

House Price Bubbles on the Major Polish Housing Markets

Abstract

Despite the fact that the Polish housing market has been in operation for almost 20 years, it is really only since the year 2000 that it has begun to display characteristics of a developed market. This can be primarily linked to financial sector development, which accelerated after EU accession. The decrease in both the inflation rate and economic risk has led to the situation in which Poland, primarily the main Polish cities, started to notice substantial house price changes as a consequence of the credit boom.

The purpose of this research is to attempt to identify and measure house price bubbles on the major Polish housing markets. We will also try to analyze and estimate the potential implications of house price bubbles for both financial system stability and for the entire Polish economy.

The measurement of house price bubbles is a difficult task even with respect to well-developed countries where long time-series data are available. In the case of Poland, where the availability of such data as house prices, rents or mortgage interest rates as well as other fundamental factors data is very limited, it becomes a real challenge. Moreover, relative comparisons of research results are problematic due to many discrepancies in the structures of Polish and other EU housing markets (for instance in Poland a professional rental market practically doesn't exist, whereas in other European countries it is well-developed and should be considered as a substitute for purchasing housing).

Despite the above-mentioned difficulties, it is still possible to make reliable estimates of house price bubbles on the major Polish housing markets, which is the main goal of this research.

Key words: house price bubbles, indices, banking system and overall economic risk, real estate market cycle

House Price Bubbles on the Major Polish Housing Markets

1. Risk of cycle and crisis in the real estate markets

Real estate markets, including residential markets go through cycles, probably since the Ancient Times. This means that basic economic indicators describing those markets such as prices, transactions, construction or construction and assembly output are subject to more or less regular changes in the time function. Traditional factor triggering the cycle were time lags between the response of supply represented by housing construction and changes in demand and speculation.

Development of the financial system conditioned the increase in housing availability and constituted an additional factor enabling a rapid rise in demand and cycle deepening. Initially, banks were very weak and engaged in the sector with caution; also in the latter period the systems of house financing were established, for the most part, with the government's aid and consequently, were regulated in a conservative way. They tended to have a national and specialized character and fulfilled a social function granting loans under governmental programs. This limited the possibility of speculative transactions based on bank credit and was, at the same time, the reason for the institutional and regulative structure of the financial system varying significantly from country to country.

The development of the banking sector and its gradual deregulation, increased its role in triggering changes in demand in the housing market in response to its cyclical character and real estate crises.

Real estate crises on the global scale are a relatively common phenomenon; on the national scale, they used to occur once in every generation as this was the time needed to forget about bad experiences from the past.

They were usually connected with the collapse of the financial system and the emergence of price bubbles in the real estate market. Price bubble in the real estate market is a phenomenon involving a rapid rise in house prices not justified by changes in the market fundamentals. The previously observed real estate crises affected local, domestic property markets and local financial systems. The current crisis shows that the situation is changing. While the mass-scale destruction of the financial system affects only the American market, the phenomena of price boom and rapid price growth have been observed in many markets.

Housing bubbles although known for a long time by real estate market specialists, including bankers, were not commonly recognized in the theory of the economy until very recently.

Representatives of the Chicago school who deny the very possibility of occurrence of the speculative bubble, already at the beginning of 2000, argued that in the case of housing this is impossible due to high transaction costs.

Asset price bubbles may lead to disruptions both in the financial sector and in the real economy. Excessively high asset prices do not play the price-signalling function correctly which leads to improper fund allocation – too many funds are allocated in assets whose prices grow stronger than suggested by fundamental variables. Price bubble burst brings about losses in the financial sector posing a threat to financial stability and creating a risk of strong economic slowdown.

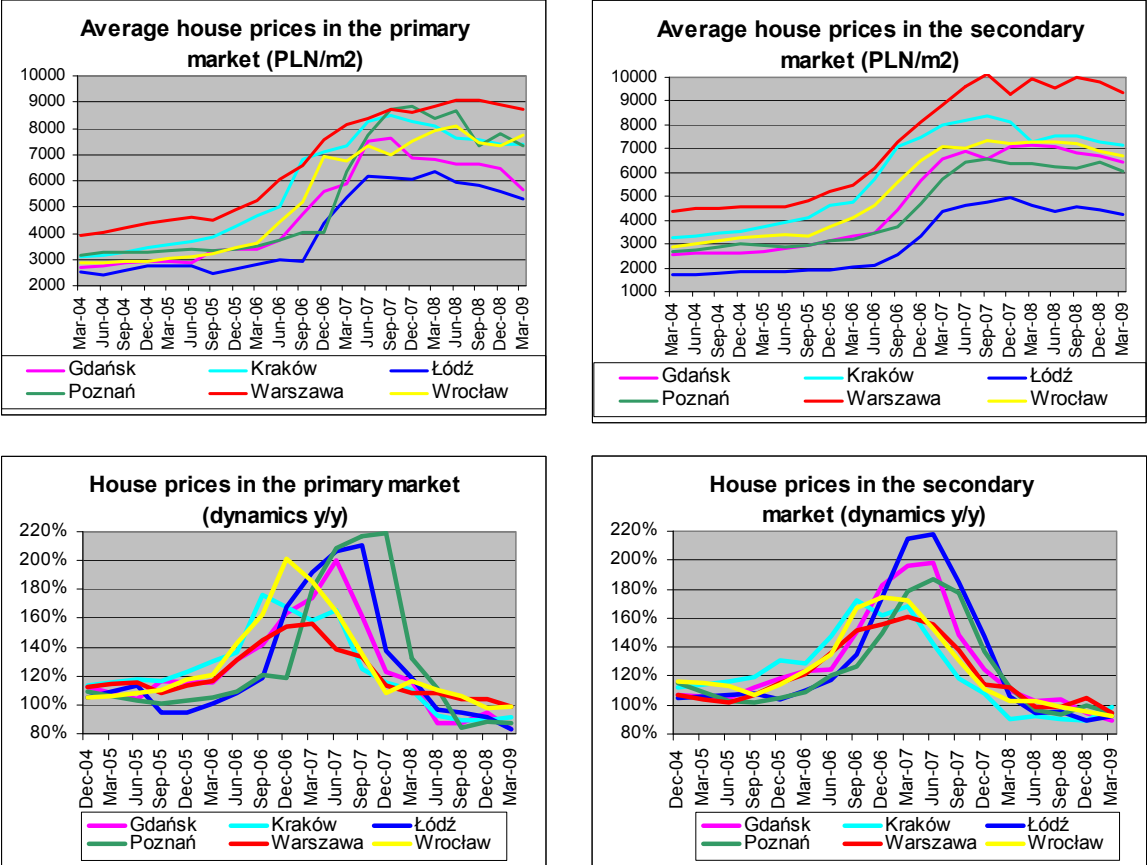
It is recognized that price bubbles occurring in asset markets, including the housing market, have their origin in common expectations of economic agents of asset price growth. These expectations, as argued by the Neo-Keynesians, might be driven by fundamental factors, or as explained by the Austrian school, by psychological factors. These factors urge economic agents to undertake speculative asset purchases which leads – amidst limited short-term supply – to asset price growth. As a result, households' expectations materialize which reinforces the expectations of further increases. In this way, the spiral of increasing prices, price expectations and demand unwinds. The result of this spiral is the onset of a price bubble. In the case of real estates, the occurrence of a large-scale price bubble requires the financial sector capable of raising considerable funds in a short period of time. The factor increasing the risk of a bubble are low interest rates setting a low level of alternative costs and encouraging speculation as well as easy access to funds which is translated into liberal banking supervision.

Yet, it should be noted that not every dynamic asset price growth involves the onset of a speculative bubble. We have to do with a speculative bubble when asset prices are not justified by fundamental factors i.e. factors which lead to long-term changes in supply and demand. This is so because asset price increases may be caused by changes in fundamental factors i.e. long-lasting changes in demand or supply, which in the case of the housing market may involve changes in long-term demographic trends, construction costs, availability of building sites, interest rate levels and credit availability.

2. Price bubble mechanism – the case of the housing market in Warsaw

Price bubble mechanism may be traced on the example of the Warsaw real estate market. In the years 2004-2007 this market saw a significant, exceeding 100% rise in housing prices, and the insightful analysis of the situation points to the existence of the price bubble. Similar phenomena were observed in other housing markets of the largest cities in Poland, yet, the dynamics and the scale of the phenomenon differed. The phenomena are illustrated by the following charts.

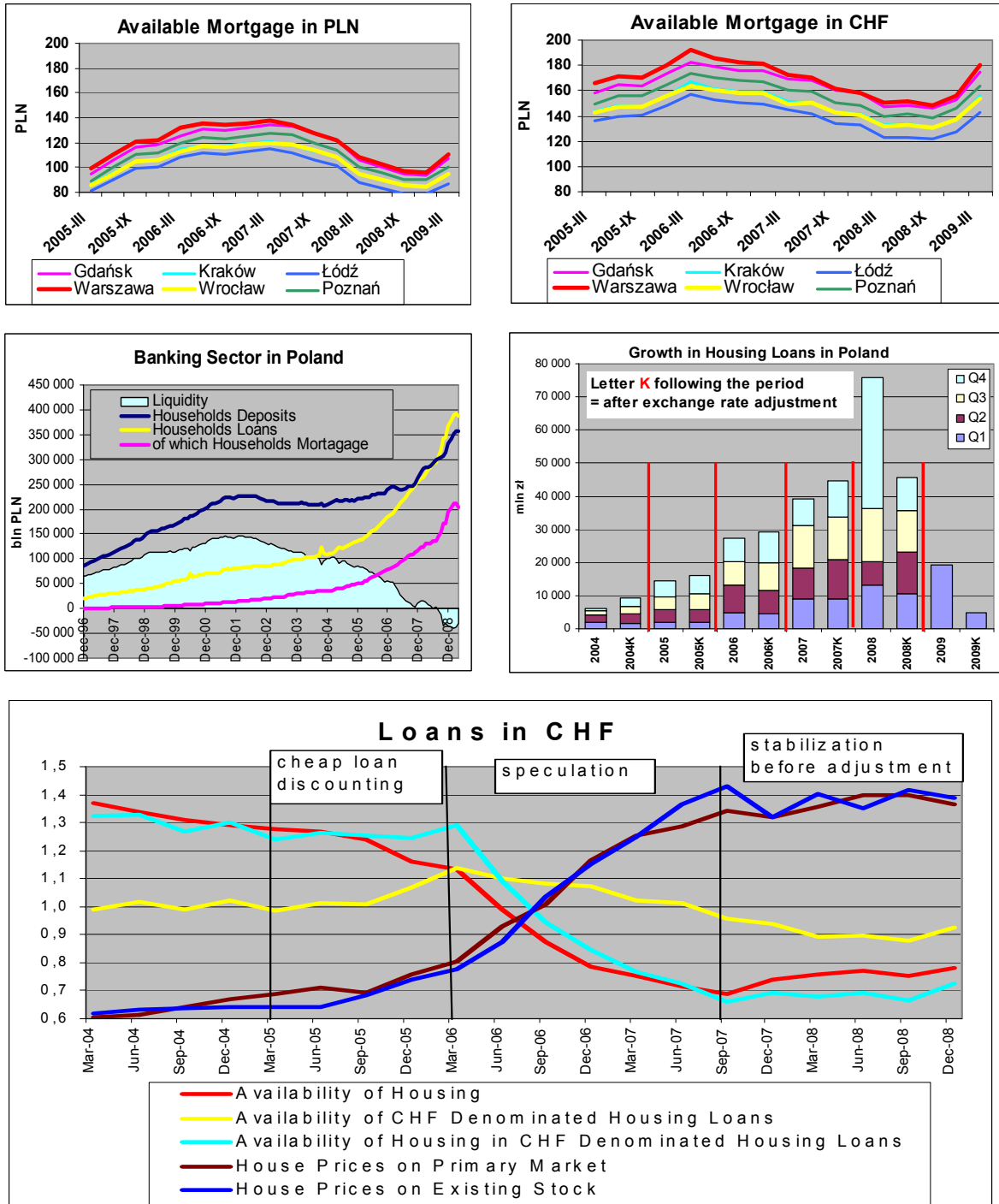
Chart 1-4

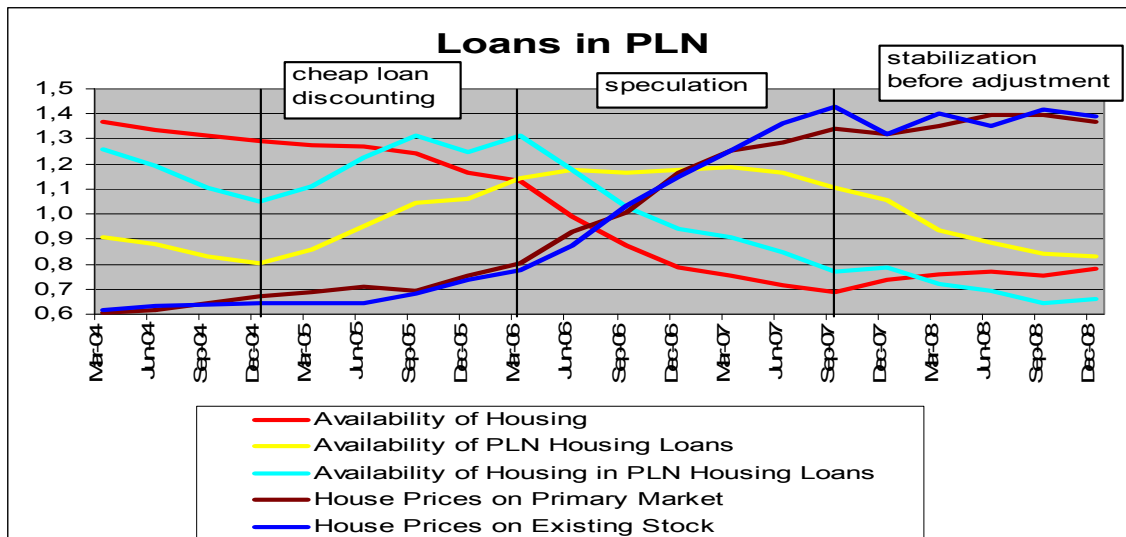


The starting point i.e. the years 2003-2004 saw the interweaving of generally short-lived internal and external factors which triggered speculative behaviour. On the demand side, those phenomena included rising credit availability resulting from falling interest rates and bank margins, substitution of zloty denominated loans with cheaper loans denominated in foreign currencies, rapidly rising income and social optimism resulting from Poland's accession to the EU as well as a rapid economic growth, rise in migration and in a number of households. Also VAT issue was not without significance - announcements of VAT increases accelerated house purchase decisions. The long-term analysis shows that the developments in

the credit market were of primary importance as the rise in global credit availability fuelled rising indebtedness.

Chart 5-10





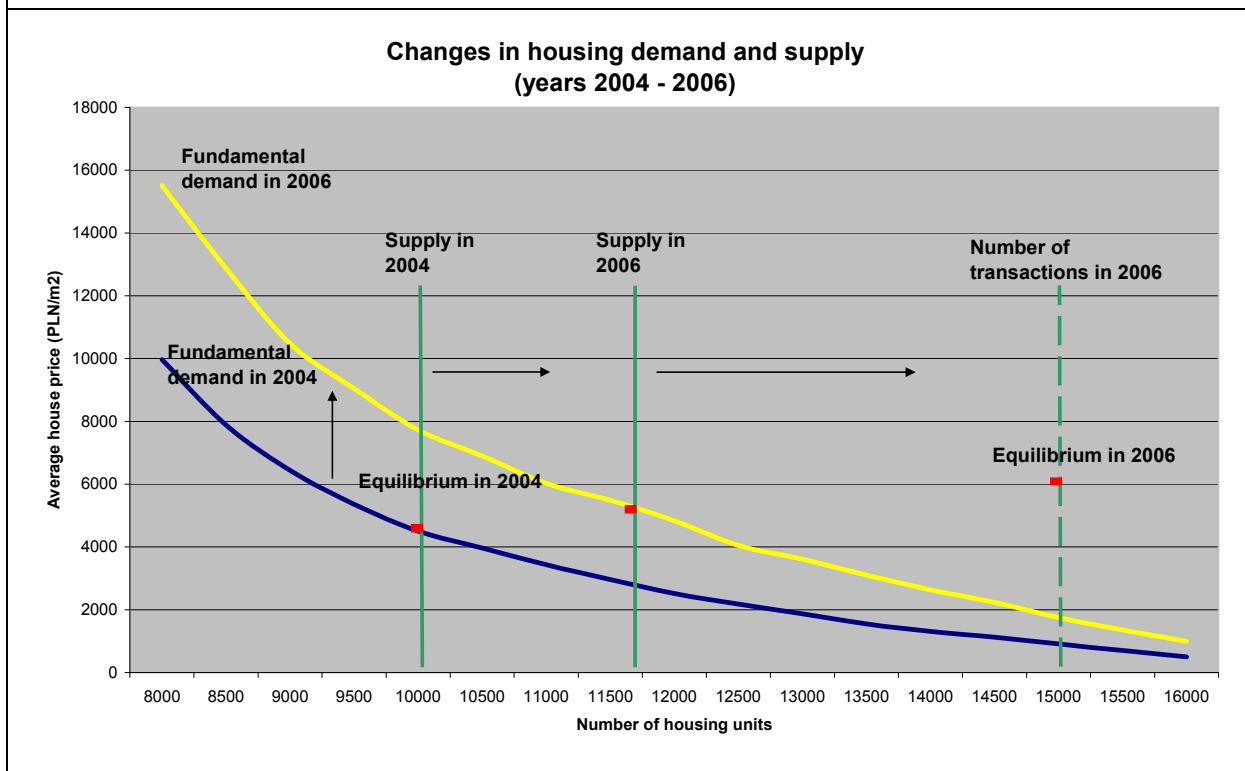
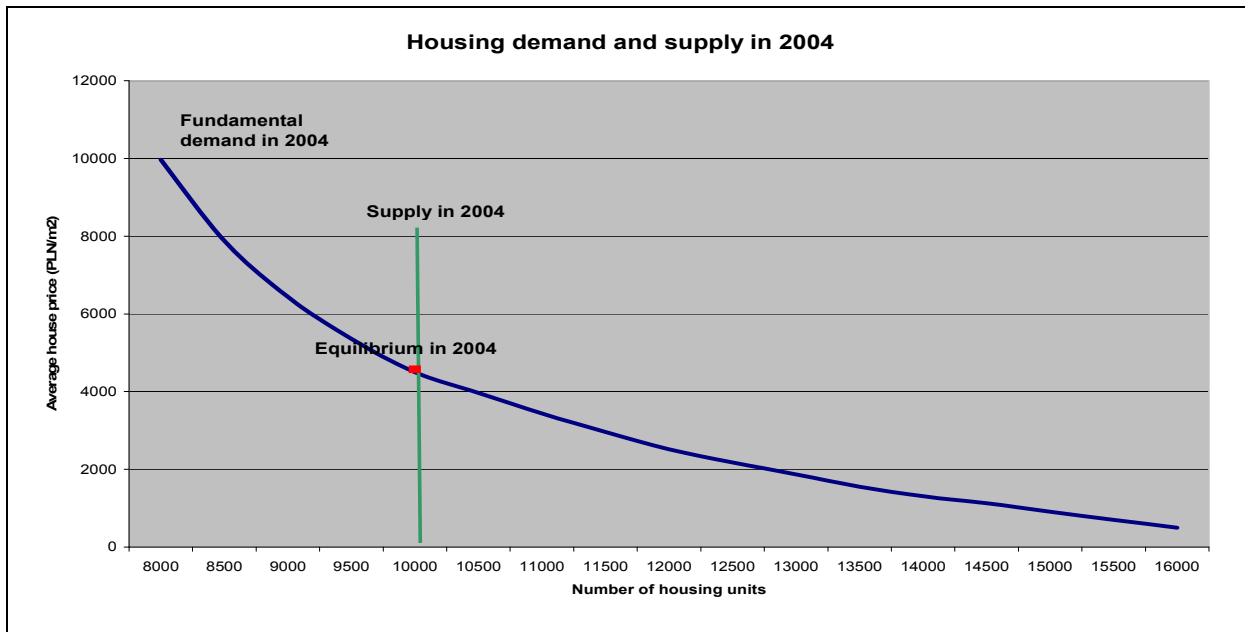
(Charts 5 and 6 - rising availability of PLN and CHF denominated loans, growing share of CHF loans denominated, Chart 9- 10 rising average loan availability and loan amount).

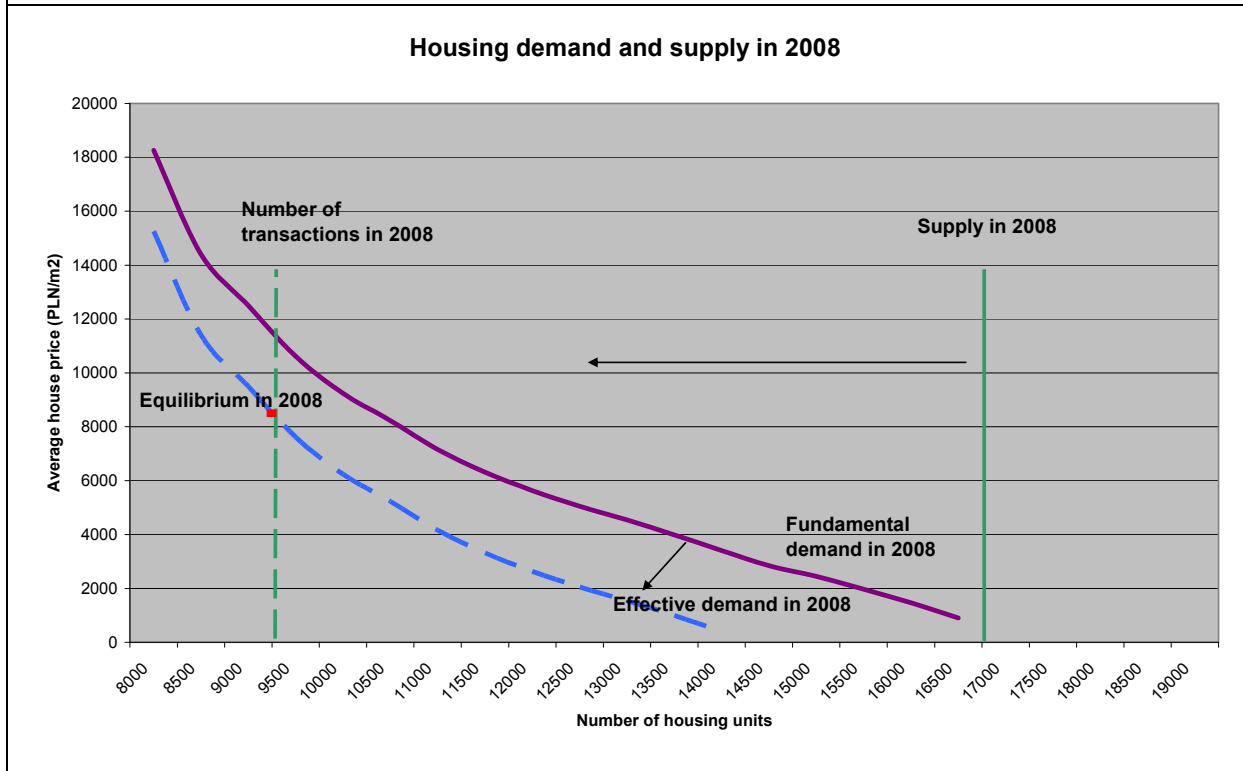
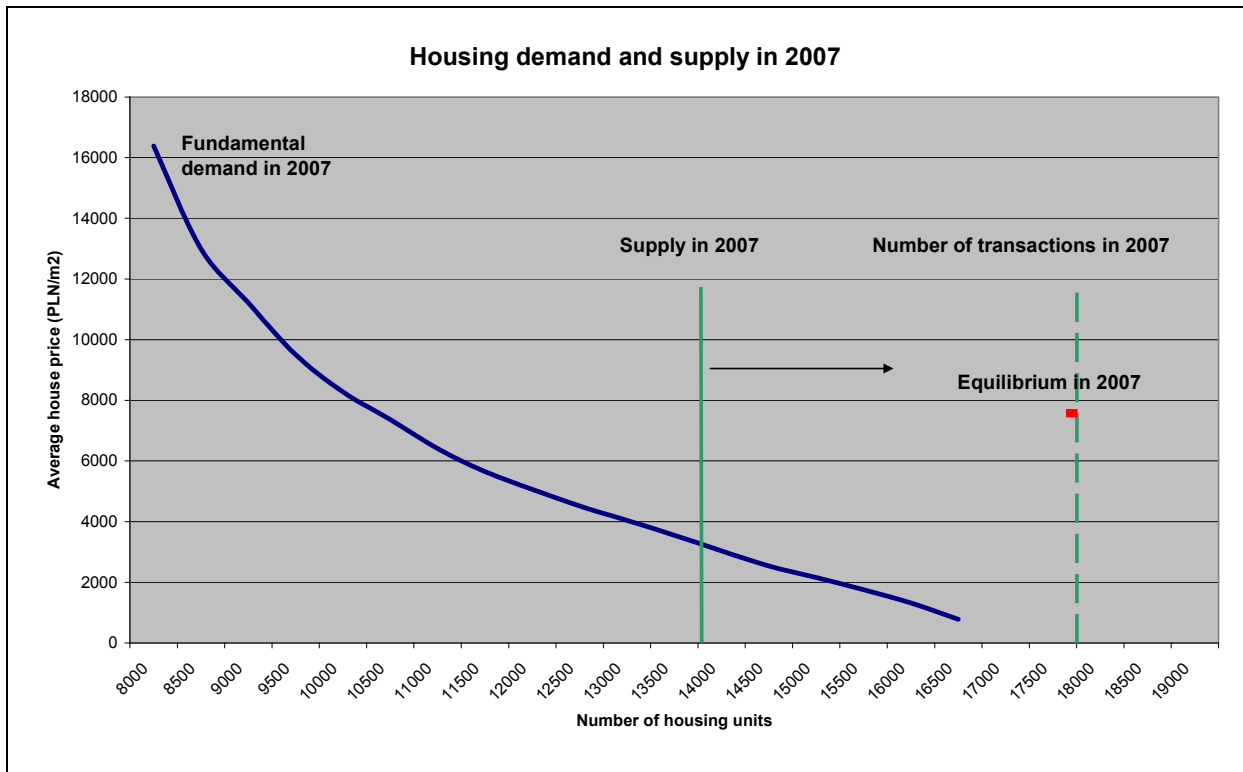
Increased demand was coupled with lower supply flexibility - delayed effect of the previous cycle. As a result of the 2001-2002 cycle, faced with a surplus of unsold housing, property developers considerably reduced the number of planned investment projects, which additionally tightened the supply in the perspective of the subsequent 3-4 years. Tight supply combined with growing demand resulted in price increase. Falling interest rates and growing competition in the mortgage market, largely transferred to the Polish market from European markets by daughter-banks of international financial corporations resulted in further growth in credit availability. As a result, rising house prices did not translate into a rise in monthly costs of housing financing – the opposite effect was observed i.e. credit availability of housing increased. Charts 9 and 10 show that despite rising prices and falling availability of housing in both zloty and foreign currency markets, credit availability of housing increased. Growing prices of housing fuelled further rise in demand and tight supply caused further price increase. Stage 3 of charts 9 and 10 provides the explanation and shows the mechanism of the phenomenon. Price increase was so high that could not have been offset by a rise in credit availability, which, in the case of foreign currency denominated loans, reached its peak and embarked on a downward trend. As a result, credit availability of housing or mortgage costs for consumer started to rise. Yet, this did not limit the demand as the primary factor driving demand was speculation based on expectations of further price growth rather than rising availability and declining costs of house purchase. Households, including foreign ones, started to purchase houses with a view to reselling them at a profit, while others accelerated their

purchase decision to buy cheaper. This was possible thanks to further rise in lending. The market was perfect at discounting additional cash flow, and, as a result, market prices of housing and theoretical prices calculated as the size of construction business divided by cash flow practically did not coincide.

Rapid price growth continuing for the third consecutive year started to trigger reaction both on the demand and on the supply side. Supply became more flexible, especially as house construction contracts concluded at the initial period of investment projects or even preliminary contracts rather than finished housing were the object of transactions. This was possible as banks started to offer non-mortgage loans for construction financing by individual clients. As shown in charts 11a-11d, the supply curve started to move. At the same time, together with price increase, the fundamental and speculative demand faded despite constant heating of the market by property developers. Also the US crisis had a considerable impact on limiting the demand. It cooled off investors' optimism, contributed to tightening banks' loan granting criteria and considerably limited access to the previously easily available refinancing. As a result, the demand curve started to move to its starting point. As a result of demand and supply factors, price growth gradually halted and a surplus of new, unsold housing started to flood the market. This brought about a shift in market expectations towards price decline and moved the demand curve to its starting point. This was also driven by the previous acceleration of demand. As a result, the situation started to look as presented in stage 4 of chart 9 and 10.

Chart 11a-11d





Limited supply of mortgage credit offered by the banking system combined with deterioration of households' economic situation and their expectations of further fall in house prices shifted the effective demand curve to the beginning of the system of coordinates, while the supply curve moved in the opposite direction. Additionally, the market is plagued by houses

purchases for speculative purposes whose number is estimated to be close to the one offered by property developers. Sellers expect high prices, the result of which is a small number of transactions. On the other hand, market equilibrium price means price slump. In this situation, the bubble burst and price slump, or possibly the bubble absorption will be driven by economic situation and behaviour of economic agents.

3. Bubble measurement in Polish real estate markets

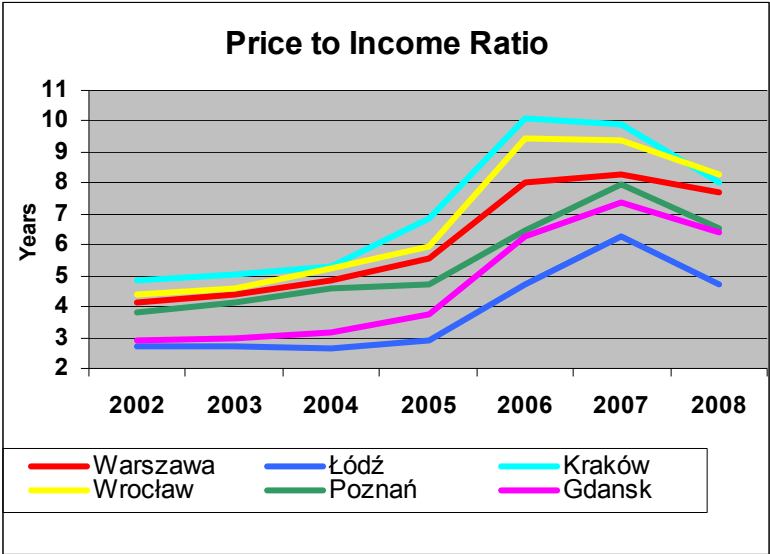
The risk of bubble in real time is usually assessed by measuring the deviations of economic indicators from their equilibrium level. Due to the fact that the fundamental equilibrium level is often hardly measurable or observable, the reasoning is based on auxiliary indicators or analysis of long-term time series. Thus, the assessment of those deviations will be subject to error.

The simplest method to assess the likelihood of the price bubble is the analysis of historical development of real and nominal prices of housing in comparison with the volume of lending. Measurement of the bubble requires comparing house prices with selected fundamental variables for the housing market. The constructed indicators, apart from house prices, take account of ordinary interest rates in the economy, household income and market rental prices. Also the analysis of house construction costs and international comparisons might be useful in such assessment.

The simplest and most common measure of disequilibrium in the housing market is the ratio of the median house price in particular market to the median annual household income (the so-called P/I ratio). In countries with flexible housing supply, such as the United States, the long-term trend of this ratio ranges from 3.5 to 4.0, and its higher values might point to disequilibrium in the market. This is clearly visible in the case of the United States where this ratio, in certain regions, significantly exceeded the level of 7, and now it is time to revise it. In European countries, the supply is traditionally less flexible than in the United States mainly as a result of stricter development planning and generally lesser availability of construction sites; as a result, those indicators which differ for particular areas, exceed the level observed in the United States. As far as Poland is concerned (chart 11), this ratio – depending on the city – ranges from 6.0 to 8.5 which points to the existence of considerable tensions in the housing

market, albeit their scale varies from city to city. For Cracow and Wrocław this ratio exceeds 8.0 i.e. the level typical for the areas of the United States of high disequilibrium.

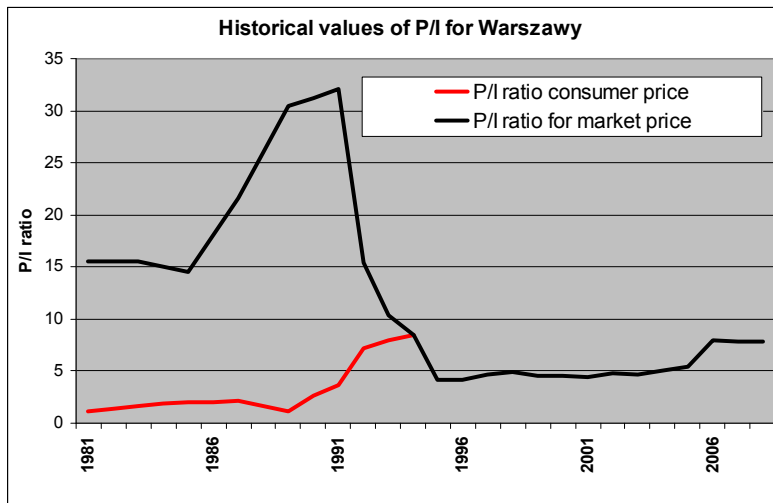
Chart 12



Source: GUS, NBP.

Similar conclusions may be drawn from the analysis of the long-term P/I ratio trend in the Warsaw market. In the 80ties falling in the period of real socialism, this ratio reached a very high level of 15 (i.e. the number of average annual salaries needed to buy a flat) to exceed 30 at the end of the decade. Yet, it should be remembered that the end of the 90ties was the period of shortages and exceptionally high-scale inflation which had to be reflected in the ratio growth as housing, apart from foreign currency, was the instrument of investment. It should be remembered that the so-called free market was relatively small as compared with the regulated official market where the long-term trend in price to income ratio remained at the level of 4 and below. After the turmoil marking the period of transformation, the prices settled, for many years, at the level of approx. 5, namely slightly above the level observed during the real socialism. The rise in this ratio to the level of 8 observed for the past two years is thus a considerable deviation from the long-term trend function.

Chart 13

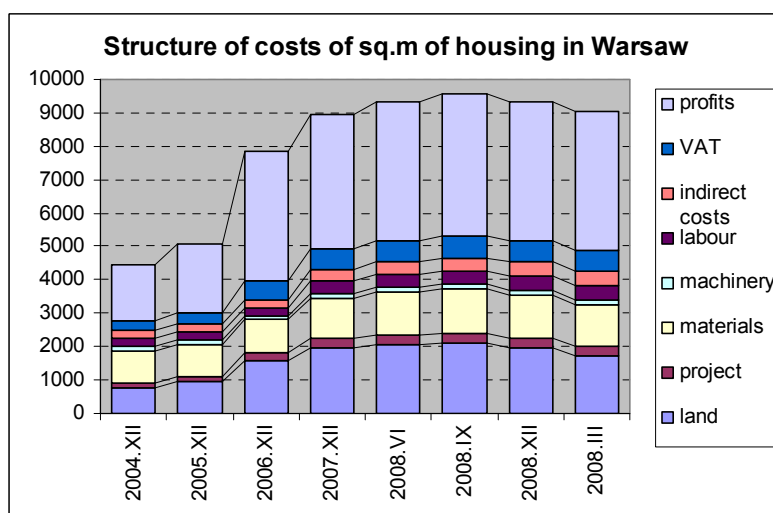


Source: GUS, NBP.

Information concerning the existence of possible disequilibria in the housing market may also be provided by the analysis of the structure of house construction costs.

In this situation of disequilibrium in the housing cost structure, an exceptionally strong rise is observed in the property developer's profit, followed by the share of land costs. Also profits of construction companies rise. Data available for Warsaw shows that such a situation has been observed in the past few years (share of property developers' profit increased considerably in the cost structure - Chart 3), which may point to an excessive rise in real property prices. Similar relations have been observed in other cities.

Chart 14.



Source: NBP's estimates based on Sekocenbud data.

While examining the P/I ratio we have to ensure comparability of income and house prices in various cities. **Yet, since real estate markets compete with one another to attract customers, especially in the EU, comparison of the absolute level of prices in similar cities in Poland and Germany might prove interesting.** The table below shows data concerning Hamburg, Munich and Berlin – which taking into account the nature of the market – may be compared with Gdańsk metropolitan area, Cracow and Warsaw (subsequent tables). As particular segments of the market in Polish and German cities are not fully comparable (differences in definitions), then the best idea is to analyse the medium segment for both countries.

Table 2 Housing price developments in Hamburg in 2007 and in Gdańsk metropolitan area in 2008 Q1

Location	Good	Medium	Poor
Housing prices in Hamburg (primary market) EUR/m²	2 400-3 500	1 800-2 400	1 550-2 100
Housing prices in Hamburg (secondary market) EUR/m²	1 500-2 200	1 200-1 900	850-1 400
Housing prices in Gdańsk metropolitan area (primary market) EUR/m²	2 035	1 835	1 455
Housing prices in Gdańsk metropolitan area (secondary market) EUR/m²	1 847	1 669	1 553

Table 3 Housing price developments in the real estate market in Munich in 2007 and in Cracow in 2008 Q1

Location	Good	Medium	Poor
Housing prices in Munich (primary market) EUR/m²	3 300-4 500	2 900-3 800	2 500-3 000
Housing prices in Munich (secondary market) EUR/m²	2 500-3 700	2 000-3 000	1 700-2 200
Housing prices in Cracow (primary market) EUR/m²	2 244	1 963	1 812
Housing prices in Cracow (secondary market) EUR/m²	2 064	1 893	1 626

market) EUR/m²			
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Table 4 Housing price developments in Berlin in 2007 and in Warsaw in 2008 Q1

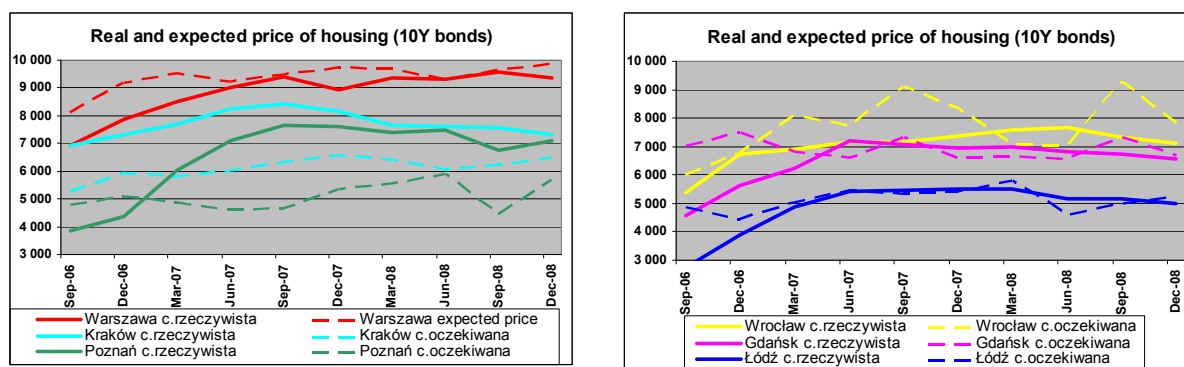
Location	Good	Medium	Poor
Housing prices in Berlin (primary market) EUR/m²	1 700-3 500	1 500-2 500	No data
Housing prices in Berlin (secondary market) EUR/m²	1 400-3 000	1 200-2 200	800-1 800
Housing prices in Warsaw (primary market) EUR/m²	2 603	2 235	2 177
Housing prices in Warsaw (secondary market) EUR/m²	2 874	2 366	2 071

Results of the comparisons prove unfavourable for the Polish market. While adopting the EUR exchange rate of 3.3. it appears that housing in Poland (Warsaw) is more expensive or almost comparable with house prices in Germany, offering considerably higher aesthetic and technical value and, on an international scale, better location (for example, Munich and Cracow). Also significant differences in GDP per capita unfavourable for Poland should be noted.

Another method of assessing disequilibrium in the housing market is the comparison of market price of housing with its price based on earnings formula – (price of housing as the sum of discounted future rental flow and value of house resale). The positive difference between the market price and the value of house determined with the earnings formula points to the speculative expectations of house price growth included in the market price (included in the implied value of house resale). In some cities in Poland (in Cracow and Poznań – chart 3) there is a significant upward deviation of the market price from the price estimated on the basis of earnings formula, which may point to the speculative element included in the market prices of housing in these markets. For Wrocław, this indicator may point to the “underestimation” of the market price which is, however, inconsistent with the relatively high P/I ratio for this market pointing to a possible price “adjustment”.¹

¹ As explained below, the reason for such discrepancies between comparable indicators is the shallowness of the Polish rental market, and, consequently, limited reliability of data on the housing rental market.

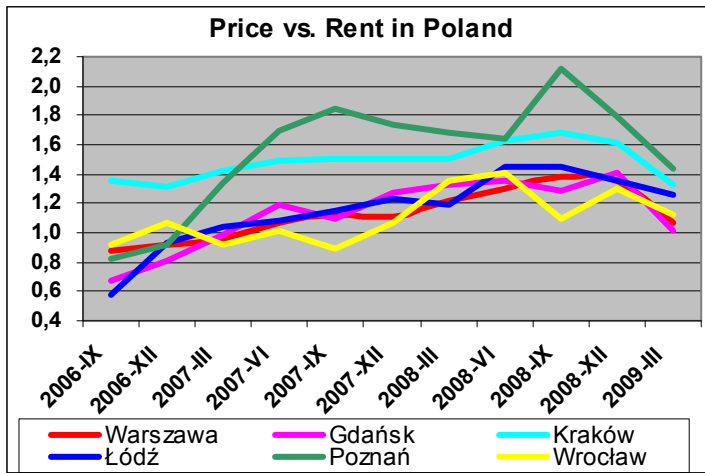
Chart 15-16.



Source: GUS, NBP, PONT Info

Another, commonly used measure of disequilibrium in the housing market is the comparison of house ownership and house rental costs. Rental cost may be approximated with the amount of rental, while the house ownership cost is estimated on the basis of interest on housing loan (without capital payments). In the long-term equilibrium in the housing market where house rental substitutes for its ownership, this ratio should be close to one. In some cities in Poland, this ratio considerably exceeds one (Cracow, Poznań – Chart 5), which may point to the expectations of rising house resale price included in the market price. This may suggest a speculative element included in the market price in these markets, yet, it is difficult to assess whether this results from fundamentally justified expectations of rising house prices in the future or not. It should also be emphasized that due to the relatively shallow market of tenement houses in Poland (*inter alia*, due to the application of the Tenant Protection Act) and limited availability of reliable data on this market, interpretation of the above two ratios is subject to great uncertainty.

Chart 17.



Source: GUS, NBP

The values of the above measures of the price bubble have been presented in standardized form, thus creating a ranking of bubble risks in the largest housing markets in Poland. The results of standardization and ranking are presented in table X. Fundamental factors, additionally taken into account in the total risk assessment, albeit not discussed in detail in the paper, have been estimated on the basis of other studies.

Table 5. Comparison of measures of bubble in the housing market of 6 major cities in Poland and related risk for the banking sector.

	Warsaw	Gdańsk metropolitan area	Cracow	Wrocław	Poznań	Łódź
Rapid price growth	1	1	1	1	1	1
Expectations of price growth and related behaviour	1	1	1	1	1	1
Credit expansion	1	1	1	1	1	1
P/I ratio – level and growth	1	0,5	1	1	0,5	0,5
P/R ratio – level and growth	0	0	1	0	0	0
Offer for average sale						
Price as discounted	0	0	1	0	1	0

rental yield						
Share of profit	1	0,5	1	1	1	0,5
International comparisons	1	1	1	No data (0)	No data (0)	No data (0)
Fundamental factors	-1	-1	-1	-1	-1	1
Sum	4	3	6	4	3,5	4
Ranking according to the risk level	2	4	1	2	3	2

4. Bubbles and the banking sector and economic risk. Projected scenarios of developments.

Housing market slump being the result of bubble burst usually brings about two indirect effects: bankruptcies of property developers and decline in housing investment leading to a fall in GDP growth and problems in the banking system. The banking system usually suffers losses on loans granted to property developers and on mortgage loans as a result of house value falling below the debt value and some borrowers ceasing to service their debt. The Polish market faces an increased risk as a result of high share of foreign currency denominated loans in the housing loan portfolio, namely as a result of foreign exchange risk.

Table 6 shows basic measures of sensitivity of the economy to mortgage risk, and table 7 shows the scale of risk connected with bubble burst.

Table 6

Years	2002	2004	2006	2008
Housing loans in the assets of the banking sector	4,3	6,6	11,4	18,5
Doubtful housing loans in regular mortgage		2,7	1,2	1,0
Capitalisation of the banking sector in Poland		15,4	13,2	11,2
Housing loans to GDP	2,6	3,9	7,3	15,1
Housing construction in GDP		1,6	1,6	2,2
Projects made by Developers in GDP		0,2	0,3	0,4

The share of housing loans in GDP is significant, yet the current portfolio quality is good. Assuming even considerable deterioration of this quality, housing loans should not threaten

the stability of the financial system considering its high capitalisation. Assuming even the most pessimistic scenarios, portfolio restructuring costs, usually financed from the current GDP, would not be high. Also the impact of significant decline in property developer construction, the second effect of bubble burst, causes insignificant GDP revision (approx. 1 %).

Bubble risk for the banking sector is determined in a more precise way in the table below. This corroborates the previous findings.

Table 7

Percentage share of loans in areas exposed to bubble risk	35
Percentage share of loans in areas exposed to bubble risk granted in the years 2007-2008	33

Another factor of the analysis is the assessment of future trends in the housing market. In the optimistic variant, developers have over 60% of projects sold which will enable them to spread sales and profit realization over the period of 2-3 years and wait for fundamental demand to drive sales of the existing housing stock. Prices will fall by 10% and, combined with inflationary depreciation, will slightly boost demand. Speculative investors will rent flats, or, if they are in a good financial condition, they will wait through the difficult period. A considerable decline in investment outlays will take 2-3 years.

In the pessimistic variant, bad economic condition of property developers and investors, combined with further fall in demand as a result of deteriorating general economic situation will lead to devastating competition in the housing market. As a result, prices will see a deep fall, at least by 30%. Such large house sales will, however, lead to a strong recovery in demand, and the market will regain its balance within a year. A fall in investment outlays will take 1-1.5 years.

The in-between variant assuming a price fall of 15-20%, a gradual recovery in demand and the market regaining its balance within 1.5-2 years, seems the most likely. Investment outlays are likely to be expected. Such a variant would lead to the worsening in housing portfolio quality, albeit without a significant impact on the banking sector stability. Also the resulting decline in GDP would not be significant.