

**Decline and Depression:  
The Impact of the Global Economic Crisis on Housing Markets in Two  
Post-Socialist States**

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Abstract: *The goal of this paper is to outline the main factors influencing the diverse consequences of the global economic crisis on housing and mortgage markets in two post-socialist economies – the Czech Republic and Hungary. In the former there was a mild decline of markets while in the later there has been a depression of markets. The paper also contributes to the convergence and divergence debate on housing policies in Europe. In the last two decades the post-socialist states have moved toward a market based housing system (a convergence trend), but substantial differences have simultaneously emerged in tenure structure, housing finance institutions and housing policies (divergence trends). The Czech Republic and Hungary have introduced efficient market reforms in their economy but they have followed different paths in reforming their housing systems. This article shows that divergence in housing systems explains some of the differences in the impact of the global economic crisis on the housing and mortgage markets. However, the article concludes that housing policy responses to the impact of global economic crisis on housing markets may on balance reinforce convergence trends.*

**Keywords:** Economic crisis, Housing system, Transition economies, Mortgage market

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## **Introduction**

Although often not recognized in the housing literature there are substantial differences among post-socialist countries in terms of their housing systems and policies. There is no consensus among researchers if the different trajectories that developed in response to the challenges of transition to a market economy represent different models, or if the different developmental paths are just variations of one common model (Lux 2003, Hegedüs and Tosics 1996, Lowe and Tsenkova 2003, Hegedüs and Struyk 2005, Struyk 1996, Donner 2006, Pichler-Milanovich 2001).

After 1990, several post-socialist countries applied restitution to the housing stock that had been expropriated by the communists, and thus returned it to the original owners or their descendants (e.g. Czech Republic, Estonia, Slovenia and Albania). Other former socialist states did not implement any restitution (i.e. Russia and Bulgaria) or chose financial compensation for former landlords rather than restituting their property 'in kind' (e.g. Hungary). The majority of transition countries passed right-to-buy legislation, and consequently, the sitting tenants of public housing were given the right to buy their flats under the very favourable terms set by central government. However, in Poland and the Czech Republic, no right-to-buy legislation was passed; and it was left to the discretion of the municipalities to decide if public housing stock would be privatized and under what conditions. The pace of privatization was slower and the terms of sale largely varied over time and from place to place. The change in tenure structure was therefore not universal. Some countries, such as Hungary, quickly became 'super-homeownership' states (no restitution and generous right-to-buy policy). In other post-socialist states, such as the Czech Republic, a more balanced tenure structure was established where both private and public rental housing stock represented significant proportions of total housing stock (restitution 'in kind', no right-to-buy policy).

If we leave aside tenure structure change and look closely at the new housing policy strategies, we again find that the differences between countries were very significant. Subsidy rules frequently changed and consequently it is almost impossible to classify the countries according to subsidy strategies. Nevertheless, we can see that Hungary and Slovakia mainly used subsidies to help people acquire owner-occupied housing through down payment grants, interest subsidies, and tax relief; while in Poland, the Czech Republic and Slovenia subsidized owner-occupation was accompanied also with significant state subsidies which promoted the construction of public, or non-profit, rental housing.

There are also significant differences between the market-based housing finance systems across the various post-socialist states (Hegedüs and Struyk 2005, Hegedüs 2002, UN/ECE 2005). There were differences in the solutions used to tackle the ‘tilt’ problem that arose in the first period of transition as a result of high inflation rates.<sup>1</sup> The Czech Republic solved it mainly through use of interest subsidies (until 2001); Hungary used deferred payment mortgages along with interest subsidies (until 2004); Poland introduced and extended indexed mortgage loans (dual-index mortgage); and in many other countries housing loans were increasingly denominated in foreign currencies (e.g. Hungary after 2004). There were also significant differences in the implementation of housing saving schemes. The Czech and Slovak Republics introduced housing saving schemes similar to the German *Bausparkassen* in 1993. Hungary followed in 1997, Croatia in 1998, Romania in 2003 and Bulgaria in 2004. Though *Bausparkassen* legislation was also passed in Poland in 1997, no such scheme has yet been introduced in practice. In the Czech and Slovak Republics, unlike Hungary, housing savings schemes have been very popular with the public as a general savings vehicle.

The global economic crisis of late 2008 represents the most significant international economic shock to impact on the post-socialist states since regime change in 1989-1990. Unlike the situation in the US, the housing market crisis in post-socialist states did not primarily result from a failure of their mortgage markets and more specifically a surge in the provision of risky sub-prime mortgages. Firstly, the crisis was caused by an unexpected external shock – a global loss of confidence in the financial sector. Secondly, economic crisis in the West hit exports from small open post-socialist economies. Reduced international demand dampened economic growth and increased unemployment in many post-socialist states. Consequently, the global credit crunch and lower international demand pushed many Central and East European states into economic recession.

The impact of the global economic crisis on housing and mortgage markets varied considerably among post-socialist states. Consequently, this article will address two central research questions: (1) What factors explain the diverse impact of global economic crisis on mortgage and housing markets in post-socialist states? and, more specifically, (2) Can the institutional differences in housing systems and policies, i.e. past divergence trends, explain some of the differences in the impact of the global economic crisis?

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<sup>1</sup> With high inflation lenders charge high nominal interest rates. This creates an affordability barrier with annuity mortgages where initial payments are high. However, as time passes loan repayments decline in real value through inflation resulting in repayments constituting a declining share of a borrower’s income. This effect is called a ‘tilt’ problem. Thus, the high real values of payments at the beginning of a loan term prevent many households from qualifying for mortgages.

It is not possible to answer these two research questions by analyzing data from all post-socialist states. The availability of reliable quantitative evidence on housing and mortgage markets in post-socialist states is very limited. Instead, we have deliberately chosen two post-socialist countries, Hungary and the Czech Republic, because they are characterized by differences in (a) institutional development of housing systems and (b) impact of global economic crisis on their housing markets. For a more comprehensive theoretical justification of the merits of using paired comparisons in comparative research see a recent insightful article by Tarrow (2010).

Hungary and the Czech Republic are comparable in population size and overall economic performance, but they differ in several important aspects of their housing and mortgage systems. Hungary introduced give-away public housing privatization and offered no restitution. In contrast, the Czech Republic restituted a sizeable amount of public housing to the original owners, but did not apply right-to-buy policy and kept a substantial share of the housing stock in municipal ownership. The respective housing finance systems also developed along different paths. Hungary introduced a heavily subsidized mortgage scheme in 2000 and moved to foreign currency denominated loans after 2004. The mortgages in the Czech Republic were in comparison not so generously subsidized, and did not include foreign currency denominated loans. The Czech states' housing savings scheme was heavily subsidized and was very popular with citizens. Such saving scheme played a much smaller role in Hungary although there was a similarly high level of public subsidies.

The argument presented in this article will be structured as follows. The first section outlines the main theoretical framework within which this research derives its main hypotheses underpinning the two central questions outlined in the introduction. The following section presents the pre-crisis institutional, financial, economic and housing policy context in the Czech Republic and Hungary. Section three describes the impact that the global economic crisis had on mortgage and housing markets in both countries, as well as the policy responses of the Czech and Hungarian governments. In the research results section, the pre-crisis context and the impact of the crisis are compared and answers for the research questions are presented. The concluding section draws some general lessons from the paired comparison results and suggestions for future research.

### **Theory and Hypotheses**

One of the goals of this article is to answer the central question: What factors explain the diverse impact of global economic crisis on mortgage and housing markets in post-socialist

states? An analysis of markets and their reactions to external economic shocks may be framed in terms of both neoclassical and institutional economic theory. Neoclassical economics applies the concepts of market efficiency and market equilibrium. Ideally, markets provide an optimal allocation of resources on the basis of consumer sovereignty. Differences among housing markets' performance can be explained by differences in the size of markets, macroeconomic environment (such as inflation, interest rate, unemployment), existence of specific constraints (such as land or credit availability), market inefficiencies (such as monopolistic competition), and market regulations (such as legal framework). Consequently, the divergence in impact of global economic crisis on mortgage and housing markets in post-socialist states should be examined through a comparative analysis of these 'universal' aspects of economy and markets.

In contrast, institutional economists emphasise the importance of a specific institutional context, that is to say, the behaviour of organizational and individual actors embedded in specific cultural and social norms. Such norms are seen to be the product of decades of social interaction oriented toward solving the social, economic and political problems of a particular society (North 1991, Hodgson 1998, 2006). One of the key concepts of this theoretical approach is institutional equilibrium, which occurs when there is of no advantage to any market participants to take on the costs connected with altering existing contracts. Institutional equilibrium does not represent only 'universal' free market equilibrium. This is because in different historical and cultural contexts diverse institutional equilibriums will emerge. This is also the reason why the same global (exogenous) change will affect any pair of countries in different ways. In other words, the economic life of markets is territorially embedded in social and cultural relations. Consequently, differences in the observed impact of the recent global economic crisis on housing and mortgage markets in post-socialist countries should be explored through a comparative analysis of broader institutional and cultural settings of particular societies.

Both neoclassical and institutional economics can enhance our understanding of market reactions and performance. Consequently, we may formulate two hypotheses that reflect the main causal mechanisms postulated by both economic theories, i.e. neoclassical and institutional economics respectively.

H.1 The differences in how the global economic crisis impacted the mortgage and housing markets in the two selected post-socialist states are explained by differences in the macroeconomic environment, the nature of market inefficiencies, and features of market regulations such as regulations expanding or constraining the supply of mortgage credits.

H.2 The differences in how the global economic crisis impacted on the mortgage and housing markets in the two selected post-socialist states are explained in terms of broader institutional factors influencing behaviour of market actors. Here the focus is on (a) traditional patterns of household economic behaviour, e.g. savings and leveraging; (b) traditional patterns of mortgage lenders' behaviour, i.e. forms of competition; and (c) the institutional development of a housing system and housing tenure choice.

The impact of the economic crisis on the mortgage and housing markets itself will be measured through an examination of changes in the levels of housing market transactions, house prices and the default rate among mortgage borrowers that emerged during the crisis, i.e. during 2008 and 2009. The two hypotheses will be tested on range of micro and macro data which were obtained for our post-socialist paired comparison. Much of this data exists in a standard format as the national statistical offices of EU member states apply common Eurostat guidelines. For some data such as house prices, price-to-income ratio and rent-to-price ratio the data were adjusted in order to ensure comparability between our paired case studies.

### **Trends toward Divergent Housing Systems: The Pre-crisis Context**

In this section we are going to present main 'contextual' data (country comparison) relevant for testing our hypotheses. Appendix 1 presents the basic macroeconomic information for our paired comparison. Both countries are comparable in terms of population size and GDP per capita, although the Czech Republic had higher GDP growth in the pre-crisis period. The Czech Republic's macroeconomic performance was generally better than that of Hungary. This evaluation is demonstrated by the fact that the Czech Republic attained a higher GDP with a lower public budget deficit and public debt. Compared to Hungary, the Czech Republic also had lower inflation, lower inflation volatility and a higher household savings rate.

<< Tables 1 and 2 about here >>

Inflation and savings rate have important macroeconomic consequences on interest rates, including the rates charged on mortgage loans. In the Czech Republic the real (after-inflation) interest rate on local currency deposits was negative between 2004 and 2008; while it was significantly positive (except for 2007) in Hungary. This fact, together with lower inflation, allowed Czech mortgage lenders to offer low interest rates on local currency mortgage loans. In the years 2005 to 2008, the data in Table 1 show that the average nominal rate on local

currency loans was around 10% per annum (hereafter, p.a.) in Hungary and around 4-5% p.a. in the Czech Republic. The disparity would be even deeper for loans with longer fix periods. This is because in Hungary nominal interest rates for loans in the local currency for a five-year to a ten-year fix period ranged from 13 to 16% p.a. while in the Czech Republic similar loans had interest rates of about 5% p.a. thereby yielding a difference of at least 8 percentage points between both countries.

It is important to notice that also real interest rates, where inflation is discounted, were higher in Hungary than in the Czech Republic. On average this difference was about 3 to 4 percentage points (except for 2007). Additionally, as the evidence in Table 2 demonstrates the spread between deposit and mortgage loan rates (or between government bond yields and mortgage loan rates, respectively) remained higher in Hungary than in the Czech Republic until 2007, suggesting higher profits for Hungarian mortgage lenders. However, there were no significant differences in mortgage market concentration measured on the basis of the market share of three main mortgage lenders in both countries.

Consequently, the explanation of differences in the observed spread between deposit and mortgage loan rates, and real interest rates, lies in the effects of broader institutional factors influencing behaviour of market actors. The competition between Hungarian mortgage lenders concentrated more on relaxing of the underwriting criteria to mortgage loans than was the case in the Czech Republic. As many potential clients received income from the informal economy the Hungarian banks were able to increase the number of their clients more by adopting a flexible loans policy than by cutting interest rates (Banai et al. 2010).

<< Table 3 and Figure 1 about here >>

Lower inflation combined with lower local currency deposit/loan rates in the Czech Republic led to another housing finance system divergence as shown in Table 3. The Czech mortgage loan portfolio contained a much higher share of fixed rate mortgages and a much smaller share of foreign currency denominated loans than was the case in Hungary. Notwithstanding better credit conditions in the Czech Republic, the share of outstanding mortgage balance as a proportion of total GDP increased much more sharply in Hungary than in the Czech Republic. The credit expansion that happened in Hungary until 2004 may be explained by specific state subsidies. There were three major subsidy programmes tied to the mortgage market that

contributed heavily to the fast development of the Hungarian mortgage market.<sup>2</sup> However, after their cuts in 2004 the supply of mortgage loans underwent a substantial structural shift: from fixed rate local currency mortgages to variable rate foreign currency mortgages. The substantial increase in borrowers' risks inherent in such change should, based on neoclassical economic theory, have resulted in a decline in demand for mortgage loans and, consequently, decline in credit expansion. Instead, as the evidence in Table 3 illustrates, mortgage credit extension in Hungary after 2004 continued to grow very fast; faster than in the Czech Republic.

The low risk aversion of Hungarian borrowers to likely changes in exchange and interest rates after 2004 may be explained again by broader institutional settings, especially specific aspects of housing systems. Figure 1 shows the changes in housing tenure structure: in Hungary owner-occupied housing formed an estimated 94% of the housing stock and rental housing 6.3% in 2005 (3% private and 3.3% public rental housing). Things were quite different in the Czech Republic where owner-occupied housing represented 'only' 61% of the housing stock (77% with housing cooperatives) and rental housing 23% of the housing stock in 2008 (13% private and 10.2% public rental housing).<sup>3</sup>

<< Tables 4 a 5 about here >>

Table 4 presents house price indices for selected post-socialist states. The evidence presented in Table 5 reveals that the price-to-income ratio (defined as the share of the average house price to average net annual household income) was constantly higher in Hungary than in the

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<sup>2</sup> The first subsidy was a generous *interest subsidy for mortgage loans* (called a subsidy to increase the demand for mortgage loans). It was equal to the yield from government bonds minus four percentage points (approximately 7.5% in 2000). The interest subsidy was provided for the full term of credit repayment. The second subsidy was an *interest subsidy on mortgage bonds* that was worth 3% in 2000. It could only be used when the interest on a mortgage loan financed from a subsidized bond did not exceed the interest rate on market bonds by more than 1.5 percentage points. If, for example, the market interest rate on mortgage bonds was 11%, the maximum interest rate that could be set on a mortgage loan was 12.5%. In such cases the bank could request a 3% interest subsidy, which effectively reduced the bank's costs to 8%. This interest subsidy was increased in 2001 from 3% to 6%; and through a new mechanism it reached a record 10% in 2002. The third subsidy was a *tax relief* programme. The entire subsidy system was financially untenable in the long term and added substantially to state debt and the budget deficit. As expected, the Hungarian government cut such subsidies in December 2003. The interest subsidy on loans was reduced to 60% of the yield from government bonds, and the interest subsidy on mortgage bonds was reduced even more to 40% of the yield from government bonds. The maximum limit for tax deductions was cut in half, and a tax deduction was in most cases only allowed for the first four years of a mortgage. In 2007, all tax deductions on mortgages were abolished.

<sup>3</sup> There are several factors behind these differences such as (1) the privatization policy in Hungary that started in 1986 and resulted in the introduction of right-to-buy legislation in 1993, and (2) strong public support for restitution of housing stock in the Czech Republic during the early phases of the post-communist transition process. Support for public rental housing construction in the Czech Republic after 1990 also has some relevance in this respect.



Czech Republic.<sup>4</sup> Moreover, in the Czech Republic the attractiveness of the main substitute for owner-occupied housing, namely private rental housing with market rents, grew in the eyes of prospective tenants. This is because market rents did not follow the same path of appreciation as house prices: the rent-to-price ratio in fact dropped substantially from 9 in 2000 to 5 in 2008. Conversely, in Hungary market rents changed in line with house prices and the average rent-to-price ratio remained persistently high around 7 between 2000 and 2008.

Private rental housing in Hungary thus represents a small and high-priced sector compared to the competitive and broadly segmented supply of this type of tenure in the Czech Republic (Lux and Sunega 2010). Public housing in Hungary was marginalized and was as shown in Table 6 subsidised after 1990 to a lesser extent than was the case in the Czech Republic. In general, this evidence shows that tenure choice was much more constrained in Hungary than in the Czech Republic during the pre-crisis period. In Hungary, there were not secure and affordable housing options other than own housing, even for households with lower or unstable incomes. These constraints certainly helped to sustain high demand for mortgage loans (despite of increasing risks) and high demand for owner-occupied housing generally.

<< Table 6 about here >>

### **Impact of the Global Economic Crisis on Housing Markets and Policy Responses**

In this section the impact of the financial and economic events of late 2008 and 2009 on the housing and mortgage markets in the Czech Republic and Hungary and subsequent government responses will be described. A more comparative perspective addressing our paired comparison will be presented in the following section in terms of the research questions outlined in the introduction and hypotheses formulated in the second section.

#### *Czech Republic*

After Lehman Brothers filed for bankruptcy protection in the US on September 15 2008, the ensuing uncertainty created in the global financial markets and simultaneous credit crunch

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<sup>4</sup> It is generally very difficult to make an international comparison of price-to-income ratios as statistical sources are often incomparable. Although great effort was made to harmonize the calculation methods used, the resulting figures must still be seen as estimates. In other words, there are non-trivial differences between selected countries both in the level and trend of housing affordability (price-to-income) during the period studied, but the real difference cannot be calculated precisely. While owner-occupied housing is generally more affordable in the Czech Republic and less affordable in Hungary, affordability remained steady in Hungary but has worsened in the Czech Republic over the last decade.

had an immediate effect on financial markets in the Central and Eastern Europe (CEE). In the Czech Republic during late September and October 2008 there was a substantial drop in the activities of the interbank money market, an increase in the volatility of exchange rates with the Czech Crown (CZK) depreciating continuously because of reduced investor confidence in the whole CEE region until second quarter of 2009, and a slump in the stock market. The Czech National Bank (CNB) reacted by lowering basic rates. For example, the rate for advances on collateral decreased cumulatively from August 2008 to December 2009 by 2.75 percentage points. However, these steps had only a limited effect on interbank money market rates and, consequently, on interest rates for mortgage loans. The monetary policy mechanism linking national bank rates to commercial rates was disrupted and risk premiums increased substantially.

Instead, banks tightened their loan conditions. In practice this meant that the loan financing of new housing development projects de facto stopped; and mortgage loans for households were tightened through adding a maximum loan-to-value ratio or imposing a minimum income requirement to all new loan requests. The ‘innovative’ mortgage products of the boom period (see, Sunega and Lux 2007) quickly disappeared from the market, although formally banks continued to offer these products to customers. Owing to liquidity constraints there was a real danger of a run on Czech banks. This spurred the Czech government to increase state guarantees for deposits from EUR 25,000 to 50,000 in October 2008. In February 2010 the government doubled this state guarantee for deposits to EUR 100,000.

In 2008 the year-to-year GDP increase was only 2.5% (after 6-7% annual GDP growth between 2005 and 2007) and the economic recession, which started during the final quarter of 2008, led to an annual decline in GDP of 4.2% in 2009. However, when compared to other CEE countries, the overall macroeconomic situation remained comparatively stable. In 2009 annual inflation dropped to 1%, unemployment increased to 6.7%, and although the public budget deficit increased to 6% of GDP in 2009 total government debt was at a level that allowed a temporary shock increase (see Appendix 1).

In 2009 it became evident that the financial sector was in a healthy state, and despite the credit crunch Czech banks remained profitable. No Czech bank was taken over or went bankrupt during 2008 and 2009. It should be noted in this respect that the Czech Republic is one of few new EU member states whose banking sector is independent of external financing, despite the fact that almost all banks are owned by foreign capital (CNB 2009). The main

reason for this situation is the high ratio of deposits to loans resulting from the comparatively high savings ratio of Czech households.

With regard to mortgage lending, the default rate (i.e. loan payments are overdue by more than 90 days) increased only slightly from 1.5% in 2008 to 2.4% in 2009. The acceptable increase was partly due to the relatively conservative lending conditions applied by Czech mortgage lenders until 2006, but more likely stemmed from the high share of fixed rate mortgages and the marginal share of foreign currency mortgages. Tighter loan conditions, decreasing household demand, falling exports, general economic recession and growing uncertainty in the labour market resulted in a drop in the level of housing market transactions (by 8% between 2008 and 2009) and house prices (by 4% between 2008 and 2009). New housing developments effectively stopped. House prices dropped in close conformity with trends in the main economic fundamentals – decline in disposable income and increase in the unemployment rate.

The Czech government's response to the economic crisis in the financial sector, beyond the above-mentioned higher state guarantees for deposits, was limited. There were no mortgage rescue schemes, no special income supports for highly leveraged borrowers, no new regulations of banking sector, neither was there a moratorium on repossessions. The only government measures implemented were postponement of rent deregulation in a number of the larger Czech cities (the target date for full rent deregulation in 2010 was postponed to 2012); and the introduction of state guarantees for loans to housing developers building rental housing (however, there are very few rental housing developments). Several employment policy measures such as tax incentives for employers with low-wage employees and measures designed to cut the public budget deficit were also introduced, but they did not directly or significantly influence the situation in the housing market.

### *Hungary*

In 2002 and 2003, the Hungarian government started a loose fiscal policy, which led to an increase in household consumption by 9.8% (2002) and 7.9% (2003), much above the level that the productivity increase would have justified. While GDP grew by 4.4%-4.7% between 2002 and 2004; the postponement of austerity measures resulted in a high level of public debt, peaking at 9.3% of GDP in 2007, and a high government debt to GDP ratio reaching 73% in 2008. Due to the high public deficit and large gross foreign debt the global economic crisis had a severe impact on the economy. Hungary had to take emergency loans from IMF. The

new interim Hungarian government introduced an austerity programme that consolidated the budget and brought down the deficit to 3.8% of GDP by 2009 (Hegedüs 2010).

The mortgage market changed dramatically after September 2008. The weakening of the Hungarian currency (HUF) increased the mortgage repayments for borrowers with foreign currency loans. On average such loan repayments grew by 30 to 40%.<sup>5</sup> The majority of Hungarian mortgage loans were variable rate loans with 85 to 93% of these loans being issued between 2006 and 2008. Consequently, the payment burden increased not just because of the change in exchange rate, but also because the banks increased variable interest rates. These two developments inevitably increased the likelihood of payment arrears.

The number of clients in Hungary's Central Adverse Credit Database (KHR) more than doubled between 2008 and 2009. The stock of the non-performing mortgage loans portfolio (i.e. loan payments are overdue by more than 90 days) increased from 2.6% to 6.3% of the total outstanding balance between 2008 and 2009. By the end of 2009 there were 46,225 properties representing a 120% increase on 2008 on which foreclosure proceedings had been started, or which had been sold to companies specializing in the management of non-performing loan portfolios. More recently, the number of foreclosures has declined because the Hungarian real estate market has become frozen with relatively few transactions occurring. Hungarian banks made their lending criteria stricter. The year-on-year decrease in house prices between 2008 and 2009 was 8% in nominal values and 12% in real values. Housing transactions decreased by 42% and housing construction by 11% during 2008 and 2009, while the number of building permits dropped by 36% in the same period.

The Hungarian government's response to the crisis focused on managing the fiscal deficit, which was one of the conditions of the IMF loan. The government cut housing subsidies drastically as part of the fiscal adjustment programme, under which both the interest subsidy and the homeownership down payment grants were abolished. The government also introduced several 'mortgage rescue' programmes.

According to a programme introduced in early 2009, the Hungarian government gave households experiencing loan repayment difficulties due to unemployment the option of paying reduced instalments on their mortgages loans for a maximum of two-years. Thereafter, borrowers would have to cover the costs of their increased debt. The repayment of deferred instalments to lenders is guaranteed by the government. However, the criteria for qualifying

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<sup>5</sup> The most popular foreign currency was the Swiss franc (X% of the FX loan was issued in SF). In 2005 and 2006 one Swiss franc was equal to 150-160 HUF (Hungarian forints). By 2009 this exchange rate had increased to 220 HUF. Thereafter, the exchange rate for Swiss francs varied between 180 and 220 HUF, however, it peaked once again at 220 HUF in August 2010.

for this programme are so strict that very few borrowers are eligible to take part. The government was very cautious in determining the eligibility criteria, in order to avoid being left responsible for much of the ‘bad loans’ issued by Hungarian banks in the past. Of the 24,000 restructured loans, only 3,000 qualified for this government programme. However, the banks reacted to the government model by developing their own solution; because it is administratively simpler and financially more advantageous for them. Consequently, the banks persuaded clients to choose their (rather than the government’s) restructuring products.

Additional initiatives aimed at easing the hardship caused by the global economic crisis were also implemented. One of them was the establishment of a crisis fund, to which well-off individuals and companies could contribute. The crisis management fund would provide one-off assistance to some 30,000 of Hungary’s most disadvantaged families whose members had lost their job after October 1 2008, or for whom loan repayment instalments had increased by more than 20%.

An ‘anti-bank’ civic movement has started to monitor and challenge Hungarian banking practices. For example, a lobby group called the Association of Entrepreneurs (VÉSZ) organized protests against some banks and blocked auctions of repossessed properties. The government put a moratorium on foreclosures from September 1 2009 to 15 April 2010, and later extended this freeze to the end of June 2010 and thereafter to December 31 2010. In September 2009, Hungarian banks adopted a Code of Conduct in conformity with government guidelines, in which they introduced more consumer-friendly procedures such as stopping the abusive practice of unilaterally changing loan contract conditions; giving defaulting borrowers 115 days to sell their home before foreclosing on it; and improving the information given to borrowers, etc.

The Hungarian government also launched a mortgage-to-rent scheme that offers preferential loans to local governments so that they can buy repossessed homes and let the original owner remain as a tenant in the property. However, many local governments have refused to participate in this scheme because there is no long-term guarantee that central government will continue to support this newly created rental stock. The national government has also imposed stricter regulation of the mortgage market since March 2010 through setting the maximum loan-to-value ratio for local currency loans at 70%, for loans in EUR at 60%, and for other foreign currency loans at 45%. The new government, installed after the May 2010 parliamentary elections, introduced further restrictions: a complete ban on foreign currency mortgage loans and a strict regulation of bank borrowing practices such as securing

the option for borrowers to extend their loan repayment period by five years without incurring a penalty.

### **Research Findings**

From an evaluation of the consequences that the global economic crisis had on mortgage and housing markets in our paired comparison it is clear that Czech markets were much less affected than Hungarian ones. There are differences in the extent of the decline in house prices and number of transactions, but more significant are the dissimilarities in the changes in default rates on mortgage loans and the overall stability of the Czech and Hungarian banking sectors.

House prices dropped between 2008 and 2009 in Hungary by 8% in nominal values and by 12% in real values. During the same period these rates were 4% and 5% respectively for the Czech Republic. The number of housing transactions fell by 8% in the Czech Republic between 2008 and 2009 following a period of growth between 2007 and 2008. In contrast, the number of housing transactions in Hungary declined at a much steeper rate, i.e. by 19% between 2007 and 2008 and by 42% between 2008 and 2009. Between 2008 and 2009 the default rate in the Czech Republic increased from 1.5% to 2.4% of outstanding mortgage balance and in Hungary it grew from 2.6% to 6.3%.

#### *Hypothesis 1: Importance of macro-economic environment*

Our first hypothesis postulated that the differences in how the global economic crisis impacted the mortgage and housing markets in a paired comparison of the post-socialist states is explained by differences in macroeconomic environment, market inefficiencies and market regulations. This hypothesis that is based on a neoclassical economic theory has been confirmed by the empirical evidence presented in the previous section. There are significant differences in the values of the macroeconomic indicators in pre-crisis period which had clear (and theoretically correct) consequences on the difference in how the global economic crisis impacted the mortgage and housing markets in our paired comparison.

The Czech economy went through an economic crisis earlier in 1997-1998, and made significant fiscal and structural adjustments during the 2000 to 2002 period. Although Czech government debt increased from 15% to 30% of GDP, the fiscal situation was stable when the global economic crisis emerged in 2008. Hungary had its stabilization programme earlier, and the results of the 'good years' of 1998-2000 were subsequently wasted between 2002 and 2004 through fiscal mismanagement, which led to a high public deficit (9.3% of GDP in

2007) and public debt (73% of GDP in 2007). These factors caused a significant depreciation of the Hungarian currency (HUF) during the credit crunch; and when the global economic crisis hit the Hungarian economy in 2009 the government had serious problems in financing public debt. Consequently, as a part of IMF's rescue programme Hungary was compelled to cut housing subsidies at a time when other developed economies were introducing similar subsidies to offset the decline in housing output.

Before the crisis, the interest rates on mortgage loans denominated in local currency were much higher in Hungary than in the Czech Republic. Due to higher inflation, greater inflation volatility, and greater instability in the national economy, local currency denominated loans experienced comparatively high nominal interest rates in Hungary. As a consequence of this situation and the cuts in mortgage subsidies in 2004, the supply of mortgage loans underwent a substantial structural shift after 2004: from fixed rate local currency mortgages to variable rate foreign currency ones. Thanks to this structural shift Hungarian borrowers were able to continue to take mortgages with acceptable interest rates after 2004. However, this structural change increased overall systemic risk and amplified the vulnerability of Hungarian borrowers to macroeconomic changes - changes in both exchange and interest rates. It became obvious that this structural change is not sustainable in the long-term. During the crisis, the size of mortgage loan payments estimated in the local currency grew substantially due to depreciation of the Hungarian forint (HUF) combined with a hike in interest rates.

In contrast, the Czech Republic was characterized by a much higher household savings ratio than that evident in Hungary. Czech mortgage lenders were therefore not dependent on external financing and could accumulate resources with relatively low deposit rates even when such rates were negative in real terms. The savings behaviour of Czech households has been supported also by the Bausparkassen system. Although this system was introduced in both the Czech Republic and Hungary its impact was very different: housing savings schemes became very popular in the Czech Republic but played a relatively minor role in Hungary. The Hungarian governments' housing subsidies had also pro-cyclical effects: household savings rates decreased because many households decided to invest in housing. In the Czech Republic, the development of the mortgage market was more gradual during the same period, and traditional norms associated with a high household savings ratio were preserved.

In the previous section, we showed that real interest rates on local currency mortgage loans remained higher in Hungary than in the Czech Republic. This difference is puzzling because generally speaking in high-inflation economies nominal interest rates are high but real rates are compared to low-inflation economies relatively low. Additionally, there was

another sign of inefficiency - the spread between deposit and loan rates and consequently the profit margin was higher for Hungarian lenders than for their Czech counterparts. These differences cannot be explained in terms of market concentration. In both countries market concentration is quite high by international standards where this factor is measured as the aggregate market share of the three main mortgage lenders. Our inability to explain persistent differences in nominal and real interest rates using neoclassical theory, as postulated in our first hypothesis, leads us neatly to consideration of the explanatory power of an institutional approach specified in our second hypothesis.

### *Hypothesis 2: Importance of institutions*

Our second hypothesis outlined in section two contends that the differential impact of global economic crisis on the mortgage and housing markets in our paired comparison is explained by broader institutional factors influencing behaviour of market actors. Here emphasis is given to such things as traditional patterns of household economic behaviour and mortgage lenders' behaviour and how the national housing system emerged and evolved. In this respect, the high interest rate spreads evident among Hungarian mortgage lenders may be explained on the basis of inter-bank competition and the relaxed lending criteria stemming from such intense competition, rather than interest rate declines.

The key factor underpinning high interest rate spreads in Hungary vis-à-vis the Czech Republic had its origins in the open access to loans for clients with incomes derived from earnings coming from the informal economy. By relaxing lending criteria rather than cutting interest rate Hungarian banks stimulated higher demand for mortgages (Banai et al. 2010). This trend in credit expansion was facilitated by successive Hungarian governments' unwillingness to constrain growth the mortgage sector out of fear of causing a recession: this outlook suited the profit driven interests of the banking sector.

Inherent in our second hypothesis are two important substantive questions: Why did Hungarian borrowers after 2004 accept mortgages that had high exchange and interest rate risks? And more generally, why did public demand for mortgage loans not decline after 2004 given the increased levels of risks stemming from likely changes in the exchange and interest rates? Once again the most plausible answer to these two questions comes from consideration of broader institutional factors prevailing in the Czech Republic and Hungary. The evidence presented above reveals that for households in Hungary homeownership was the only viable option in gaining access to permanent housing, and mortgage holders' evaluation of the risk of default was attenuated by over-optimistic economic expectations.



The evidence showed that while in the Czech Republic the housing tenure structure remained more balanced with relatively high shares of both public and private rental housing, in Hungary public housing was marginalized and private rental housing formed a small and high-priced sector that is barely taxed as it is for the most part encompassed by the informal economy. While in the Czech Republic the yields (rent-to-price ratio) from residential rental investments dropped substantially and quickly, in Hungary they remained at a consistently high levels, and market rents changed in line with house prices. The housing subsidies in the Czech Republic, though also biased toward owner-occupied housing, included more support for public rental housing than was the case in Hungary. It seems that Hungarian state housing policy preferential support for homeownership distorted tenure choice and dramatically increased the demand for owner-occupied housing. As a result, other housing tenures were not perceived as viable alternatives to owner-occupied housing, even for households with low or unstable incomes. This combination of institutional factors explains why demand for mortgages did not decline although the risks to borrowers increased dramatically after 2004, thus contradicting the logic of neoclassical models of economic behaviour.

Another factor that played a role in the Hungarian housing boom was over-optimistic expectation of the long-term economic growth. This idea matched with the short-term experience of the Hungarian public itself who felt that their economy would grow faster than the Eurozone and thus the Hungarian forint would appreciate in value, meaning that foreign currency loans would in fact be advantageous. Underestimation of the risks of adverse changes is explained by the public's inability to correctly evaluate macroeconomic risk and this cognitive capabilities explanation forms part of a wider argument of limited market competence among citizens in post-socialist states. However, it is impossible within the scope of a single article to determine which of these two factors played a more powerful role in creating such a strong demand for mortgage loans and owner-occupied housing in Hungary.

In sum, the evidence presented suggests acceptance of the second hypothesis with two caveats: the paired methodology used in this article restricts the generality of the institutional mechanisms identified, and it has not been possible to take full account of other competing explanations. With these caveats in mind there is strong reason to conclude that there are factors originating in broader institutional frameworks (i.e. housing tenure policies and development of the housing systems) which explain the differences in impact of global economic crisis on the housing and mortgage markets in post-socialist states.

## **Conclusion**

The paired comparison methodology employed in this research takes advantage of the fact that the global economic crisis provides social scientists with a ‘natural experiment’ in which to test competing explanations of social change. The Czech and Hungarian cases are particularly useful as they have similar starting points in their shared communist legacy and important differences with regard to the following transition process. By focussing on the housing and mortgage markets it is possible to test neoclassical and institutional explanations of the impact of a common exogenous economic event on a carefully chosen pair of case studies. Comparing two post-socialist states response to a global economic crisis where one outcome was mild decline in the case of the Czech Republic and depression in the case of Hungary demonstrates how the behaviour of rational economic actors and institutional design provide scope for a wide range of outcomes.

At the start of this article two questions were addressed. The first inquired about what factors explain the diverse impact of global economic crisis on mortgage and housing markets in post-socialist states? The evidence presented demonstrates that the best explanation of different impact is given by neoclassical economic theory. The most important differences identified by our paired comparison methodology were inflation and interest rates, fiscal policy and credit supply regulations. The second question related to the importance of institutional differences in the Czech and Hungarian housing systems in explaining some of the varying impact of the global economic crisis observed. The institutional economic perspective while exhibit less overall explanatory power than the neoclassical approach is nonetheless very useful because it accounts for puzzles such as Hungarian householder’s willingness between 2004 and 2008 to subscribe to risky mortgage products. Here the impact of social norms, future economic expectations, pressures from banks and the unwillingness of governments to regulate the housing market more effectively resulted in sub-optimal financial choices.

In short, a full understanding of the impact of the global crisis requires both a neoclassical explanation supplemented with an institutional account for otherwise puzzling features. Future research should aim to construct a larger comparative dataset to test in greater detail the competing hypotheses examined in this article. With greater variation in all the variables of interest it should be possible to come to a more definitive conclusion as to relative merits of the neoclassical and institutional economic accounts of the recent economic crisis on CEE states development.

Turning finally to the issue of the impact of the global economic crisis on future developments in housing in our two post-socialist case studies the available evidence suggests that the diverging trends of the 1990 to 2008 period may have now been replaced with convergence. In this respect, the decision of the current Hungarian government in the summer of 2010 to strictly regulate the mortgage market with a ban on foreign currency loans, and plans for the rental market to solve the mass foreclosure problem is significant. This is because it indicates the start of a trend towards a more balanced housing tenure system. This trend could see the housing systems of both Hungary and the Czech Republic converge toward a similar structure in the future.

A fascinating implication of this research is that the impetus for past divergence in the housing market was the exogenous shock encapsulated in the collapse of communist regimes in 1989 and 1990, while the motivation for future convergence may be traced to the global economic crisis of 2008. If this proves to be the case, it suggests that the nature of exogenous shocks plus rational economic reasoning and prevailing institutional forms need to be understood if general accounts of housing system development are to be formulated and tested in future work.

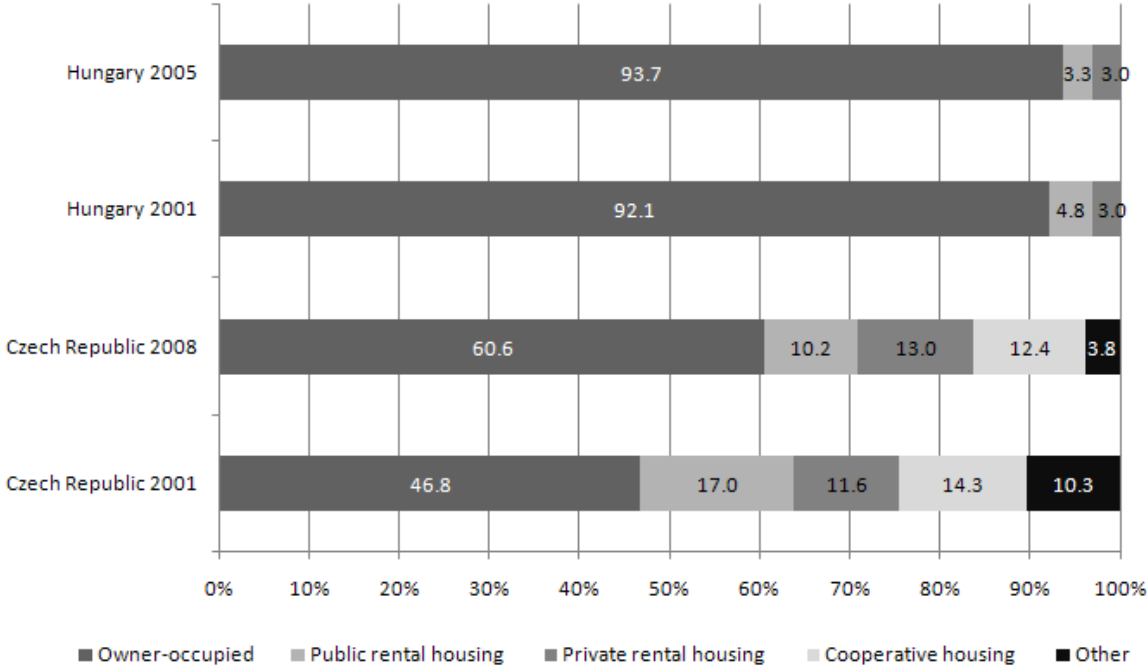
## Appendix 1: Contextual information for the Czech Republic and Hungary, selected indicators for 2005 - 2009

Socio-economic indicators	Hungary					Czech Republic				
	2005	2006	2007	2008	2009	2005	2006	2007	2008	2009
<i>Economic indicators</i>										
GDP per capita in PPS (EU-27 average =100)	63.2	63.2	62.6	64.4	n.a.	75.9	77.0	80.1	80.4	n.a.
Growth of real GDP (% , y/y, real)	3.5	4.0	1.0	0.6	-6.3	6.3	6.8	6.1	2.5	-4.2
Household consumption (% , y/y, real)	3.4	1.9	-1.6	-0.6	-6.7	2.5	5.0	4.8	3.6	-0.3
Inflation rate (CPI, %, annual)	3.6	3.9	8.0	6.1	4.2	1.9	2.5	2.8	6.3	1.0
Unemployment rate (ILO, %, average)	7.2	7.5	7.4	7.8	10.0	7.9	7.1	5.3	4.4	6.7
Gross household saving rate	11.7	8.5	7.5	6.8	7.0	8.2	9.6	10.9	10.4	9.5
Total of housing savings (billions EUR)	0.6	0.8	1.0	1.3	n.a.	11.1	12.7	13.9	16.1	15.7
Monetary base M0 (% , y/y)	18.3	-0.4	29.1	-17.6	-13.9	11.4	11.9	10.0	12.8	-3.3
M1 (% , y/y)	18.0	3.3	20.2	-14.4	n.a.	13.4	14.7	15.7	9.7	6.1
M3 (% , y/y)	17.2	9.4	8.3	9.1	n.a.	11.1	13.8	16.7	13.1	0.4
General government deficit (surplus) / GDP (%)	-6.4	-7.9	-9.3	-5.0	-3.8	-3.6	-2.6	-0.7	-2.7	-5.9
General government debt as a % of GDP	61.8	65.6	65.9	72.9	78.3	29.7	29.4	29.0	30.0	35.4
Exchange rate (annual average) HUF/EUR, CZK/EUR	248	264	251	251	280	30	28	28	25	26
<i>Income distribution, poverty rate</i>										
Income distribution: Gini	28.0	33.0	26.0	25.0	n.a.	26.0	25.3	25.3	24.7	n.a.
At-risk-of-poverty rate (%)	13.0	16.0	12.0	12.0	n.a.	10.4	9.8	9.5	9.1	10.4
<i>Demography</i>										
Population (millions)	10.098	10.077	10.066	10.045	10.031	10.202	10.207	10.234	10.267	10.468
Proportion of population aged 25-49 years (%)	36.0	35.8	35.7	35.7	35.7	36.9	36.9	37.0	37.1	37.1
Proportion of population aged 65 and over (%)	12.3	12.3	12.3	12.5	12.5	14.2	14.4	14.6	14.9	14.9
Live births per 1,000 inhabitants	9.7	9.9	9.7	9.9	n.a.	10.0	10.3	11.1	11.5	11.3
Natural growth per 1,000 inhabitants	-3.8	-3.1	-3.5	-3.1	-3.3	-0.6	0.1	1.0	1.4	1.0
Total fertility rate	1.31	1.34	1.32	1.35	n.a.	1.28	1.33	1.44	1.50	n.a.

Note: y/y denotes year-on-year change generally expressed in percentage points. Data that is unavailable is indicated by n.a.

Source: Czech Statistical Office, Hungarian Central Statistical Office, Czech National Bank, National Bank of Hungary, Ministry of Finance of the Czech Republic, Eurostat.

**Figure 1: Comparison of housing tenure structures in the Czech Republic and Hungary (percent)**



Note the data on housing tenure for 2005 (Hungary) and 2008 (Czech Republic) are estimates.  
 Source: Czech Republic – Czech Statistical Office (Census 2001, EU-SILC 2008 – 2008 estimates).  
 Hungary – Statistical Yearbook of Hungary, 2000, Yearbook of Housing Statistics, 2000-2005.

**Table 1: Interest Rate (IR) on housing loans in local and foreign currencies, 2000 – 2009**

Types of Interest Rate (IR)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<i>Average IR of loans for dwelling purchase, local currency (% nominal)</i>										
Czech Republic	7.01	7.49	6.32	5.11	5.24	4.51	4.48	4.80	5.48	5.51
Hungary	18.41	16.42	14.19	12.24	12.31	10.07	9.54	9.96	10.39	11.75
<i>Average IR of loans for dwelling purchase, local currency (% real)</i>										
Czech Republic	3.11	2.79	4.52	5.01	2.42	2.65	1.95	1.97	-0.89	4.46
Hungary	8.64	7.23	8.91	7.58	5.56	6.50	5.62	1.98	4.29	7.55
<i>IR of loans for dwelling purchase over 1 and up to 5 years fix, local currency (% nominal)</i>										
Czech Republic	n.a.	n.a.	n.a.	n.a.	5.13	4.29	4.55	4.78	5.56	5.65
Hungary	n.a.	n.a.	n.a.	12.21	11.62	9.37	9.09	9.30	9.73	11.43
<i>IR of loans for dwelling purchase over 1 and up to 5 years fix, local currency (% real)</i>										
Czech Republic	n.a.	n.a.	n.a.	n.a.	2.31	2.42	2.02	1.95	-0.80	4.60
Hungary	n.a.	n.a.	n.a.	7.54	4.87	5.79	5.17	1.31	3.63	7.23
<i>IR of loans for dwelling purchase over 5 and up to 10 years fix, local currency (% nominal)</i>										
Czech Republic	n.a.	n.a.	n.a.	n.a.	5.31	4.85	4.99	4.94	5.27	4.93
Hungary	n.a.	n.a.	n.a.	12.51	13.41	13.39	13.67	14.36	16.25	17.29
<i>IR of loans for dwelling purchase over 5 and up to 10 years fix, local currency (% real)</i>										
Czech Republic	n.a.	n.a.	n.a.	n.a.	2.49	2.98	2.45	2.11	-1.09	3.88
Hungary	n.a.	n.a.	n.a.	7.84	6.66	9.82	9.75	6.38	10.15	13.09
<i>IR of loans for dwelling purchase, foreign currency (% nominal)</i>										
Czech Republic	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Hungary (CHF, mortgage loans)	n.a.	n.a.	n.a.	n.a.	n.a.	3.67	3.75	4.36	5.29	5.68
Hungary (EUR, housing loans)	n.a.	n.a.	n.a.	n.a.	n.a.	4.31	4.86	5.76	6.44	7.17

Notice: Real IR is nominal IR minus year-to-year change in the Consumer Price Index (CPI) level. Data that is unavailable is indicated by n.a.

Source: Czech Republic – Mortgage market 2005 survey conducted by author (data for 2000-2002), Hypoindex.cz (data for 2003), Czech National Bank (data for 2004-2009), own calculations.

Hungary – National Bank of Hungary, own calculations.

**Table 2: Spreads between interest rates on housing loans and reference interest rates, 2000-2009 (per cent)**

Types of interest rate spread	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<i>Spread 1 (Average IR of housing loans minus average IR of deposits)</i>										
Czech Republic	n.a.	n.a.	n.a.	n.a.	4.40	3.69	3.60	3.76	4.11	4.31
Hungary	11.74	10.25	8.90	8.70	7.17	6.12	5.90	5.89	5.72	6.36
<i>Spread 2 (IR of housing loans for dwelling purchase over 1 and up to 5 years fix minus the yields from five year government bonds)</i>										
Czech Republic	n.a.	n.a.	n.a.	n.a.	1.23	1.57	1.31	1.13	1.74	2.20
Hungary	n.a.	n.a.	n.a.	4.61	2.51	2.58	1.68	2.28	0.47	2.12

Note IR denotes Interest Rate and n.a. data that is not currently available.

Source: Czech Republic – Czech National Bank, own calculations.

Hungary – National Bank of Hungary, own calculations.

**Table 3: Outstanding mortgage balance and mortgage loan portfolio, 2000-2009**

Year	Mortgages as a share of GDP (%)		Mortgages in foreign currencies as a share of all mortgages (%)		Share of variable rate mortgage loans on annual granted loans (%)	
	Czech Republic	Hungary	Czech Republic	Hungary	Czech Republic	Hungary
2000	1.08	1.40	1.95	1.99	n.a.	n.a.
2001	1.49	2.10	1.07	1.96	n.a.	n.a.
2002	2.69	4.50	0.52	1.55	n.a.	n.a.
2003	3.58	8.00	0.39	1.20	n.a.	27.10
2004	4.46	10.10	0.27	12.20	n.a.	66.90
2005	6.21	12.10	0.14	30.10	49.20	77.10
2006	7.97	14.50	0.08	46.80	69.50	84.90
2007	10.19	17.40	0.10	61.00	67.20	90.60
2008	11.57	22.50	0.06	73.50	57.10	92.80

Note all mortgage estimates refer to outstanding loan balances and are end of year percentages. In the Czech Republic outstanding mortgage balances includes part of the regular loans granted by the Bausparkassen, if the loans fulfil a definition of the mortgage loan. Since 2009 the definition of the mortgage loan changed, i.e. in addition a part of the 'bridging loans' granted by Bausparkassen is included in outstanding mortgage balance. In both countries, the equity withdrawal mortgage loan is included, but the share of the variable rate mortgage loan is calculated on the basis of housing loan only.

Source: Czech Republic – Czech National Bank, own calculations.

Hungary – National Bank of Hungary, own calculations

**Table 4: Index for nominal and real house prices, 1998-2009 (2000 = 100)**

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Czech Republic</b>												
Flats – nominal	84.7	91.4	100.0	115.0	140.0	166.8	162.6	163.8	177.6	233.0	267.6	251.1
Family houses – nominal	78.6	86.5	100.0	106.9	116.0	124.0	124.4	125.1	131.3	147.4	165.0	166.6
Aggregate index - nominal	82.1	89.3	100.0	111.4	129.5	148.2	146.0	147.0	157.4	195.7	222.9	214.3
Aggregate index - real	87.0	92.7	100.0	106.5	121.5	138.8	133.0	131.5	137.4	166.0	177.8	169.2
<b>Hungary</b>												
Aggregate index - nominal	51.6	68.4	100.0	117.3	134.5	160.4	173.0	177.2	186.3	195.2	197.3	181.1
Aggregate index -real	62.4	75.1	100.0	107.4	117.0	133.3	134.7	133.2	134.8	130.8	124.6	109.8

Note: Czech Republic – aggregate index is based on flats and detached family homes indices, it was calculated as weighted average of both indices; weights were based on Census 2001 data.

Source: Czech Republic – Czech Statistical Office (transaction prices for 1998 – 2007), Česká spořitelna index (appraisal prices for 2008-2009), own calculations.

Hungary – FHB house price index (2001- 2009), data before 2001 are estimated by author.



**Table 5: Price-to-income ratio in the Czech Republic and Hungary, 1998-2008**

<b>Price-to-income ratio</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Czech Republic	2.6	3.5	2.7	2.5	2.8	3.3	3.6	3.9	4.0	4.4	4.8
Hungary	4.1	5.3	6.9	6.8	6.6	6.8	6.9	6.5	6.3	6.3	6.0

Note: Price-to-income = average house price/average annual net household income.

Czech Republic: Average house price = weighted average of flat and family house prices according to Czech Statistical Office (transaction prices); weights based on the share of flats and family houses according to Census 2001.

Hungary: Average house price based on aggregate house price data (house prices stated by respondents of the households housing surveys).

Source: Czech Republic – Czech Statistical Office, own calculations.

Hungary – estimations based on author's household housing survey of 1999, 2003, FHB house price index and Hungarian Central Statistical Office.

**Table 6: Government housing expenditures and their share of GDP between 2000 and 2009, percent**

Housing type:	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009	
	HU	CZ	HU	CZ	HU	CZ	HU	CZ	HU	CZ	HU	CZ	HU	CZ	HU	CZ	HU	CZ	HU	CZ
Rental housing	7.4	21.0	14.7	21.8	23.3	19.4	14.5	18.2	7.4	17.6	6.5	11.7	2.2	9.0	2.5	7.5	2.6	4.6	2.6	1.4
Homeownership	72.9	57.4	69.6	61.6	66.4	57.9	79.0	60.8	84.9	68.6	83.1	75.5	51.0	74.6	53.9	74.5	54.8	78.3	59.4	71.6
Restituted	12.5	5.2	9.9	2.0	6.6	9.1	4.7	9.4	5.4	3.3	6.0	2.9	5.2	6.8	7.7	8.6	10.5	6.5	9.4	16.1
Housing allowances	7.2	16.4	5.8	14.5	3.7	13.7	1.8	11.7	2.4	10.5	4.4	9.9	41.7	9.6	35.9	9.3	32.0	10.6	28.6	10.9
<i>Total (%)</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Total in billions (HUF, CZK)	49.4	16.5	62.4	18.6	101.1	22.1	193.6	24.3	244.8	24.2	270.1	25.0	399.1	23.8	350.9	22.4	283.1	19.8	279.5	23.0
% GDP	0.4	0.8	0.4	0.8	0.6	0.9	1.0	0.9	1.2	0.9	1.2	0.8	1.7	0.7	1.4	0.6	1.1	0.5	1.1	0.6

Note: GDP in current prices in national currencies. HU indicates data from Hungary and CZ estimates from the Czech Republic.

In Hungary gas prices were highly subsidized by the state through incentives given to energy supply companies. This government policy became unsustainable and a means tested subsidy was introduced. This change in energy subsidies is one reason why housing allowances were dramatically increased in 2006.

Source: Hungary – government public information and author calculation.

Czech Republic – the Ministry for Regional Development (<http://www.mmr.cz/Bydleni/bydleni2009/en/1-43-government-housing-expenditures.html>).

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