prepay the loan anytime free of any penalty. Such loan conditions increase operating costs. Housing savings banks offer also low-value loans secured by one or more guarantees and administration of such loans could be more expensive (when we consider marginal costs) than in case of mortgage loans. However, the higher level of spread may be also the sign of hidden "product" monopolization and inefficiency (see below). To make a proper comparison of gross margins values for housing savings banks and mortgage lenders we certainly should to take into

[16] The weights were the banks' shares in the total amount of outstanding residential loans granted up to 31 December 2004.

account the options of the loans offered by savings banks (i.e. guaranteed interest rate for the whole maturity and the possibility of prepayment at any time without penalty). However, only one mortgage lender offered in 2006 mortgage loan with the possibility of prepayment without penalty at any time during the maturity. The gross spread for such lender (calculated according to methodology specified above and using average costs for the lender in 2004 – unfortunately more recent data were not available) ranges between 1,13 and 1,44 percentage points (the value depends on the ways of approximation of deposit costs used in calculation – see above). It seems that housing savings banks offer loans less efficient than mortgage lenders. However this "conclusion" should be interpreted very cautiously (because is based on the insufficient data basis) and should be verified in future research.

Credit and interest rate risks

Housing savings banks are aware of the price risk and therefore usually extend loans with a maximum LTV of 80%-85%. The methods used for the revaluation of mortgages with a higher nominal value are, however, just a non-transparent and unconvincing as in the case of banks providing mortgage loans. Between 2003 and 2004 a slight improvement occurred with regard to the profitability indicators (rentability of average own capital and average assets), and net profit per employee also increased, while the share of gross yield from fees and commissions out of total gross yield decreased. Conversely, for every crown of net profit in 2004 there was a higher amount of operational costs than in 2003. The performance of universal and mortgage banks extending mortgage loans (classical mortgage lenders) attained better values than those of the housing savings banks, especially the values for the profitability of average own capital, as demonstrated in the following table.

Table 5: Selected indicators of the profitability of mortgage banks and building savings banks

	Mortgage banks		***Building savings banks***	
	2003	**2004**	**2003**	**2004**
	weighted average	*weighted average*	*weighted average*	*weighted average*
Ratio of operational costs to net profit (%)	2.22	1.79	2.92	5.65
Net profit per employee in thousands CZK (thousands EUR)	748.3 (23.5)	1,007.4 (31.6)	695 (21.8)	712 (22.3)
ROAA (%)	1.2	1.4	0.42	0.46
ROAE (%)	19.9	20.1	11.97	12.50
Gross yields from fees and commissions / total gross yields (%)	-	-	37.4	24.2
Share of non-standard, doubtful and losing claims for clients (%)	-	-	2.12	2.16

Note: The weights were the amounts of residential mortgage loans granted by individual banks to physical persons up to 31 December 2004 in the case of mortgage banks. In the case of building savings banks the weights were constructed according to the amount of client deposits in individual building savings banks up to 31 December 2003 (for data from 2003), or to 31 December 2004 (for data from 2004).
Source: Annual reports of mortgage banks for 2004 and annual reports for building savings banks for 2003 and 2004.

The representatives of housing savings banks surveyed by qualitative research consider the interest risk to be "the most important" type of risk that building savings banks are exposed to. The fall in interest rates on the inter-bank market in the Czech Republic, the impossibility of using financial derivatives for security against the interest risk (up to 2004), and the careless interest rate policy of building savings banks in recent years led to a sharp fall in the profits of savings banks coming from interest rate margins.

The default rate in the housing savings sector is higher than among banks (in average about 6%-7%). In part this is a natural phenomenon, considering the higher number of loans provided by savings banks, their lower nominal value (and therefore greater accessibility to a broader spectrum of clients) and the fact that large part of smaller loans from savings banks is not secured by mortgage.

Liquidity risk, operation costs and government intervention

The market on housing savings shows a relatively high degree of concentration,[17] which is slightly lower that the degree of concentration in the mortgage loan market and need not necessarily be a sign of inefficiency. The measure of concentration applied does not sufficiently take into account the size of the national market, and moreover, it was not possible to make a comparison with the measures of the concentration of the market in housing savings in advanced countries (owing to a lack of necessary statistical data).

According to the view of their representatives, faster registration in property registers and work of the courts could help to reduce the operation costs. The inefficient work of the register and the courts is evident in the fact that securing a loan with a pledge does not bring the client any significant interest discount in comparison with other methods of loan security. The level of efficiency in the sector could be increased, by their opinion, if the use of the loans were made more transparent and simpler (the building savings banks have to prove that the loans were used for "housing" purposes but this specification in the law is not clear and unique). In this sphere there is a considerable degree of legislative insecurity, which significantly increases the savings banks' costs and puts an excessive burden on their clients.

All the respondents reacted negatively to the ideas of enabling clients to move between individual building savings banks without losing state support, or paying the state premium only to those clients who take the housing loan, or implementation of income targeting for state premiums (known, for example, from Germany). In their opinion such measures would result in higher administrative costs and less transparency of the entire system, liquidity problems for savings banks, longer waiting periods for the allocation of loans, etc. This attitude could be expected as such measures would go against their interest; however high level of state expenditures into the scheme would ask probably for the additional reform of the system in the future. Surprisingly, all the respondents agreed that the level of state support in the Czech Republic is still considerably higher than in the surrounding countries where these systems also operate.

Conclusions

The market on housing finance (i.e. mortgage market and market on housing savings) in the Czech Republic shows a relatively high degree of concentration in comparison with markets in developed EU countries, but in comparison with other transition economies (Hegedüs, Struyk 2005) it is one of the lowest. With some caution it is possible to conclude that the high degree of concentration does not have to be necessarily a sign of inefficiency. There are clear signs of strong competition on the mortgage market like growing volume of granted loans, increasing LTV, broader spectrum of offered products and falling margins. The efficiency of

[17] The five largest building savings banks in the Czech Republic (measured from the total volume of deposits up to 31 December 2004) control 96.3% of the market. The value of the Herfindahl index on 31 December 2004 was 2,251.

the housing finance market in the Czech Republic may be negatively affected due to the fact that mortgage lenders and housing savings banks are often members of one financial group. The competition within these powerful financial groups can be limited by the specific internal rules of the group. Naturally this "product concentration" can produce a certain degree of inefficiency, but that particular point was not examined in the scope of this article.

The relatively high degree of competitiveness of mortgage lenders (proved by low and decreasing margins, growing product complexity and increased both maximum and average LTV) is employed only on recruitment of new clients. The transitions of clients among different lenders are rare because of high transaction costs. The borrowers face large uncertainty in setting interest rate after the agreed fixed-rate term is over. There is therefore a room both for the use of methods to provide the client with greater security and for higher competition between lenders (in the form of easing the procedure of refinancing, establishing clear rules how new interest rates will be set when the period of fixed rate finishes etc.).

The banks generally underestimate the price risk, which is projected into the methods used to revalue mortgages, methods that are not convincing or transparent, which are usually restricted only to real estates of high nominal values or for foreclosure in the case of problem loans. This fact could present a significant future threat in the light of the growing average and maximum LTV as well as the house price stagnation during 2004-2005. In this context is necessary to mention a lack of reliable housing price index in the Czech Republic, which could be used by banks for revaluation of mortgages and for identification of current and possible future house price trends.

There are several important barriers to further development of mortgage financing created by state – slow performance of courts and slow registration in the property register. The period for registration of a title by the local relevant property register (according to the location of the property) should not exceed 30 (or in case of more complicated applications 60) days according to the law. However, many property registers especially in large urban areas like Prague substantially overran this period. The average registration period amounted to 4.6 months (almost 140 days) in 2005 in Prague (Profit 2006). Another problem concerns the slow performance of courts in the case of loan default. The average length of civic proceedings (except divorces) amounted to 18 months in 2005 (Statistický přehled soudních agend 2005), but may be even much longer.

The current system of state premium on housing savings scheme remains questionable; it seems to be too generous and inefficient. The expenditures on state premium constitute the largest part of the total sum of state budget expenditures on housing in the Czech Republic. Despite the positive effect of state support in promoting saving behaviour it is unclear, what share of public expenditures is really used for housing purposes. The value of the coefficient of the outstanding loan-to-savings balance remains low in comparison with other developed countries with similar system of housing savings (Austria, Germany) and the average gross spread on loans from housing savings banks is probably significantly higher than it is on loans from mortgage lenders. The operating costs seem to be also higher for housing savings banks than for mortgage lenders.

Despite several shortcomings described in this paper the "intermediation" efficiency of financial institutions providing housing loans in the Czech Republic could be considered, at least in comparison with other Central and Eastern Europe countries, at relatively high level (Hegedüs, Struyk 2005). With the use of methodology of Diamond and Lea (1992) we can

with some caution say that gross margin in the Czech Republic is comparable with gross margins in selected developed countries. However, the existence of high prepayment penalties, missing support for first-time buyers, slow and inefficient work of courts and property registers, and still very generous state subsidy to the housing saving sector together with the low value of the coefficient of the outstanding loan-savings balance there could be seen as the most apparent drawbacks of the current state of the market-based housing finance system in the Czech Republic.

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