NBP Narodowy Bank Polski

Report on the situation in the Polish residential and commercial real estate market in 2013

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Summary

This Report presents analyses and surveys of the real estate market in Poland, which lead to the following conclusions:

- It may be assessed that in 2013 the situation in the primary residential property markets was close to the equilibrium level. The situation in the existing housing stock markets (secondary markets) deteriorated somewhat for the buyers, which is indicated by the extended home selling time. The residential market is currently undergoing a recovery phase and its further development will depend on the macroeconomic situation.

- Average offer prices per square meter of average housing in the primary and secondary markets in all the cities remained stable.

- Transaction prices per square meter of housing in the primary and secondary markets in seven cities and nine cities also remained stable. In Warsaw average transaction prices per square meter of housing in the primary and secondary market exhibited minor increases in 2013. 2014 Q1 brought a slight decline in prices in the Warsaw market and a further stabilization of prices in other analyzed markets.

- In all the analyzed cities prices per square meter of housing in the primary market exceed those in the secondary market. The differences in these prices are not significant, although the primary market usually offers housing of better quality that the already existing housing.

- In 2013, the number of completed housing units was by 7.8 thousand lower than in the previous year, yet the number of completed dwellings is still high. The number of new building permits issued and the number of commenced investment projects hit the lowest level since 2006. In the second half of 2013, the number of commenced investment projects exceeded the level recorded in the corresponding period of 2012. At the same time, real estate developers have adapted new housing to the preferences and financial capacity of consumers offering more small and medium-sized flats.

- For the past few years, real estate developers have adjusted the number and the size of housing units in the primary market, which resulted in a gradual decline of the surplus accumulated in the previous periods. In 2013, the number of completed real estate developer housing units pending sale decreased, reaching a level that can be sold over a period of approx. 4 quarters. This level is assumed as a benchmark equilibrium in the primary market.

- A gradually increasing demand was another factor behind the reduction in the accumulated surplus of housing supply. Although demand driven by such demographic factors as rising number of marriages and new households has ceased, growing household incomes continued to be an important factor boosting demand. The time needed to sell housing in the primary market in selected voivodship cities shortened.

- Mortgage loans and their availability are among the most important factors determining the demand for housing. In 2013, the number and the value of PLN mortgage loans increased, driving up the total volume of housing loans. Since 2011 the accumulation of risks associated with foreign currency loans has been reduced. In November 2013, for the first time since 2002, the share of zloty denominated loans exceeded 50% of the total mortgage loans portfolio.

- In the analysed period the ratios of loan-financed housing availability improved, which was driven by a growth in wages and a significant reduction in interest rates on new housing loans in PLN.

- In 2013 there were no government-subsidized housing schemes in place. The *Housing for the Young* (*Mieszkanie dla Młodych*) scheme came into effect in 2014 and replaced the repeatedly modified and criticized *The Family on their own (Rodzina na swoim)* scheme. This scheme generated an additional few percent demand for housing.

- Rents in 2013 in the analysed voivodship cities remained close to their 2012 level, with slight fluctuations in particular quarters. 2014 Q4 brought a slight increases in average rents, the highest ones in Łódź and Wrocław.

- As a result of historically low interest rates on zloty-denominated housing loans in 2013 in large cities it was more profitable to purchase loan-financed housing than to rent housing, as indicated by the ratio of interest expenses on mortgage loan to rental payment.

- The quality of loans to developers is low (approx. 28% of the value of granted loans considered as impaired loans however these loans account for less than 4% of lending banks' assets. Capitalization of the real estate development sector is, however, high (own equity accounts for approx. 40% of the companies' balance sheet total), and bankruptcies are less frequent than in the previous years.

- The commercial real estate sector, namely the retail, office and warehouse space market, is facing growing imbalances. The year 2013 was another year of a rapid growth in the supply of new office and retail space. The increase in the value of investment transactions in this market was accompanied by growing vacancy rates. In the case of loan-financed real estate, it can mean a growing credit risk amidst lower quality collateral.

- The findings of partial analyses conducted separately for 16 voivodship cities support the conclusions of the analyses carried out at the national level. In 2013, all the 16 analysed cities in Poland reported an improvements in the housing situation, i.e. growth in the housing stock per 1000 inhabitants, increase in the average area of housing in the housing stock per person and decrease in the average number of persons in a housing unit. The improvement of the housing situation differed across local markets, yet it was largely driven by unfavorable demographic changes, declining number of marriages and migration. In the analysed cities, home prices stabilized, and the effects of economic shocks observed in the previous years faded away.

Introduction

The real estate market has strong correlations with other sectors of the economy (particularly with the financial, real estate development and construction sectors). These correlations are crucial to macroeconomic and financial stability. Therefore, the observation and analysis of the developments in the real estate market is vital for the analyses of financial stability and macroeconomic imbalances conducted at NBP.

The Report aims to provide the stakeholders, including real estate market participants, with fairly complete, reliable and objective information on the situation in the residential and commercial real estate market in Poland.

The Report focuses mainly on the 2013 phenomena, which directly impact the current situation. Yet, whenever justified, backward-looking insight was also provided.

Due to the local nature of housing markets, similarly as in the previous editions of the Report, the Report provides in-depth analysis of sixteen markets of voivodship cities broken down into: Warsaw, 7 cities (Gdańsk, Gdynia, Kraków, Łódź, Poznań, Szczecin, Wrocław) and 9 cities (Białystok, Bydgoszcz, Katowice, Kielce, Lublin, Olsztyn, Opole, Rzeszów, Zielona Góra)[1].

The analysis of offer, transaction and hedonic prices per square meter of average housing in the primary and secondary market and analysis of the commercial real estate market are based on data obtained by analysts from the Regional Branches of Narodowy Bank Polski under the survey of the housing market Real Estate Market Database (BaRN) and commercial real estate market (Commercial Real Estate Database (BaNK)[2]. As the survey covered a variety of agents operating in the market (agents, developers, housing co-operatives, municipal offices, consulting companies), it allowed its authors to obtain extensive information[3].

The study also relied on the database by PONT Info Nieruchomości (PONT) containing data on offer home prices, the SARFIN database of the Polish Bank Association containing data on housing market financing and AMRON database containing data on housing appraisal and transaction prices of mortgage-financed housing. The authors drew on the reports issued by the Polish Financial Supervision Authority (KNF) as well as aggregate credit data released the Credit Information Bureau (BIK). The statistical data published by the Central Statistical Office (GUS) and

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[1] This breakdown results from the number of inhabitants registered in a city and the size of a particular property market.

[2] See "Programme of statistical studies for public statistics for 2013. Appendix to the Ordinance of the Council of Ministers of 9 November 2012 on the programme of statistical studies for public statistics for 2012 (Dz. U. [Journal of laws] No 173, item 1030)." The study of residential real estate prices in Poland's selected cities, ref. 1.26.09(074), is conducted by the President of Narodowy Bank Polski.

[3] The data collected by NBP Regional Branches in the BaRN database since 2006 Q3 during 31 quarterly surveys; after 2014 Q1 there are about 1.1 million records in the BaRN database. Detailed information on the BaRN database is provided in Chapter 4 - Convergence and differentiation processes in local markets and structural changes (comparison of 16 property markets in Poland).

analyses including sectorial data have been used in the structural analysis[4]. The authors also made use of the findings of the "Social Diagnosis" survey conducted by the Social Monitoring Council and the results of the surveys by the Public Opinion Research Centre (CBOS) and TSN Polska. The data concerning transactions in the commercial real estate market are drawn from the Comparables.pl. database. The information about the commercial real estate market is also based on data provided on a voluntary basis by commercial real estate brokers, as well as real estate management and consulting companies. The analysis was supported with knowledge of experts of particular agencies[5].

Although many sources of information were explored, missing data or insufficient quality of data have proved a significant barrier. In such situations, the authors relied on estimates verified on the basis of expert and specialist opinions.

Technical terms, defined in the glossary of terms and abbreviations following the first part of the Report, are marked with '#'.

The Report presents the developments that took place in Poland in 2013 in the residential and commercial property sector. It highlights the main directions of changes in the real estate markets and identifies the factors affecting these changes. It analyses the process of reaching an equilibrium in the housing market. The Report also draws attention to the financial capacities of home buyers and discusses the impact on the absence of government-subsidized housing schemes in 2013 on housing demand. The authors described the phenomenon of stabilization of offer and transaction prices in the primary and secondary markets of the analysed cities. They presented the results of surveys of home rental being an alternative to homeownership. The authors presented the estimates of housing supply and demand, relying, among others, on the number of transactions recorded in the NBP database. They discussed the most important developments in the commercial real estate market, drawing attention to a significant increase in the supply of properties that does not correspond with an adequate increase in demand, leading to a growing vacancy ratios. The analyses included factors affecting transaction price per square meter of commercial space for rent. The last point discussed in the Report are convergence and differentiation processes and structural changes in the 16 local real estate markets in Poland.

The Annex to the Report presents detailed information about the residential and commercial property markets in each of the 16 analyzed cities, capitals of Poland's voivodships.

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[4] This concerns, in particular, Sekocenbud studies on the structure and costs of construction, research conducted by the company Real Estate Advisory Service (REAS) on home prices and the real estate development sector, of the Polish Construction Research Agency (*Polska Agencja Badawcza Budownictwa* (PAB)) concerning the construction sector and many other entities and associations operating in this market. The most important ones included the Polish Association of Polish Banks (*Związek Banków Polskich*), the Polish Real Estate Federation (*Polska Federacja Rynku Nieruchomości*), the Association of Employers – Producers of Construction Materials (Związek Pracodawców-Producentów Materiałów dla Budownictwa) and many others.

[5] The authors relied on the data and information provided by the following agencies: CBRE, Colliers International, Cushman & Wakefield, DTZ, JLL, Knight Frank and associations: Retail Research Forum, Polish Council for Shopping Centres (*Polska Rada Centrów Handlowych (PRCH)* and Warsaw Research Forum.

1. The real estate market in Poland in 2013

1.1. The situation in the real estate markets

In 2013, as in the past few years, the situation in the real estate markets followed a gradual stabilising trend after a period of tensions in the years 2006-2008. This stabilisation was fostered by the temporary slackening of economic activity, the end of lending in foreign currency as well as the absence of government-subsidized housing schemes. The situation in the primary real estate markets in 2013 was close to equilibrium, which is indicated by the stable price per square meter of average housing, the declining number of homes in the sale offer and a shorter selling time. The situation in the existing housing stock markets (secondary markets) was stable. Home purchasers were offered a wider choice of housing. The situation of home sellers in the secondary market slightly deteriorated, which is demonstrated by the extended selling time of the existing housing stock. It can be assessed that as a result of these developments the residential market of the largest cities in 2014 Q1[6] was close to equilibrium and the probability of considerable decline in home prices is insignificant. Data from the NBP database indicate that in 2013 the number of housing units sold was on the rise, both in the primary and in the secondary market. It can be assessed that the residential market is currently in the recovery phase and its further development will depend on the macroeconomic situation.

On the other hand, the commercial real estate market, i.e. commercial and retail space as well as office and warehousing space, faced growing imbalances. This segment recorded a very rapid increase in fixed assets largely financed by foreign capital inflow. The growing supply may result in price adjustments which, in turn, may have an adverse effect on the condition of creditors and investors in this market.

1.2. The residential real estate market

### General assessment of the equilibrium in the residential market

The residential markets, like the commercial real estate markets are of local nature. It means that the impact of local demand and supply factors may be significant enough to considerably disturb the impact of macroeconomic factors. The structural feature of the real estate markets is their cyclical nature. The housing market cycles are often not synchronised with the business cycle, however, they are affected by economic factors, including longer financial cycles[7] and they are also usually of local nature. It can be assessed that in 2013 in the markets of the largest cities local factors played an important role. Accordingly, the pace of developments differed, with the prevailing impact of economic factors.

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[6] In figures we use abbreviated dates - I 2013 means the first quarter of 2013.

[7] See, inter alia, C. Borio "The financial cycle and macroeconomics: What have we learnt?", BIS Working Papers (2012).

One of the significant economic factors common for all the residential markets was the impact of the domestic monetary policy. In 2013 the Monetary Policy Council lowered the NBP interest rates on six occasions. This affected the interest rates of both deposits and bank loans (see Figure 1 and 2). At the same time, commercial banks slightly tightened their mortgage policy[8], which, however, did not dampen growth in the number and value of new housing loans.

Figure 1 Interest rates in the financial market in Poland
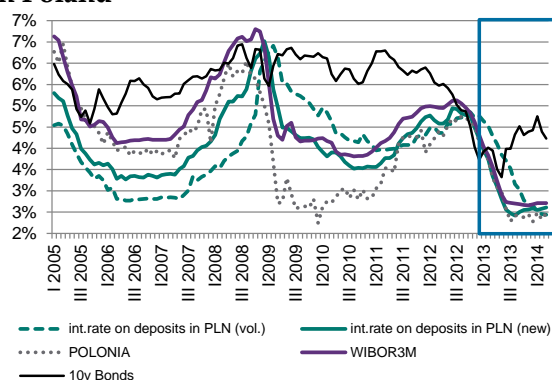
Figure 2 Interest rates on housing loans in Poland
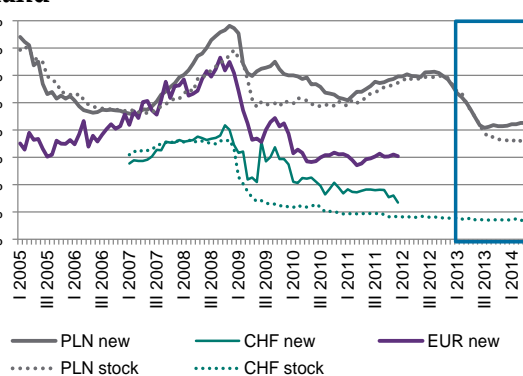
Source: NBP, MF, reuters.pl.   Source: NBP.

Housing availability calculated in square metres to be purchased for the average monthly wage in the enterprise sector has been on the rise since 2007 (see: Figure 6), which is driven by a growth in wages in the analysed period and stabilisation of nominal prices per square metre of housing. The indicators of housing availability at a level of 0.7–1 sq. m for the average wage do not indicate any major imbalance in this market.

The price-to-rent ratio[9] (*P/R ratio*) also does not point to an excessively high level of home prices (cf. Figure 4). Although the low P/R ratio largely results from low interest rates, it did not show price tensions even in the case of higher level of interest rates, as previously observed.

In 2013 the costs of mortgage loans for consumer, as deflated with CPI decreased. The decrease was even more significant when costs were deflated with the annual wage growth in the enterprise sector, particularly, in the case of subsidised loans (see Figure 5).

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[8] See: "Senior loan officer opinion survey on bank lending practices and credit conditions", NBP, July 2014

[9] However, it should be added that the official market of homes for rent in Poland is limited at the moment, therefore, the P/R ratio may be subject to some uncertainty.

Figure 3 Ratio of average value of housing (according to transaction price) in the primary market to the annual income (P/I#)
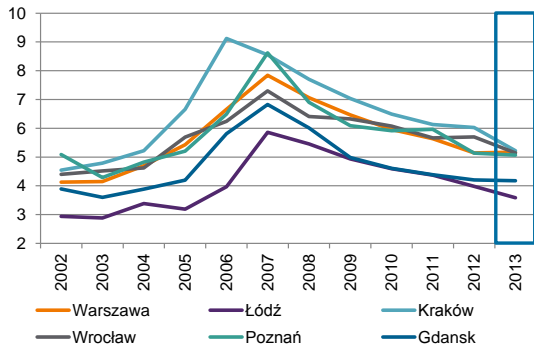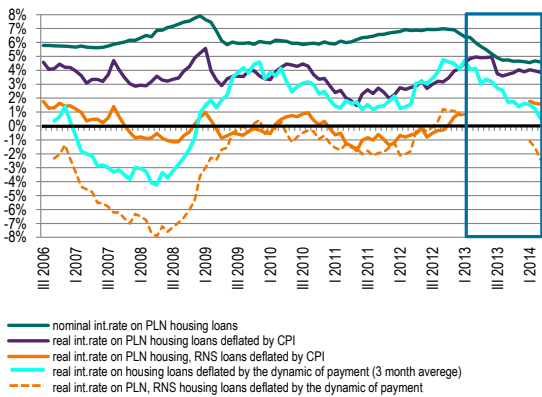

Source: NBP, GUS.

Figure 4 Relation of interest costs on a housing loan to rent, per 1 square metre (P/R#)
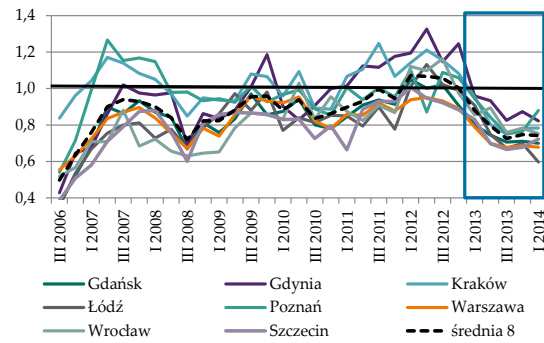
Note: excluding maintenance costs.

Source: NBP, GUS.

Figure 5 Real costs of housing loans for consumer deflated with CPI or wage growth (YoY) in the enterprise sector

Note: values below 0 mean the negative real interest rate for the borrower; in 2013 no government–subsidised housing schemes were available, i.e. the RNS scheme (effective until end of 2012) and the MDM scheme (launched in 2014).

Source: NBP, GUS, BGK.

Figure 6 Housing availability in terms of one square meter of housing for an average wage in the enterprise sector
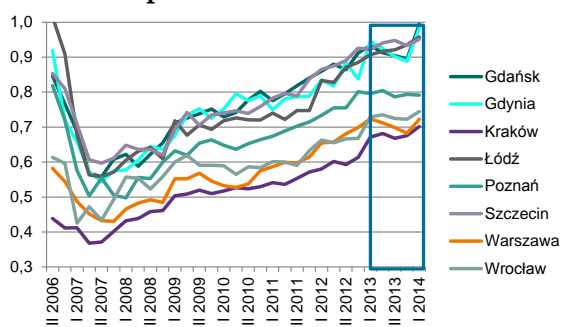
Source: NBP, GUS.

Figure 7 Available weighted* mortgage loans and accumulated index of changes in banks' lending policy criteria (ZKPK#)
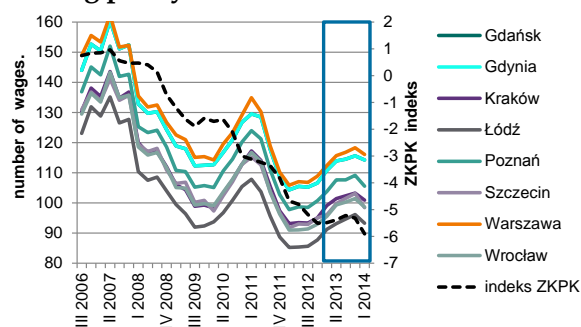
Note: weighting with the currency structure of the quarterly loan increase; since 2012 practically only PLN denominated loans.

Source: NBP, GUS.

The correlation between housing demand and changes in loan availability and availability of loan-financed housing is significant but delayed in time and variable in strength. The practical withdrawal of foreign currency denominated loans increased the strength of the impact of domestic monetary policy on the housing sector and halted the accumulation of credit risk associated with open FX position of borrowers. The cuts in interest rates were reflected in the increased availability of housing loans and growing demand. The analysis of the real level of housing loan disbursements, conducted on the basis of debt increases and maturity of loans indicates that, both the period of the past three years and the second half of 2013, posted a systematic growth in loan disbursements, which contributed to a steady increase in sale of developer contracts for housing construction.
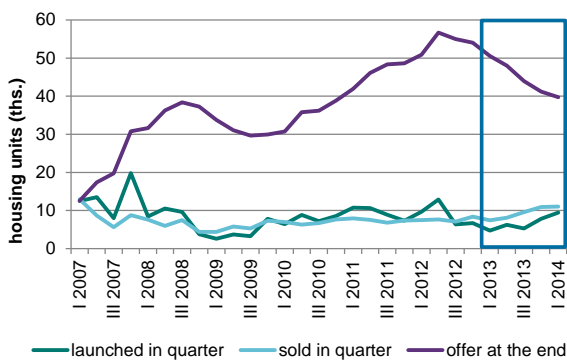
The years 2008-2013 brought a decrease in the ratio of the price of an average dwelling to the average annual income of buyer (P/I), resulting from the decline in average home prices and increases in average annual income. This ratio, which may be considered as a certain measure of tensions in the market, recovered to the level close to the values noted before its dynamic growth in 2006-2008 (see Figure 3).

The beginning of 2013 may be considered as the end of the adjustment process of real estate developer companies following the 2006-2008 demand shocks. This adjustment was postponed by the raised price limits of the RNS Scheme which supported increased demand for residential real estate in the years 2009-2012. On the other hand, at the end of 2013 it was already possible to see the first signs of the recovery phase. In 2013, the number of offers put on the market showed a slight growth, however, the increase in the volume of sales, financed both by cash and by loans,

was faster. Home prices guaranteed sufficient rates of return on residential construction projects for real estate developers[10] to ensure housing production, which means that the primary market was relatively balanced.

The depletion of developers' stocks of ready, unsold housing to the level of an annual production, i.e. the level adopted as the equilibrium level in this market, may be considered as the most important indicator determining changes of the situation in the primary market of residential real estate. The gradual growth of demand and sale of housing, mainly less expensive housing, was one of the factors behind the depletion of housing stock (see Figures 8, 9 and 29).

Figure 8 Housing units placed on the market, sold and on offer in 6 biggest markets* of Poland

*Warszawa, Kraków, Trójmiasto, Wrocław, Poznań, Łódź.

Source: REAS.

Figure 9 Selling time of housing units on offer in PM in selected cities

Source: NBP based on REAS.

Figure 10 Selling time of housing units in SM in selected cities
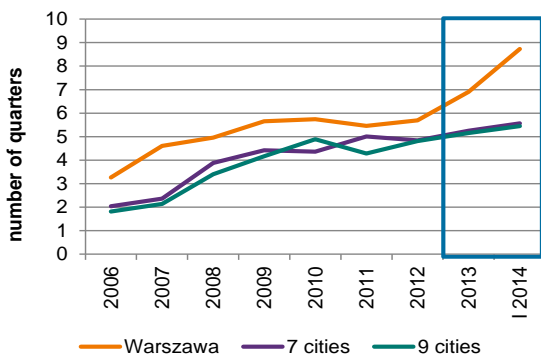
Source: NBP.

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[10] Details of analysis of the developer project in the article " Real estate development enterprises in the Polish market" and issues related to its analysis, in the "Report on the situation in the Polish residential and commercial real estate market in 2011", NBP 2012.

Prices

Stabilisation of prices in the primary and secondary markets confirms that the shocks and tensions in the market driven by the mismatch between demand and supply, including the absence of adjustment of the housing structure in terms of usable area of housing are gradually fading. The increase in the ratio of transaction prices per square meter of housing in the primary market to transaction prices in the secondary market, observed since the beginning of 2013 (see Figure 19) may indicate that the government-subsidized MDM scheme[11] is factored in by the primary market only.

Data on the offer and transaction prices, including the real estate description, originating from the BaRN database, enable to perform an in-depth analysis of the housing market. In the markets of 9 cities the increases in transaction prices per square meter in the period 2006-2008 were lower than in the large markets of Warsaw and 7 cities, which experienced only a limited rebound in lending. Moreover, in smaller cities high demand for apartments was partly shifted to single-family houses. In 9 cities the difference between transaction prices per square meter of housing in the primary and secondary market remained relatively stable. In all the analysed cities the average nominal offer prices per square meter of housing were stable in the discussed period (see Figure 11).

At the same time, nominal transaction prices per square metre of housing, both in the primary and in the secondary markets in 7 and 9 cities were stable (see Figure 13). On the other hand, the Warsaw market posted a slow decline in transaction prices per square metre in 2007-2012 and an increase of these prices in 2013 (see Figure 14). The data analysis indicates that in the Warsaw market, average prices per square meter of housing were on the rise in the majority of usable area ranges. Mainly housing in prime location was sold, both for own residential and investment purposes. In 2014 Q1 the situation in Warsaw reversed – prices started to decline once again.

As the composition of the sample of housing units analysed in the BaRN database is subject to qualitative and quantitative changes[12], also prices adjusted by the hedonic index are analysed[13]. The results of the analysis indicate that in a long-term, prices in the markets remain stable. On the other hand, the observed short-term fluctuations result from the change in the structure of the

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[11] The MDM scheme, despite the conservative price limit, generated additional demand for housing, estimated at the level of several per cent.

[12] In each of the periods, the quality and location of sold housing changes. Moreover, in the periods of rapid growth in housing prices, the number of transactions exceeds the average number.

[13] The price adjusted with the hedonic index is a "pure" price, i.e. resulting from other factors than differences in housing quality (size, location, technical condition, age, etc.). The price of a standardised dwelling, based on the econometric model, is always analysed. It adjusts the average price from the sample with a change in quality of housing in the sample in each quarter. This distinguishes it from the average price or median growth in the sample which would strongly react to a change in the sample composition, e.g. by a higher number of small housing units with a higher price per square metre. More information in the article by M. Widłak (2010), *Metody wyznaczania hedonicznych indeksów cen jako sposób kontroli zmian jakości dóbr* [Methods of determining hedonic price indices as a way to control changes in goods quality], „Wiadomości Statystyczne" [Statistical News] No 9.

analysed sample (i.e. the size of the sample and qualitative change in the market offer as well as increase or decrease in the number of more expensive housing).
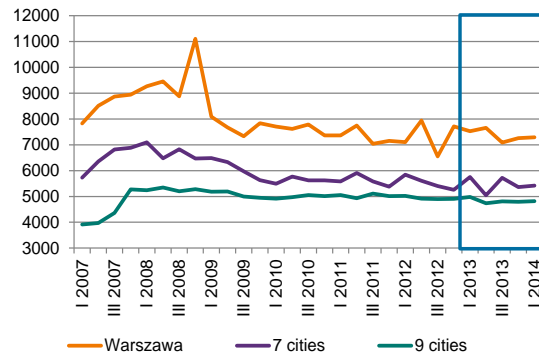
Since 2007 average home prices calculated on the basis on the hedonic model have demonstrated a downward trend, however, in 2013, these prices were stable (cf. Figure 15 and Figure 16).

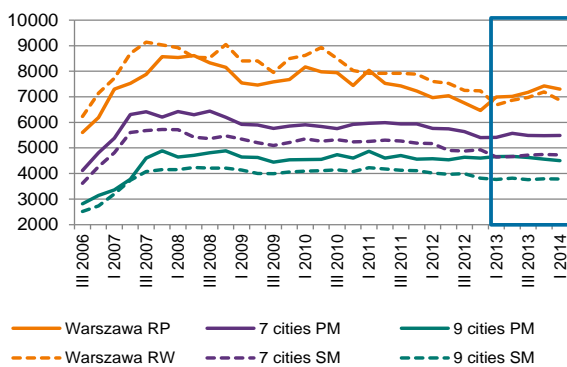**Figure 11 Offer prices per sq. m of housing in the primary and secondary market**
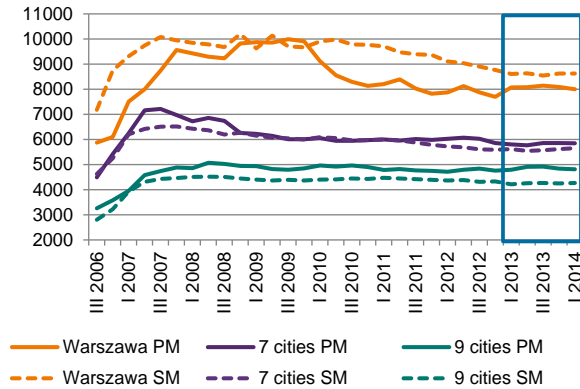
Source: NBP.

Figure 12 Offer prices per sq. m of new housing put on the primary market for the first time

Source: NBP for 9 cities, REAS for Warsaw and 7 cities.

Figure 13 Transaction prices per sq. m of housing in the primary and secondary market

Source: NBP.

Figure 14 Transaction prices per sq. m of housing in the secondary market of selected cities
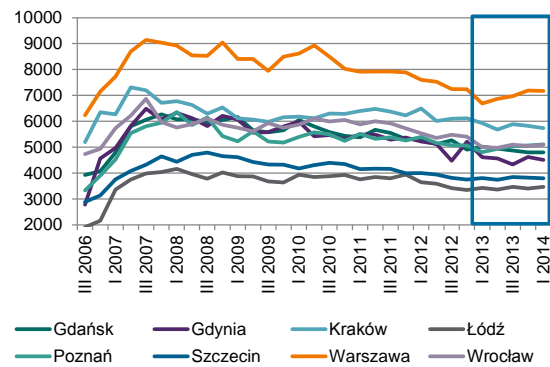
Source: NBP.

In all the analysed cities, prices per square meter of housing in the primary market exceeded prices in the secondary market, which can be explained by a better quality of new properties. It is worth stressing that as a result of a certain growth in demand, in 2013 Warsaw, the largest developer market in Poland, saw a structural change, namely, new developer housing became more expensive than those included in the existing stock (see Figure 19). This may indicate that also in Warsaw, where the secondary market offers housing in good locations whose size is well adjusted to the financial capacity of purchasers, developers managed to tailor their offer to consumers' needs.

Slightly faster drops in real prices per square metre were observed as a result of accelerating wage growth (YoY) in the enterprise sector and rising inflation (CPI). The analysis of prices in real terms shows that prices in the primary and the secondary market approached the prices recorded before the period of tensions (cf. Figure 17 and Figure 18).

Figure 15 Transaction prices for a 1 sq. m of housing in the secondary market and adjusted for housing quality (hedonic prices)
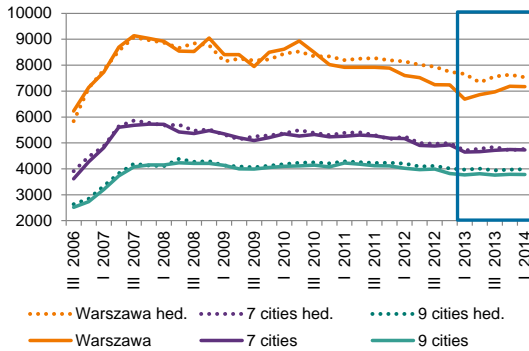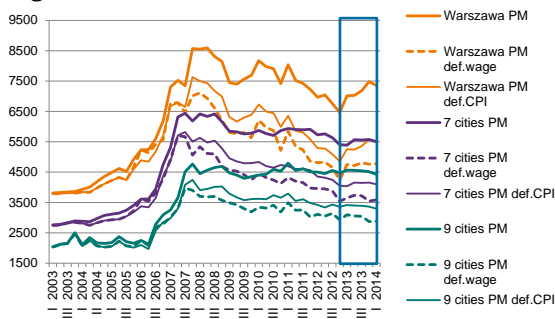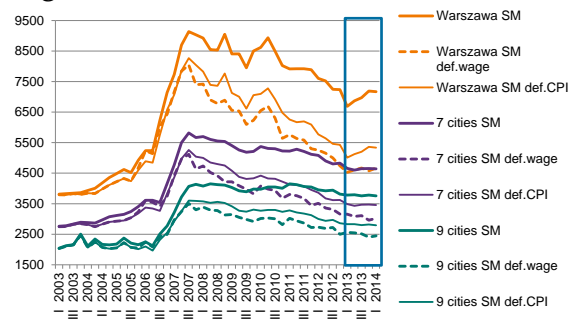

Source: NBP, GUS.

Figure 16 Transaction prices for a 1 sq. m of housing in the secondary market and adjusted for housing quality (hedonic prices)
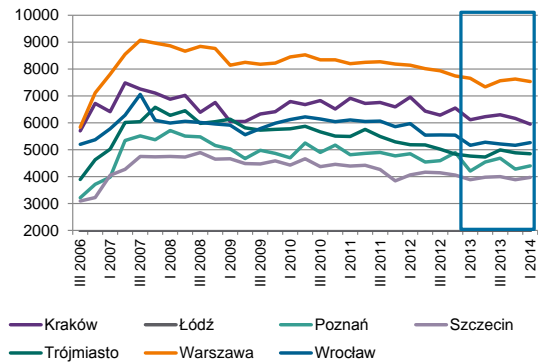
Source: NBP, GUS.

Figure 17 Average transaction prices in the primary market in selected cities and the ratio of real prices to year-on-year growth in wages and CPI

Source: NBP, GUS.

Figure 18 Average transaction prices in the secondary market in selected cities and the ratio of real prices to year-on-year growth in wages and CPI

Source: NBP, GUS.

Figure 19 Ratio of average transaction prices of housing in PM to SM
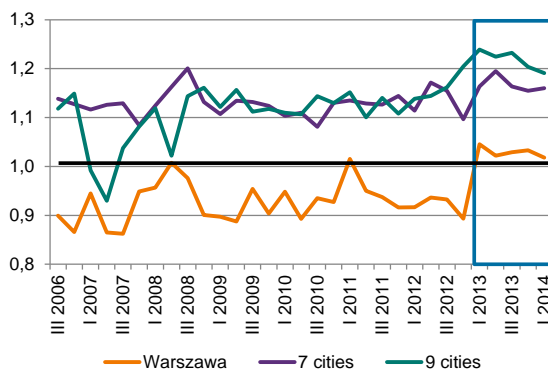
Source: NBP.

Rents

Rents demonstrate a long-term stability (see Figure 20). As in the previous years, they fluctuated slightly in particular quarters. In 2013, it was possible to observe a minor growth in rents in Łódź and Wrocław, whereas in other cities they remained stable.

In all large cities, loan servicing costs were lower than rental costs (P/R ratio, see Figure 4). Low interest rate on PLN denominated housing loans encouraged households to purchase residential premises instead renting. On the other hand, the current level of rents ensures higher rates of return on investment in housing as compared to investment in bonds or bank deposits, and similar rates of return on investment in commercial real estate (cf. Figure 21). However, it should be noted that relatively high cost of maintenance of the rental housing stock and the risk related to dishonest tenants as well as low liquidity of the assets, have not been taken into account in the analysis.

Figure 20 Average (offer and transaction) rents of housing in selected cities
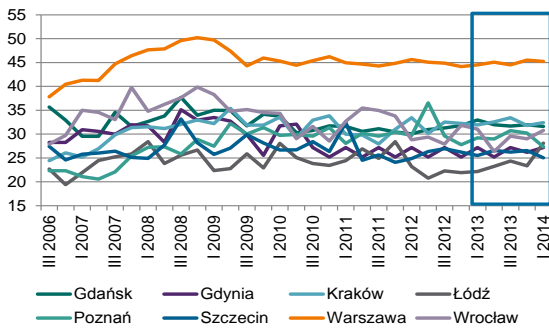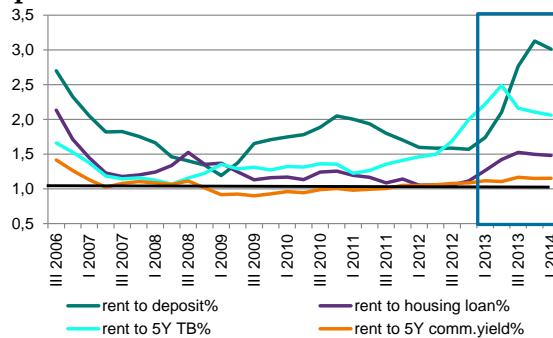
Figure 21 Profitability of housing rental as compared to deposits and housing loans of households, 5Y TB and capitalisation rate of commercial real estate (office and retail space)

Source: NBP.

Note: the values exceeding 1 mean higher profitability of investment in housing built for rental purposes as compared to other capital investments. This analysis does not take into account high transaction costs in the housing market and the potentially long time necessary to exit from investment.

Source: NBP, GUS, Comparables.pl.

Supply

As a result of the previously observed problems in selling the completed housing units, real estate developers significantly restricted the launch of new projects in 2013. At the same time, they adjusted the usable housing area in the new offer to the purchasing power of clients. It means that their offer included more housing units of up to 50 sq. m which were the most sought for by purchasers.

The primary market (developer housing) in the largest cities practically recovered to its equilibrium level following six years of surplus of housing supply over demand. It is indicated, among others, by the decline of the average selling time of the current market offer of housing below the period of four quarters (see Figure 9). Such a long period of reaching equilibrium resulted mainly from the scale of tensions in the years 2006 – 2008, which additionally overlapped with the impact of some regulations[14]. Developer housing units are currently adjusted to the purchasing power of clients, which means that small apartments dominate in their structure.

In 2014 Q1 the developer sector was undergoing recovery and its further development will depend on the macroeconomic situation of the economy. There are no price disparities which would threaten a collapse in prices and, consequently, decline in production and increased losses of banks granting housing loans. Production of housing was profitable, thus encouraging developers to launch new investment projects. Developer companies demonstrate a good capitalisation rate (equity account for approx. 40% of the balance sheet total), have the required experience in overcoming bureaucratic obstacles and possess numerous construction sites (see Figure 22 and Figure 23). Mortgage lending is also profitable for banks[15].Accumulation of risk associated with currency denominated loans has also been halted. On the basis of international comparisons it can be assessed that the housing stock is adequate to the GDP level.

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[14] E.g. Tenancy Act (Act of 21 June 2001 (Journal of Laws no. 71, item 733) *on the protection of tenants' rights, the municipal housing stock of and the amendment to the Civil Code*) and the government-subsidised housing scheme: *"Family's on their own" (Rodzina na Swoim)* (RNS) (Act of 27 September 2013 *on state aid in purchasing the first housing by the young people* (Journal of Laws of 2013, item 1304)).

The assessment of changes in the regulatory environment and their impact on the real estate market is presented in the Report on the situation in the Polish residential and commercial real estate market in 2012.

[15] As regards the issue of risks associated with lending in foreign currencies see, e.g. *P. Szpunar, A. Głogowski* Lending in foreign currencies as a systemic risk,
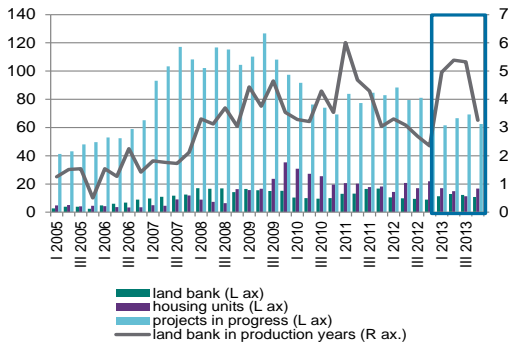
https://www.esrb.europa.eu/pub/pdf/commentaries/ESRB_commentary_1212.pdf?d14b7c120a2196145bf390942f549583 *and* The Recommendation of the European Systemic Risk Board of 21 September 2011 on lending in foreign currencies (ERRS/2011/1) (2011/C 342/01).

Figure 22 DFD Economic indicators
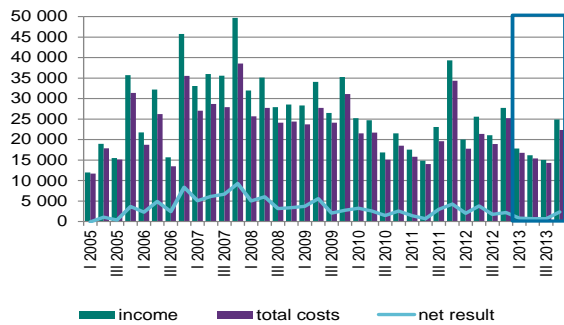
Source: NBP, GUS.

**Figure 23 DFD situation**

Source: NBP, GUS.

As a result of the gradually growing sale and decreasing volume of housing construction contracts on offer in the primary market, real estate developers started to launch new housing projects. As a consequence, after the periods of decline, the share of housing investment started to rise. The relatively high annual rates of return on equity in this kind of projects, estimated in the model at approximately 20%, were of key importance. Profitability indicators of developer companies, such as ROE and ROA remain at a significantly lower level of several per cent. It results from various factors, including the specific nature of the bookkeeping system used by developer companies, under which the sale of home construction contracts is not recognised as revenue. The revenue is settled only after a building is completed and commissioned. Other factors include various types of historic burdens of companies, arising from wrong decisions or tax optimisation.

The quality of developer loans for residential real estate remained low - in 2013 these loans considered by banks as impaired loans accounted for approx. 29% of the total number of loans granted to real estate developers (see Figure 24), however, bankruptcies are relatively rare. Housing loans represent less than 4% of assets of the banks granting them.
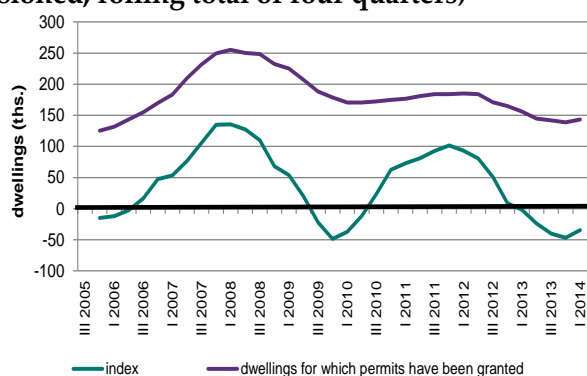
Figure 24 Real estate loans for enterprises (in PLN billion, left-hand axis) and impaired loan ratio (in %, right-hand axis)
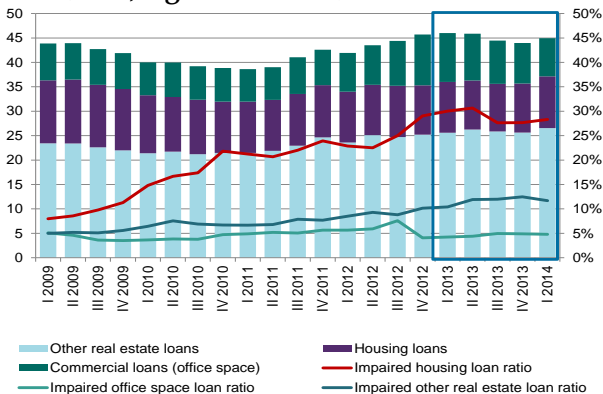
Note: Exclusive of BGK.

Source: NBP.

Figure 25 Business cycle indicators of housing production in Poland (housing units started less housing units completed and commissioned; rolling total of four quarters)


Figure 26 Estimated ROE from investment projects in selected cities and the reported rate of return of large development companies (DFD)


Source: NBP based on PAB, GUS.

Source: NBP, Sekocenbud, GUS.

The number of housing units completed in Poland in 2013 reached 145.1 thousand and although it was lower by 7.8 thousand than the number recorded in 2012, it was still high from historical perspective (see Figures 25). In 2013 the number of newly commenced housing projects was lower by 14.4 thousand as compared to the previous year (127.4 thousand), however, in 2013 Q2 the downward trend was reversed. If growth in supply continues, it will be the factor limiting price increases. This phenomenon requires further observation. In 2013 the number of issued building permits for housing construction was lower by 26.6 thousand than the number recorded in the previous year, hitting the lowest level over the last 8 years. It may indicate the adjustment of the number of new investments to the housing demand. However, it should be remembered that developers can start new construction projects based on permits obtained before.

The reliable and up-to-date information on the number of transactions in the secondary markets is missing, however, the average selling time of housing recorded in the surveyed real estate agencies may be considered an approximate indicator of the business cycle (see Figure 10). The prolonging time necessary to sell housing in the secondary market demonstrates the deteriorating situation of sellers in this market. Although the secondary market competes with the developer market with lower prices and often - a better location, however, it is not covered by government-subsidized housing schemes. The secondary market housing is often of inferior technical condition and not adjusted to the preferences and purchasing power of consumers. The offer of housing in the secondary market is a function of the housing stock structure, which comprises many medium-sized and larger apartments, whereas small housing units are currently the most sought for. The lack of demand for bigger housing may be assessed as a structural feature of the current phase of the cycle.
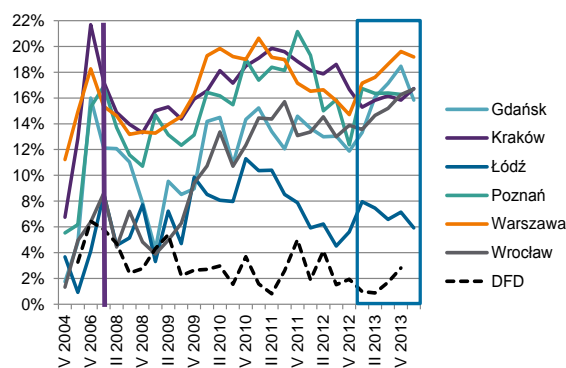
Demand

The gradual growth in housing demand was the consequence of the former nominal- and real-terms decline in home prices, increased income of households and reduced interest rate on loans and deposits. However, on the demand side, the main demographic factor has expired, namely, the number of new households, whereas income continued to rise.

The value of housing assets in Poland has been stable since 2011 which is indicated by the estimates[16] presented in Figure 27. At the same time, since 2007 the ratio of the value of the housing stock to GDP has been decreasing, due to the stabilisation of nominal prices of housing and the sustainable economic growth. At the end of 2013, the ratio of the volume of mortgage lending in Poland to GDP reached 20.2%, i.e. increased as compared to the previous year by 0.4 percentage points. (see Figure 28).

Figure 27 Estimated value of the housing stock

Source: NBP, GUS.

Figure 28 Estimated value of the housing stock, new housing construction and housing loans
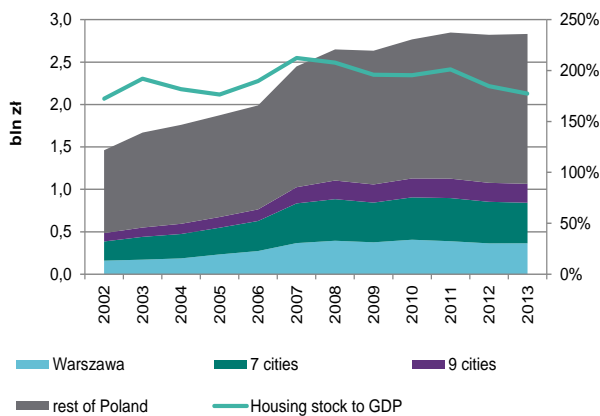
Source: NBP, GUS.

The situation of the Polish housing market is adequate to the GDP level, therefore, growth in income amidst unchanged preferences generates housing demand. The housing stock in Poland posts an insignificant debt level, therefore, as shown by international and domestic experience, its debt may be expected to grow further. This may indicate that the share of housing loans in GDP and the associated risk will grow in the coming years.

Housing loans and their affordability are among the most important factors of demand for developer construction. The long-term share of loans in financing developer housing purchases in the largest cities may be estimated at approximately 50% (in 2014 Q1 it dropped to 36%)[17].

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[16] The estimate was calculated by multiplying the total usable housing area for a given city by the transaction price in the primary market derived from the NBP database (BaRN), or the cost of construction per sq. m of housing for the remaining part of Poland.

[17] See "Information on home prices and the situation in the residential and commercial real estate market in Poland in 2014 Q1.", NBP 2014.

The growth in the volume of sales in the primary markets observed in 2013 was driven by increased availability and volume of housing loans amidst lower interest rates and financial incentives supporting the decisions on home purchase. In the Warsaw market, the share of small and medium-sized housing in the total sales was on the rise, since such housing was more affordable for the majority of purchasers (see Figure 29). The growth in home sales was more often financed by cash, however, it is difficult to clearly assess whether these were cash flows from home sales in the secondary market or investment purchases for rental purposes. The prolonging selling time in the secondary market would rather suggest that funds came from sources outside the housing sector. Home purchases became an attractive investment for better-off consumers, as income from bank deposits decreased, costs of loan-financed investment dropped and rental payments did not change. It could have encouraged households to undertake housing investments despite high transaction costs and limited liquidity of this kind of asset.

**Figure 29 Number of homes sold in Warsaw according to the usable area**
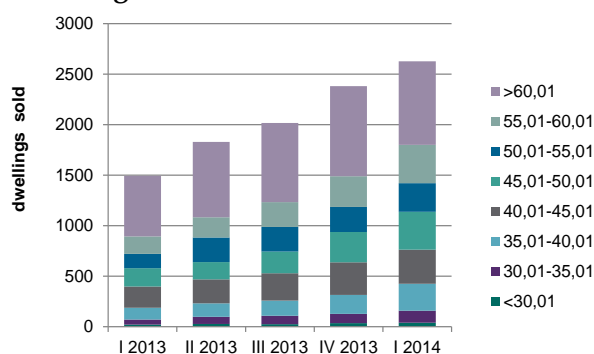
Source: NBP.

In 2013 the volume of PLN denominated housing loans continued to increase, whereas loans denominated in foreign currency were in the repayment phase. This has led to a further, gradual decline of their share in the total housing loan portfolio (see Figures 30 and 31). In November 2013, for the first time since 2002, the share of PLN denominated loans exceeded 50% of the total housing loan portfolio. This change is favourable from the point of view of the financial system stability. On the other hand, geographical structure of new PLN denominated housing loans has not changed significantly (see Figure 32 and 33). The increased share of new housing loans in the remaining part of Poland[18] results, to a large extent, from loan agreements concluded by the population migrating outside city limits, beyond city administrative boundaries. The share of new loans granted to home buyers from Warsaw, in the total loans all over the country, has slightly decreased, in terms of numbers and value, In view of the increased sales of housing in Warsaw it may be explained by the higher share of cash purchases.

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[18] The aggregate "remaining part of Poland" is the result of a difference between loans granted all over Poland and those granted in the analysed regional capital cities, including Gdynia.

Figure 30 Volume and quarterly changes in the value of mortgage debt of households following the adjustments and the currency structure of quarterly changes
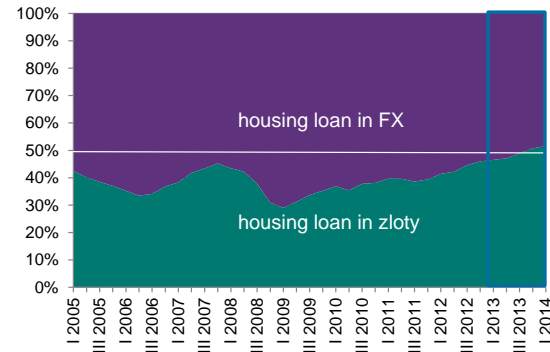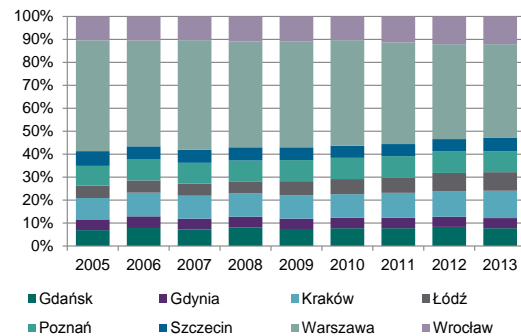

Source: NBP.

Figure 31 Currency structure of mortgage debt of households following adjustments
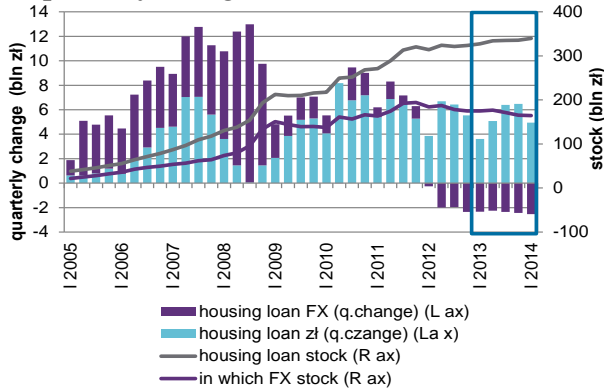
Source: NBP.

Figure 32 Geographical structure of new housing loan in Poland
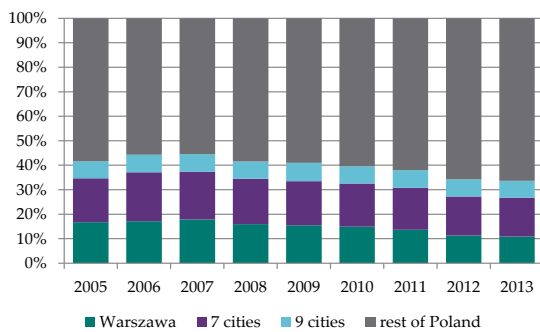
Source: NBP based on BIK.

Figure 33 Geographical structure of new housing loan, divided into selected cities in Poland

Source: NBP based on BIK.

Demographic factors (i.e. demographic growth, migration, marriages), economic factors (including income) and fiscal policy differently affected demand in the analysed cities[19].

In 2013 demand in the residential market was strongly affected by regulatory factors, in particular, the Act on the protection of real estate developers' clients [20] (introduced in 2012) and the absence of government-subsidized housing schemes in the discussed period. In 2012 the government housing scheme *Family on their own (Rodzina na swoim)* (RNS) subsidising interest rates in housing loans was terminated, whereas a new government-subsidized housing schemes for the young *Housing for the Young (Mieszkanie dla młodych)* (MDM) was launched in 2014.

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[19] See item 1.2 and analyses of individual cities in the annex to this report.

[20] Act on the protection of home buyers' rights, the so-called "Developer Act" (Journal of Laws of 2011 no. 232 item 1377) entered into force on 29 April 2012. The Regulator obliged real estate developers to open an escrow account, where purchasers ' funds would be transferred. The previous investment activities of developers in the period 2011 Q 4 - 2012 Q2 were aimed at obtaining a portfolio of orders for the forthcoming years, which would be advantageous from the legal point of view.

Box 1. Preliminary analysis of the Housing for the Young *(Mieszkanie dla młodych)* **and Housing for rental** *(Mieszkania na Wynajem)* **Schemes**

The basic objective of housing policy is to help to meet households' housing needs. The aid in acceding housing services should take into account housing needs, including the minimum housing area per person and the social minimum (housing minimum, the standard required in relation to housing consumption). It is particularly important for multi-person households where smaller financial resources often go hand in hand with higher needs. This condition may be embedded in the formula of calculating loan availability, and the difference of area so obtained should be treated as costs of obtaining optimum housing conditions.

The MDM Programme replaced the RNS scheme, modified on numerous occasions and criticised, and entered into force in 2014. Households took it into account in their expectations in 2013. The main reservations raised against the RNS programme, terminated in 2012, included extensive subsiding and the absence of target groups[21]. In the original version of the RNS scheme, modest standard of housing financed by public funds were to control income, which was, however, enhanced during the operation of the programme. The drawbacks of the RNS scheme could not have been avoided in the MDM programme. The programme may be evaluated as an initiative supporting the developer sector instead of fulfilling social objectives. Purchases of both new housing and homes from the secondary market should be supported, in order to provide consumers with wider choice, particularly among less expensive housing. In addition, competition of housing from the secondary market curbs growth in prices of subsidised housing in the primary market. Meanwhile, the MDM programme supports exclusively the primary market and all purchasers, irrespective of their income. The family-friendly policy issues are not sufficiently addressed[22].

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[21] The detailed assessment of the changes in the regulatory environment and its impact on the real sphere of the economy, in particular, the impact of the RNS scheme, is presented in the "*Report on the situation in the Polish residential and commercial real estate market in 2012*", NBP 2013, pp. 29-34. On the other hand, the assessment of the MDM programme is included in the publication *"Information on home prices and the situation in the residential and commercial real estate market in Poland in 2013 Q2."*, NBP 2013, pp. 5 and 6.

[22] Currently, the MDM programme provides 10% subsidies for singles and childless families and, additionally, 5% for families with children. If the third or next child is born in a family, the family shall be eligible to receive the additional 5% support .The usable area limits set for families with minimum three children are extended by 10 sq. m both for housing units and for single family houses.

 On 18 August 2014 the Minister of Infrastructure and Development sent for public consultation the draft Act on the change of the Act on state aid to the young in the purchase of their first home (the so-called "Housing for the Young" programme). The changes proposed in the draft include, among others, the strengthening of the pro-family impact of the programme through the financial support to households with a bigger number of children.

The housing problem concerns, in particular, young households, without own home. It can be assessed by the analysis of the availability of loan-financed housing for such households. Unfortunately, the sample of households used by the GUS (Central Statistical Office) does not allow for a detailed analysis of economic and social profiles of respondents. In the analysis presented below, the size of the city of residence has been adopted as the basic cross-section diversifying households. The size of the city practically defines home prices, the nature of the housing stock and the market as well as inhabitants' income. The breakdown into cities with the population of 200-500 thousand and above 500 thousand (500 thousand +) used by the GUS, largely corresponds to a breakdown of markets into 7 cities and 9 voivodship capital cities used in the NBP studies. The decile distribution of creditworthiness in PLN thousand in particular years for the analysed cities is presented in Figure 34. This Figure shows that the available loan for an average household (fifth decile) in the years 2013-2014 amounted to approximately PLN 300,000, whereas at the starting point, i.e. 2005, it stood at approximately PLN 170,000.

Figure 1 Distribution of PLN loan availability of households in cities above 200 thousand inhabitants (in PLN thous.)
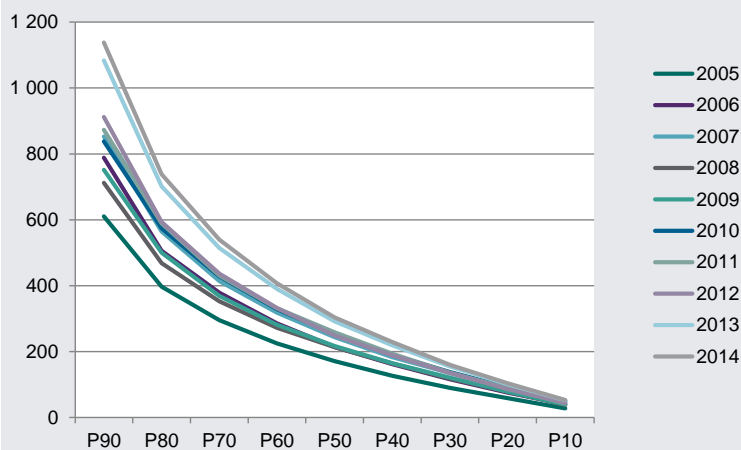
Source: Own studies based on household sample according to GUS

However, in order to assess the effectiveness of housing policy tools it is better to use availability expressing the ultimate purchasing power of the consumer, calculated for prices and support tools applied in the discussed programmes. It is illustrated in Figure 35 and 36 for cities with over 500 thousand inhabitants (500 thous.+), and in Figures 37 and 38 for cities with 200-500 thousand inhabitants. In Figures 36 and 38 the field of the drawing was narrowed down to the social groups interesting for us for cities 500 thousand+ and 200-500 thousand inhabitants.
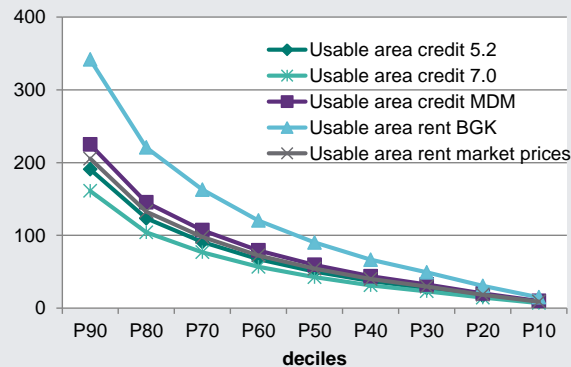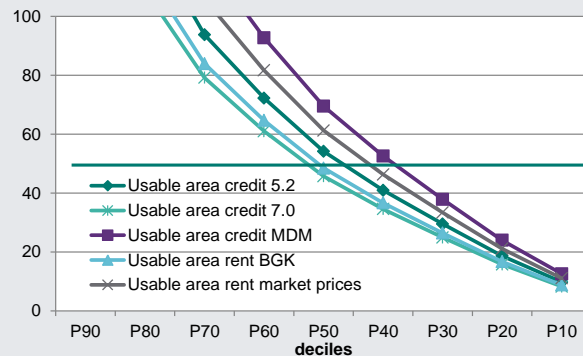
Figure 2 Purchasing power of the consumer calculated for prices and support tools used in the programmes under discussion, in cities 500 thous.+


Figure 3 Purchasing power of the consumer calculated for prices and support tools used in the programmes under discussion, in cities 500 thous.+ (the section of Figure 35, the line marks the average home of 50 sq. m area)
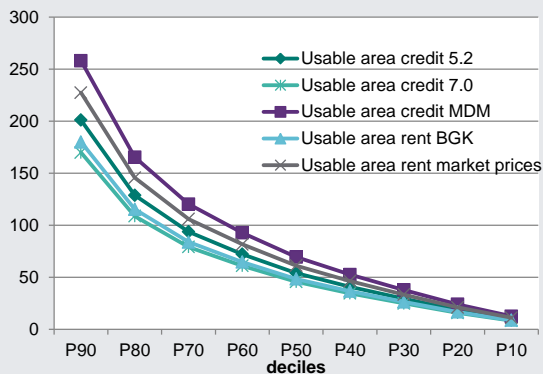
Note to Figures 35-38: PUM = usable area of a housing unit. loan_5.2 = loan with the interest rate of 5.2; loan_MDM = loan with the interest rate as for the MDM loan; Rent_BGK = rent for the Housing for Rental programme (market rent+400 p.b.); Rent_rynek = average rent according to the NBP database;

Source: Own studies.

Source: Own studies.

Figure 4 Purchasing power of the consumer calculated for prices and support tools used in the programmes under discussion, in cities 200-500 thous.

Figure 5 Purchasing power of the consumer calculated for prices and support tools used in the programmes under discussion, in cities 200-500 thous. (the section of Figure 37, the line marks the average home of 50 sq. m area)
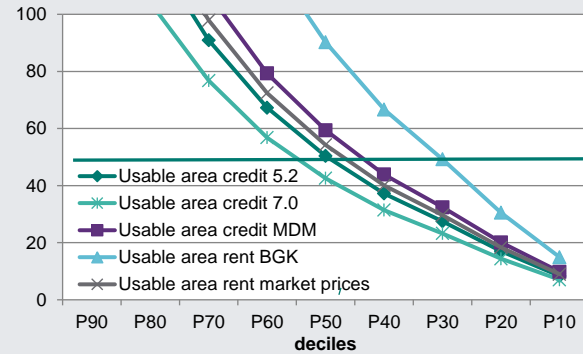
Source: Own studies.

Source: Own studies.

The analysis of the figures indicates a significant improvement in the availability of loan-financed housing in 2014, which results from the long-term increase in income, decline in home prices and low interest rates. However, both the experience of Poland and that of the highly developed countries from the period when their development level was close to that currently recorded in Poland, show that the long-term interest rate on housing loans tends to oscillates close to 7% (inflation 2.5%, deposit rate 3.5%, tax 0.7%, bank margin 2.5%), rather than 4-5%. Therefore, for the assessment of the availability of OOH housing, apart from the current interest rate level, the availability for the 7% level was also defined.

Theoretically, housing units of 40 sq. m usable area are available for the upper range of the third decile. In reality, OOH housing of 40–50 sq. m area, the offer of market homes for rental and homes for rental offered by BGK, are available for the wealthy part of the society. Formally, the MDM programme, with its price limits (limiting the housing standard) and subsidies to buyers' own contribution, should extend the scope of availability of the OOH housing by one decile downwards (up to the fourth decile). In order to achieve this goal, the programme would have to use income control or operate at low limits of housing usable area apart from low levels of allowable prices (this condition has been fulfilled). Without an additional condition such homes would be purchased by persons from higher income groups which do not require support.

In order to provide a stronger support to households from the 4th decile and enable them to purchase their own housing, the rationality of the housing policy may be improved by lowering the standard of available housing area in the MDM programme. Another solution are flats for rental, which could be less expensive than the cost of loan repayment. Moreover, the expansion of the market of homes for rental would help to maintain equilibrium in the housing market and positively affect the labour market by increasing work force mobility. The increase in the availability of housing for rental will be possible thanks to the planned launch of the Fund of Housing for Rental by BGK, in the form of the Closed Investment Fund of Non-public Assets[23]. The Fund will invest in residential real estate with ready for rental housing, to subsequently rent this housing[24].

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[23] See http://bgk.com.pl/fundusz-mieszkan-na-wynajem/fundusz-mieszkan-na-wynajem
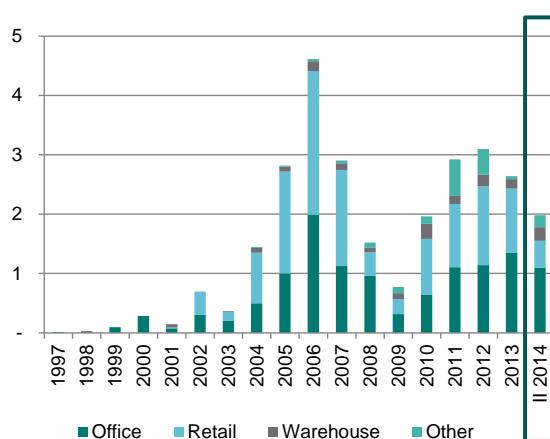[24] See Financial Stability Report. July 2014

1.3. Equilibrium and tensions in the commercial real estate market[25]

In the commercial real estate markets[26] imbalances increase, in particular, in the office and retail real estate markets. Accordingly, in the "Financial Stability Report. July 2014", NBP included a recommendation for banks to pursue a prudent lending policy in the segment of commercial real property loans[27].

Strong capital inflow to this sector continued, resulting in a rapid increase in fixed assets. In the previous years, investments were aimed to eliminate historic disproportions in the commercial real estate sector. After 2012, the sector reported signs of disequilibrium, such as decreasing capitalisation rates of properties sold, amidst stable or declining rents and growing vacancy rates.

The deteriorating situation in this market is confirmed by the declining values of participation units in closed-end investment funds (see Figure 40). In 2014 Q1 retail space in shopping centres located in big cities reached the level per inhabitant as that recorded in Germany, with much lower per capita GDP and resulting purchasing power of consumers.

Figure 39 Value of investment transactions in the commercial real estate market (EUR bln)

Figure 40 Valuation rates of closed investment funds in the commercial real estate market (Q 2 2008 = 100)

Source: Comparables.pl.
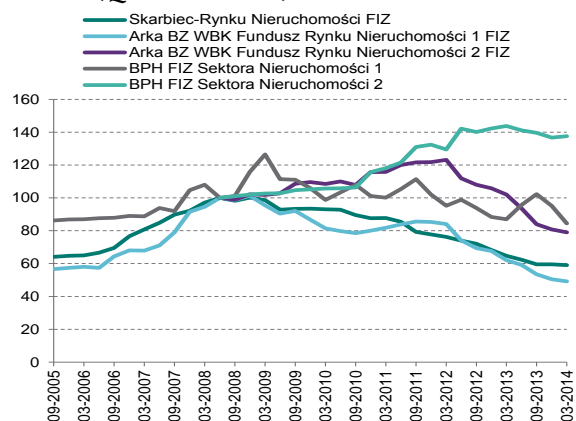
Source: NBP.

International experience shows that problems in the commercial real estate markets frequently emerge in the catching-up countries, but also in the highly developed markets. Factors behind a growing disequilibrium in this market include the currently low interest rates, which stimulate

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[25] This item is based on the NBP text of the Financial Stability Report. July 2014 and the Information on home prices and the situation in the residential and commercial real estate market in Poland in 2013 Q13.

[26] Detailed analysis of local commercial markets is presented in the Analysis of 16 voivoship cities.

[27] Recommendation 6 contained in the Financial Stability Report. July 2014 reads as follows: "Banks should pursue a prudent lending policy in the segment of commercial property loans. The situation in the retail and office property market shows that imbalances have been growing, which – in the environment of rising supply – may result in unfavourable changes in prices and rents and in credit risk growth."

the inflow of short-term capital to the real estate sector. Imbalances may also be driven by the appreciation of the currency of the target country. Declining capitalisation rates mean that the value of properties is overestimated and its adjustment may be expected following an increase in interest rates. In the case of real estate financed by bank loans this may mean a lower value of the collateral. On the other hand, in the case of investment funds, their managers may not be able to sell real estate for the expected price and they may be forced to extend the operation of the fund.

The growing supply of commercial space means growing competition and, as a consequence, declining rent rates and growing vacancies. This trend led to a decline in the value of properties as well as lower income (cash flow) which they generated. In the case of mortgaged real estate it may mean both the decline in their market value and deterioration of the collateral, as well as difficulties with timely debt service.

International experience shows that the classical prudential policy applied towards banks, based on the required high own contribution of the investor, is not fully effective in this market. The main problem for investors in this market is a very low market liquidity. In the case of unsuccessful and excessive investments, it may be difficult to withdraw the capital, which further drives prices down. If a property is financed by a loan, an insufficient value of the collateral may pose a risk for the bank. Therefore, a very conservative appraisal of the value is required, including the assessment of loan repayment capacity.

Transactions in the commercial real estate market and analysis of supply and demand.

The commercial real estate market has seen an upward trend in the value of transaction since 2010. In accordance with Comparables.pl data, in 2013 the market recorded investment transactions of EUR 2.5 billion, which indicates a growth of over 10% as compared to 2012 (see Figure 39). It should be emphasised that transactions in the warehouse market accounted for 10% of the whole value of concluded transactions, reaching twice the value of transactions recorded in 2012. Investment in office and commercial real estate continues to account for the highest share in the total value of investment transactions (approx. 40% each). Among investors, international investors still prevail, and the major part of transactions involves the change of the owner of an already operating and rented commercial property. In the office space market capitalisation rates were at 6-7%, whereas in the retail market – around 7%.

In the analysed period the value of loans granted by banks in Poland to enterprises for office real estate decreased from PLN 10.4 billion at the end of 2012 to PLN 8 billion in Q1 2014 (see Figure 24). These loans seem relatively safe as the share of loans considered as impaired did not exceed 5% since the end of 2012. International experience shows that along with rising affluence of the society, investment in the real estate sector increases. Polish investors' debt at banks resulting from commercial property investment is also likely to grow.

At the end of 2013 6.3 million sq. m of office space was available in Poland, the majority of which in the Warsaw market (4.1 million sq. m). The vacancy rate for the most important office space markets reached 11.9%, as against 9.1% at the end of 2012[28]. Approximately 1 million of sq. m of office space is under construction and, according to the Colliers International report, about 600 thousand sq. m of space will be completed and commissioned in 2014. The above data imply that the vacancy rate will continue to grow, in particular, in old buildings in less favourable locations. Offer rents in the office space market remained stable all over the country (in Warsaw the highest offer rent in the best locations amounts to approximately EUR 25 per sq. m per month)[29]. The increased supply of office space may put a downward pressure on rental payments in some markets. Investors constructing new office space must reckon with growing competition for the tenant.

In the commercial real estate market approximately 640 thousand sq. m of new space was completed in 2013, and its total supply reached 9.8 million sq. m[30]. Almost 70% of the newly completed and commissioned commercial space is located in large agglomerations. Commercial rents in prime locations all over the country remained stable whereas in Warsaw, due to the re-commercialisation of the best shopping centres, the offer rent increased by 5% on an annual basis, reaching EUR 85-100 per sq. m per month at the end of 2013[31]. The JLL report suggests that demand for space in good locations in large agglomerations continues, whereas buildings located in cities saturated with commercial properties, will probably see a downward pressure on rents.

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[28] SeeColliers International Report on "Review of the Real Estate Market – Summary of 2013".

[29] See Cushman&Wakefield Report "MarketBeat Office Snapshot Q4 2013".

[30] Cf. Colliers International Report on "Review of the Real Estate Market – Summary of 2013".

[31] Cf. JLL report "Commercial Market in Poland in Q 4 2013".

Box 2: Valuation of attributes of commercial real estate as the starting point to estimate the market value based on the NBP database (BaNK)

The analysis of prices per one square meter of rentable commercial property, which takes into account changes in the quality of real estate being the object of transactions shows attributes of this real estate which affect the transaction price. The office, retail and warehouse markets are analyzed using one regression, as after taking into account their heterogeneous quality, these three market segments exhibit similar fluctuations in prices over time. Improving economic situation entails growing demand for labour and for office space in which people work. As a result of rising employment and income, purchasing power increases and consumers report greater demand for various goods and services offered in malls or main shopping streets. In order to meet growing demand for goods, modern logistics centers are established in which goods are processed or packed and thus rapidly transported to shops or directly to the customer. When the economy slows down, the opposite impulse is propagated through the commercial real estate market, and as contracts expire, falling demand translates into a decline in rents and transaction prices of such property.

A thorough analysis of real estate transaction prices is a necessary measure to improve and facilitate the conduct of macro-prudential policy by the central bank[32]. The commercial real estate market, similarly to the residential property market is largely heterogeneous, so the analysis of average prices can distort the picture of the market. Transactions in the commercial real estate market are less frequent than those in the housing market, so when more real estate units with inferior characteristics are sold, the average price of all real estate units will be lower. For this reason it is necessary to take into account the differences in quality. The study of prices adjusted for quality shows actual changes in the value of the property in the market.

According to the model proposed by Fisher[33], in order to estimate the transaction price, we should include the attributes of particular buildings as well as their location in a particular city and within the country. Dummy variables that capture transactions concluded in a particular quarter or a half-year period, allow the construction of a hedonic price index for specific sectors. While the above mentioned authors use the data for the United States and have access to current appraisals, containing all important attributes of buildings, in this study we have to analyse these attributes separately. Transaction data were collected in the survey of prices of commercial real estate BaNK, conducted by Narodowy Bank Polski , and come from the Comparables.pl database. Attributes of buildings have been supplemented with data from websites of buildings' owners and managers as well as warehouses and professional network services. The modeling takes into account the attributes collected in the BaNK database. Transactions have been monitored since the second half of 2003, therefore the analysis covers the transactions concluded in this period.

Separate semi-annual dummy variables have been constructed, which at a later stage of the study will be used to determine price growth. This approach allows to differentiate prices of the three types of real estate, and track individual price cycles. For all types of real estate, buildings have

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[32] See: Olszewski, K. (2013). The Commercial Real Estate Market, Central Bank Monitoring and Macroprudential Policy. *Review of Economic Analysis*, *5*(2), 213-250.

[33] Fisher, J., Geltner, D., & Pollakowski, H. (2007). A quarterly transactions-based index of institutional real estate investment performance and movements in supply and demand. *The Journal of Real Estate Finance and Economics*, *34*(1), 5-33.

been generally divided into 4 groups according to the year of construction (or their latest modernization, if any), namely buildings constructed or upgraded in the period up to 1990, in the years 1991-2000, in the years 2001-2010, and the newest ones. For each type of real estate, separate dummies were used, as shopping malls may age faster than, for example, warehouses, which, in turn, feeds through to their price. Another factor differentiating commercial real estate is its location within the country, which has been divided, as in the analysis of the real estate residential market, into the Warsaw market, big cities (Gdańsk, Poznań, Wrocław, Kraków) and other smaller cities.

The Warsaw office real estate market was further broken down into the Central Business Area (COB) #, as prices in this location vary considerably. The retail real estate market was further divided into shopping centers, retail parks, outlets and other retail and commercial premises. Moreover, account was taken of the number of stores located in the building. Similarly to offices, shopping centres have been divided in terms of location, situated either in the capital of the voivodship or in other neighboring towns. For the Warsaw market we have constructed a variable indicating whether the real properties are located in the city's central business area or on the outskirts of the city. For all the properties we have taken into account the total rentable area in the building. The logarithm of price per one square meter in EUR was adopted as the modeled explanatory variable since most transactions are made in this currency, and the use of logarithms allows capturing price elasticity. We have estimated the following model, presented in detail in the table with the result (see Table 1):

In_ceny_mkw_EUR = f (location of property, type of property, surface of property, age of property, other attributes of property, error)

The empirical results confirm that prices per one square meter of rentable area vary significantly between Warsaw, large and small cities [34]. Strong differences exist also between offices located in the city's central business area (CBD #) and outside it and between shopping centers located in major economic centers of regions and outside them. Another price factor is the year of construction or modernization of the property, as older buildings get lower prices than newer ones. Interestingly, this correlation is particularly visible in the case of offices. As regards retail space only those retail premises which were built in the period 1990-2000 get lower prices. Older retail premises are generally located in the very heart of the city, which boosts their price. In the case of offices, price per one square meter of rentable office space increases with the number of parking places. Probably, this number goes hand in hand with the general technical and architectural condition of the building which are very important price factors which are not always easy to measure.

The category of the building has a huge impact on the price. Office buildings of A category achieve significantly higher prices than those of B and C category. In the case of commercial premises, the price per one square meter increases with the number of shops located within those premises. This variable seems to better differentiate these buildings than the variable dividing buildings into shopping centers, retail parks, outlets or commercial and retail premises in the main street. Interestingly, for all types of real estate, prices are negatively correlated with the total rentable area in the building. This implies the existence of economies of scale - the price of land, which is of great importance, is divided by a large rentable area, and thus the unit cost of one square meters of rentable area decreases.

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[34] While analyzing the commercial real estate market, Poland' cities have been divided into three categories: the Warsaw market, large cities (Cracow, Poznań, Tri-City Agglomeration of Gdańsk, Sopot and Gdynia) and small cities (other capital cities of voivodships).

This is the first research-oriented approach to the analysis of transaction prices of commercial real estate and its main purpose is to demonstrate which attributes affect the transaction price. When further developed, it will be used to compute the hedonic price index of commercial real estate.

Table 1. The results of estimation of transaction prices per one square meter of rentable commercial real estate in Poland.

ln_ceny_mkw_EUR	coefficient	Standard error	significance
Duze_miasta	-0.31029	0.083414	***
Male_miasta	-0.43599	0.07548	***
rok_bud_do1990_B	-0.42009	0.148594	**
rok_bud_902000_B	-0.28868	0.120407	**
rok_bud_200110_B	-0.18074	0.109052	*
rok_bud_do1990_H	-0.24692	0.266631	
rok_bud_902000_H	-0.31946	0.133079	**
rok_bud_200110_H	0.052455	0.131444	
rok_bud_do1990_M	-0.39438	0.229359	*
rok_bud_902000_M	0.018037	0.185721	
rok_bud_200110_M	0.032086	0.183628	
COB	0.488535	0.071673	***
h_typ_CH	0.154369	0.099877	
Ln_h_ilesklepow	0.076245	0.046089	*
CH_w_centrum	0.258825	0.094668	***
ln_suma_park_B	0.118067	0.034795	***
B_klasa_A	0.192644	0.06673	***
lpowdowynajmu_H	-0.07322	0.036398	**
lpowdowynajmu_B	-0.09135	0.039793	**
lpowdowynajmu_M	-0.1156	0.027618	***
stała	7.991044	0.275472	***

***, **, * statistical significance at the level of: 1%, 5% or 10%.
Regression was conducted with the use of the least squares method; the total of 427 transactions were analysed and the coefficient of determination for regression was 74%.

1.4. Convergence and differentiation processes in local markets and structural changes (comparison of 16 markets in Poland)

Irrespective of the local nature of housing markets and changes occurring within the market itself, it is usually possible to distinguish a group of cities which behave in a similar way in terms of a particular criterion (e.g. demographic data). The breakdown of cities in terms of the size of the population (large cities with over 400 thousand inhabitants and other) is the most clear and constant division.

All the analysed cities reported an improvement in the housing situation mainly due to a minor stock depletion (e.g. through demolition, repairs and modernisation of the existing stock) and implementation of new investments. The demographic indicators, i.e. decline in the number of marriages or net negative migration in the analysed cities were gradually deteriorating, which

led to an improvement in the housing situation of the inhabitants. The economic situation in the real estate market improved slightly as shocks expired, prices stabilised and GDP continued to grow uninterruptedly. However, it was reflected in the local markets to a varying degree.

The panel analysis of transaction data conducted in all the voivodship cities in Poland[35] since 2002, both in the primary and in the secondary market, confirmed a strong correlation of prices in the housing market with fundamental data, in particular, with the wage level, the unemployment rate and construction costs. It was also demonstrated empirically that the increase in housing prices in the previous periods has a positive impact on future periods. Moreover, the analysed correlations showed that the behaviour of prices in the secondary market enables to better understand and describe the behaviour of transactional prices in the primary market. Yet, this relationship does not operate in the opposite direction. The above analysis also confirms that demand shocks first appeared in the secondary market and subsequently reverberated to the primary market. The panel study also confirmed the existence of the "freezing effect" of price changes in one market on other markets. In Poland, the Warsaw market is the leading market. Clients in smaller cities observe changes in the biggest, Warsaw market, subsequently adjusting their price expectations. This correlation is stronger in the secondary market than in the primary market.

Housing situation in 16 voivodship cities

In quantitative terms the housing situation of the voivodship cities of Poland has been gradually improving due to the development of the housing sector, mainly the developer sector and the limited scale of stock depletion. In spite of implementation of new housing contracts and completion and commissioning of new housing units, the indicators of housing saturation and population, particularly, in the group of smaller cities in terms of population size, were still below the levels recorded in bigger cities, as well as in the countries of Western Europe (see Figure 41– Figure 48).

Based on the last National Population and Housing Census of 2011, the deficit of housing in voivodship cities was estimated at a level of approximately 147.8 thousand housing units. In reality, its scale could be bigger since the deficit does not take into account the qualitative structure of housing, i.e. the needs arising from poor technical quality and low usable value of a part of occupied housing units. In the majority of the voivodship cities, the old housing stock dominates, mainly dating back to 1971 - 1988, in Warsaw and Wrocław - to 1945-1970. Due to the poor technical condition of a part of the housing stock it is necessary to demolish them. The phenomenon of lack of housing adjustment to the structure of needs also occurs.

Taking into account only the quantitative data related to the entire stock (including occupied and unoccupied housing constituting the so-called second housing, which may be used for housing purposes), the deficit of housing in 2011 was reported in the group of smaller cities (excluding

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[35] More in the article: R. Leszczyński and K. Olszewski (2014) "Panel analysis of home prices in the primary and secondary market in 17 regional cities in Poland" NBP Working Paper Series.

Katowice), and in the case of large centres, only in Szczecin. In 2013, as a result of uninterrupted production of new housing, amidst limited scale of demolitions and change of intended use of housing, the housing deficit was reported in three cities only, i.e.: Lublin, Olsztyn and Opole (adopting the size of households in 2011 as a constant, due to insignificant growth of their size during the year). The above data and improving, year by year, in statistical terms, satisfaction of housing needs confirm that the basic problem of the cities is not the shortage of housing offers (investors implement their investments), but limited availability of housing due to the shortage of funds or the lack of creditworthiness of some households. Warsaw with a surplus of housing at a level of about 111 thousand housing units resulting from faster growth in housing units than in the number of households is a good example of such statistics. As regards housing, the major problems include the insufficient stocks of social housing and the shortage of inexpensive housing for rental.

Figure 41 Housing stock per 1000 inhabitants in 7 cities
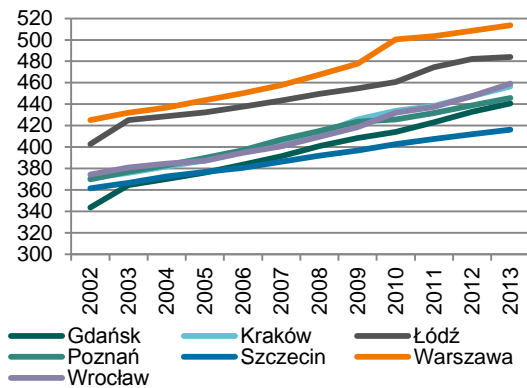
Source: GUS.

Figure 42 Housing stock per 1000 inhabitants in 9 cities
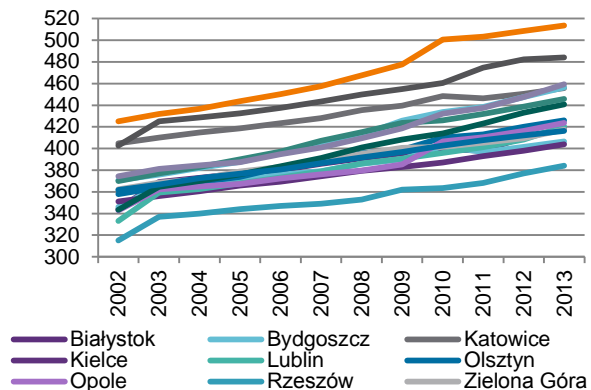
Source: GUS.

Figure 43 Average usable housing area in the housing stock (sq. m. /housing unit) in 7 cities
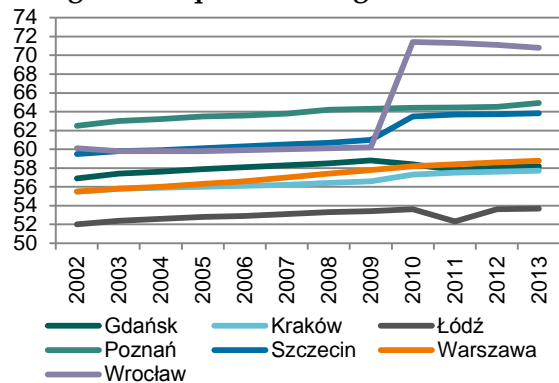
Note: In Wrocław the Central Statistical Office (GUS) recorded the change in indicators.
Source: GUS.

Figure 44 Average usable housing area in the housing stock (sq. m. /housing unit) in 9 cities
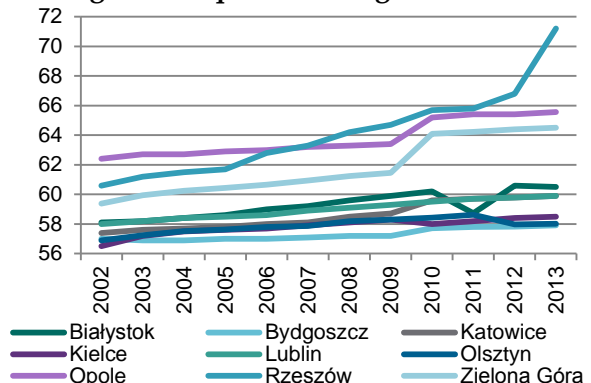
Source: GUS.

Figure 45 Average usable housing area in the housing stock (sq. m. per one person) in 7 cities

Source: GUS.

Figure 46 Average usable housing area in the housing stock (sq. m per one person) in 9 cities
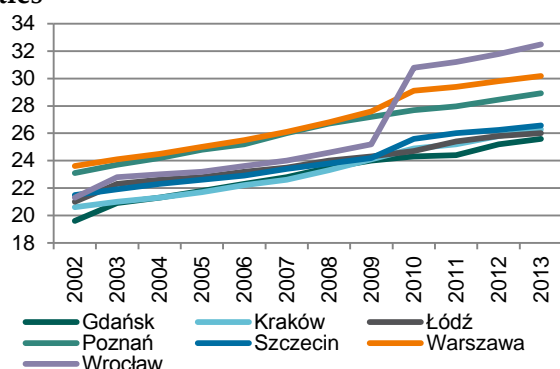
Source: GUS.

Figure 47 Average number of persons per dwelling in 7 cities
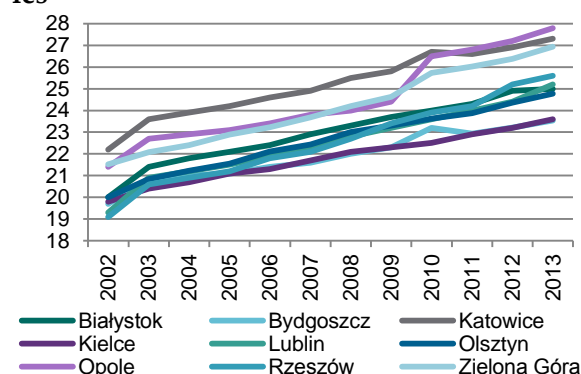
Source: GUS.

Figure 48 Average number of persons per dwelling in 9 cities
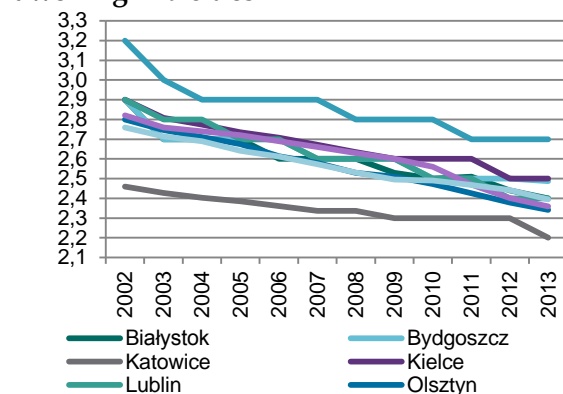
Source: GUS.

Demographic factors in 16 voivodship cities

The demographic situation of voivodship cities has been successively deteriorating, which means an improvement of the housing situation. The comparison of results of the National Population and Housing Census of 2002 and 2011 confirmed the increase in the number of households in 11 cities, however, its scale was insignificant. Five other cities reported a decline in the number of households with the sharpest drop in Łódź (by 8%). In 2013, as in the previous years, the fundamental demographic factors became weaker, which may result from the termination of the process of the second post-war baby boom generations getting independent and the successive entry of demographic decline generations to the market. In the majority of voivodship cities the number of marriages and demographic growth declined (see Figure 49 - Figure 52). In 11 cities the demographic growth reached negative value, with the lowest level recorded in Łódź. The indicator of the migration rate was also not optimistic (see Figure 53 and Figure 54), continuing to post negative values in the majority of the cities. In the four biggest markets, i.e. in Warsaw, Gdańsk, Wrocław, Kraków, increased immigration could have been associated with the economic slow-

down and relocation of population from other regions of Poland where the unemployment rate was higher than in voivodship cities.

In 2013, the continuing trend of population decline in the majority of voivodship cities was partly driven by the fact that inhabitants of large cities moved to neighbouring locations forming agglomerations. All voivodship markets recorded further declines in the population at productive age as well as faster increase in the percentage of population at post-production age as compared with population at pre-production age (see Figure 55 and Figure 56).

Figure 49 Demographic growth per 1000 inhabitants in 7 cities
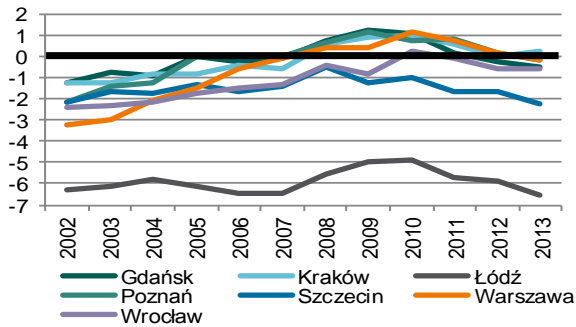
Source: GUS.

Figure 50 Demographic growth per 1000 inhabitants in 9 cities
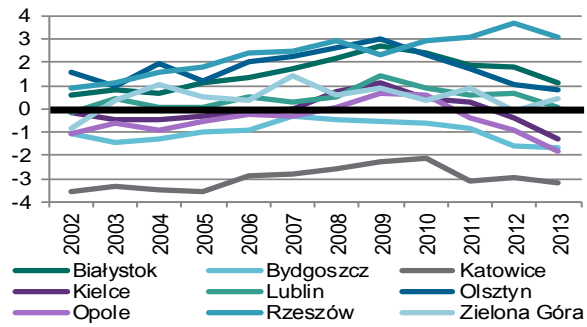
Source: GUS.

Figure 51 Marriages per 1000 inhabitants in 7 cities
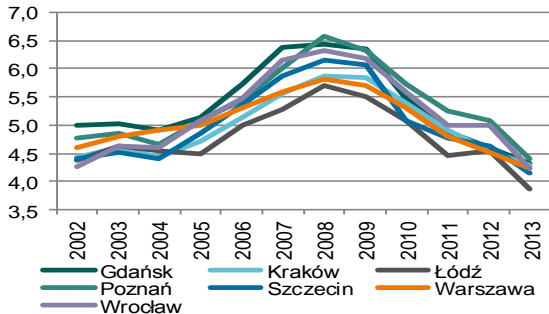
Source: GUS.

Figure 52 Marriages per 1000 inhabitants in 9 cities
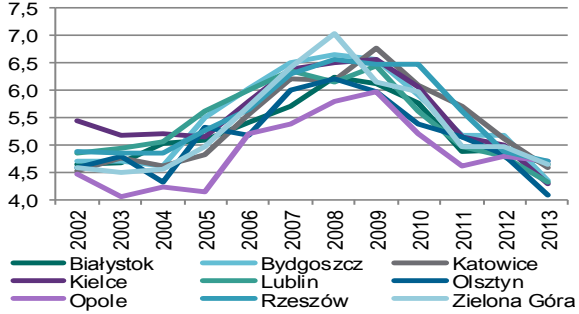
Source: GUS.

Figure 53 Migration per 1000 inhabitants in 7 cities
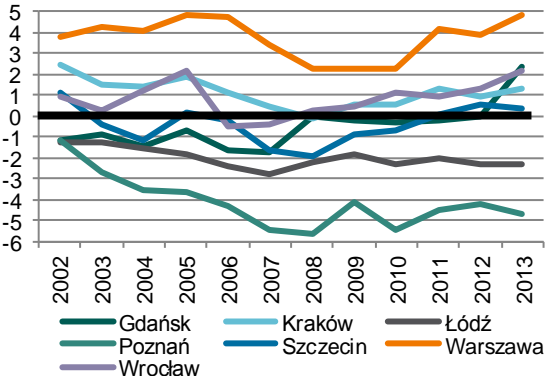
Source: GUS.

Figure 54 Migration per 1000 inhabitants in 9 cities
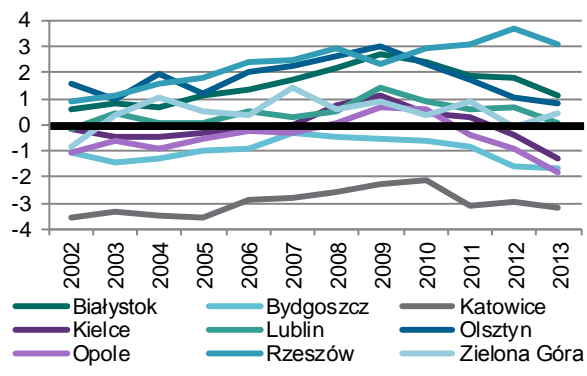
Source: GUS.

Figure 55 Changes in age structure 2012/2002 in 7 cities
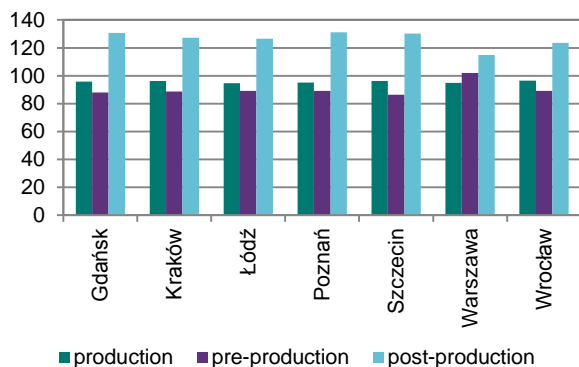
Source: GUS.

Figure 56 Changes in age structure 2012/2002 in 9 cities
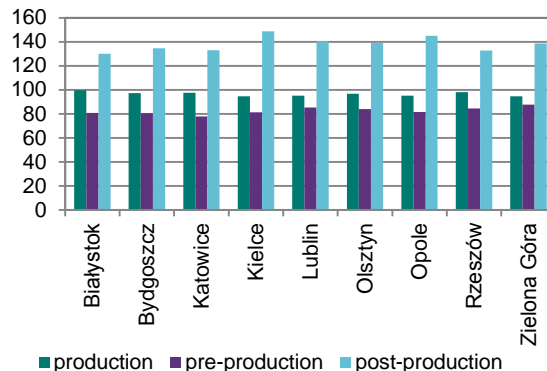
Source: GUS.

Economic factors in 16 voivodship cities

The economic factors, as in the previous years, significantly affected the situation of regional housing markets. In 2013 their impact on the size of demand for residential real estate in the majority of voivodship cities of Poland was more favourable than in 2012. Irrespective of minor increase of wages in real terms (accounting for CPI inflation) and deterioration of the situation in the labour market (increased unemployment rate in the majority of cities) homes sales improved.

In 2013 the main factors stimulating growth of demand in voivodship markets, apart from stabilisation of home prices, included wage growth and decisions of the Monetary Policy Council on NBP interest rate cuts. This was reflected in lower interest rates on mortgage loans and deposits. Lower interest rates fostered the inflow of funds to the housing market. The decrease in the interest rate on PLN denominated mortgage loans, accompanied by growing wages, improved potential availability of loans and loan-financed housing (see Figure 63 – Figure 70). In 2013, as in the previous years, Katowice stood out among voivodship cities, in terms of housing availability, including availability of loan-financed housing. Katowice continued to post the highest average wage level amidst low home prices.

In 2013, as compared to 2012, both the volume of housing loans and their disbursements slightly decreased (see Figure 71–Figure 72). This trend was observed in the majority of voivodship cities (excluding Białystok, Kraków, Opole, Rzeszów and Szczecin) despite improved availability of housing loans. This may have been driven by the termination of the RNS scheme at the end of 2012 (although disbursement of a part of loans under the RNS scheme was postponed to 2013 Q1 as agreements concluded at the end of 2012 failed to be settled on time), as well as certain tightening of the lending policy by banks' credit committees[36].

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[36] See results of the senior loan officer opinion survey on bank lending practices and credit conditions released quarterly by NBP

Since 1 January 2014 a new programme intended to support the purchase of own housing - MDM#, has been effective. The interest in the government-subsidised lending in the local markets is dampened by the price limit adopted in the programme. The comparison of average prices of residential properties in particular voivodship cities with the level of maximum limits adopted in the programme confirms the mismatch in the majority of the local markets (see Figure 73 - Figure 74). Only in two cities (Łódź and Olsztyn) average offer prices are below the limits determined in the MDM programme. The largest mismatch occurs in larger cities, i.e. in Warsaw, Kraków and Wrocław.

Figure 57 Registered unemployment rate in 7 cities
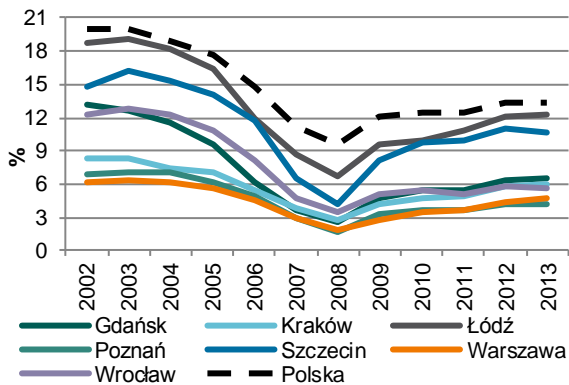
Source: GUS.

Figure 58 Registered unemployment rate in 9 cities
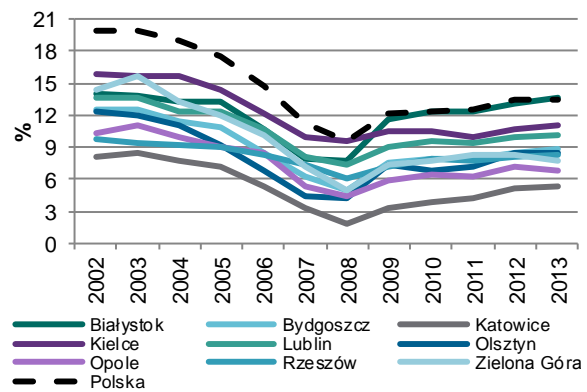
Source: GUS.

Figure 59 Share of the unemployed below 34 years of age in 7 cities
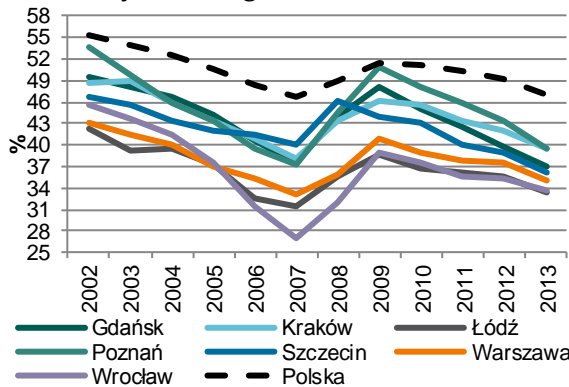
Source: GUS.

Figure 60 Share of the unemployed below 34 years of age in 9 cities
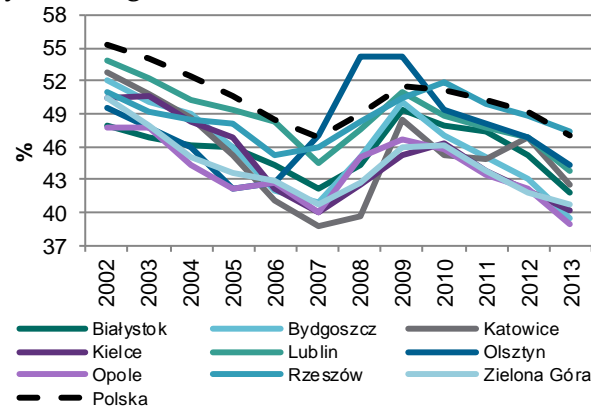
Source: GUS.

Figure 61 Average wage in the enterprise sector in 7 cities (zloty/month)
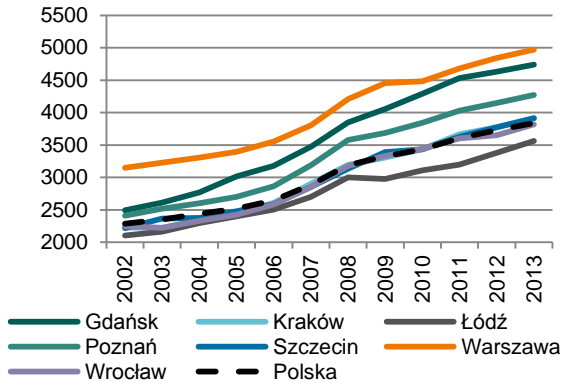
Source: GUS.

Figure 62 Average wage in the enterprise sector in 9 cities (zloty/month)
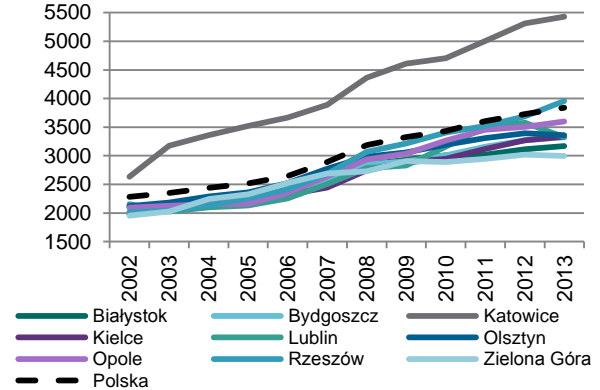
Source: GUS.

Figure 63 Housing availability for an average wage in 7 cities - primary market (sq. m./average wages)
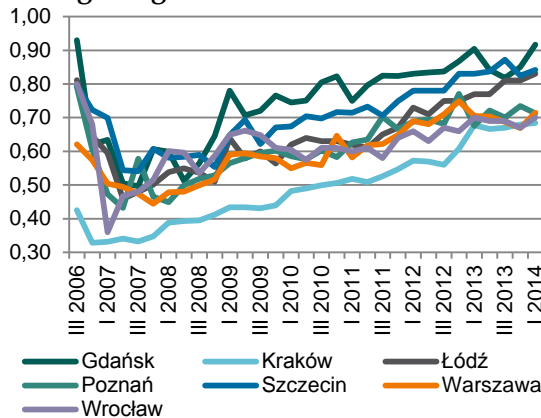
Source: NBP, GUS.

**Figure 64 Housing availability for an average wage in 9 cities - primary market (sq. m./average wages)**
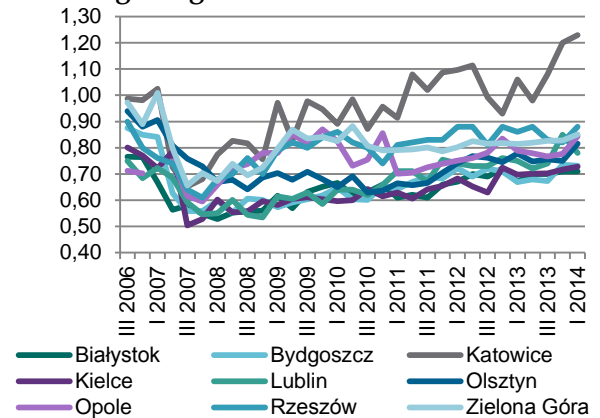
Source: NBP, GUS.

Figure 65 Housing availability for an average wage in 7 cities - secondary market (sq. m./average wages)
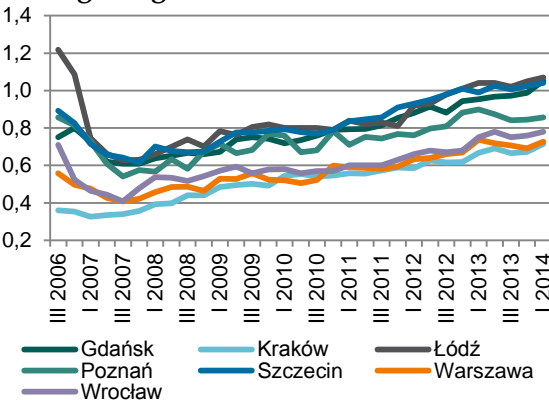
Source: NBP, GUS.

Figure 66 Housing availability for an average wage in 9 cities - secondary market (sq. m./average wages)
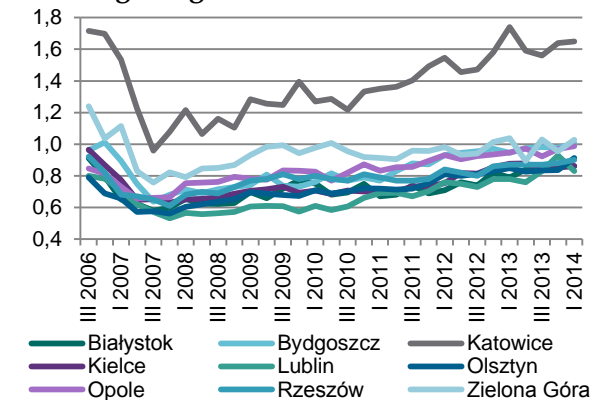
Source: NBP, GUS.

Figure 67 Availability of zloty loans in 7 cities (number of average wages)
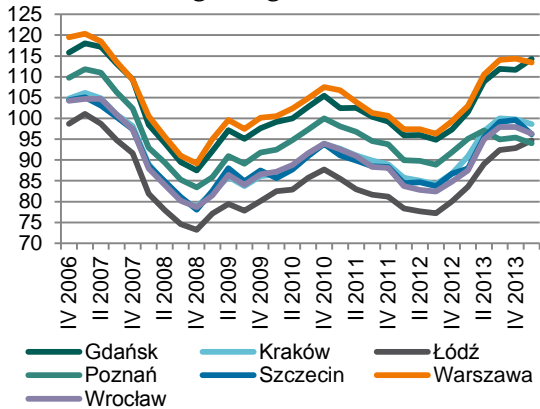
Source: NBP, GUS.

Figure 68 Availability of zloty loans in 9 cities (number of average wages)
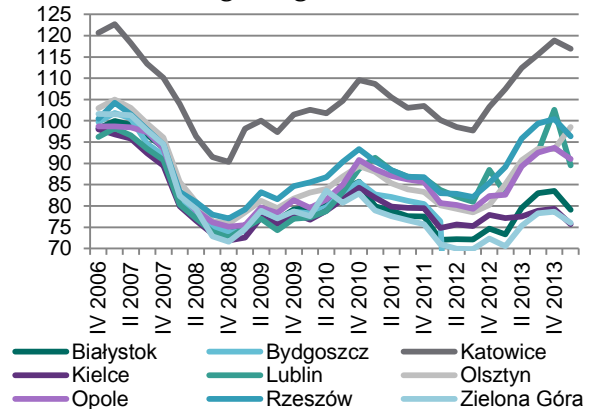
Source: NBP, GUS.

Figure 69 Availability of loan-financed housing (zloty loan) in 7 cities (sq. m. of zloty loan-financed housing)
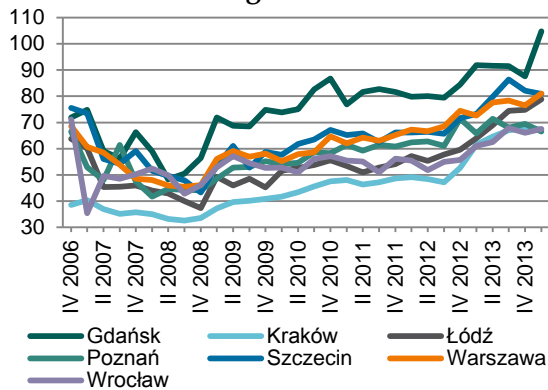
Source: NBP, GUS.

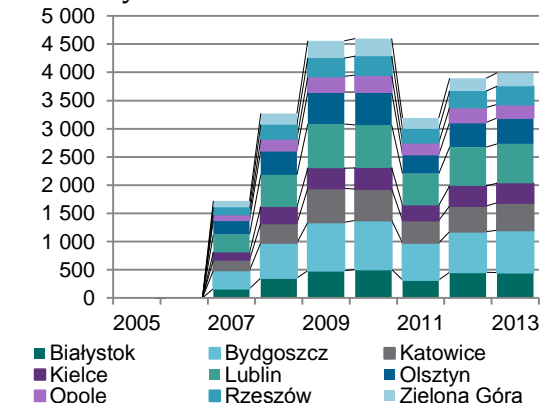**Figure 70 Availability of loan-financed housing (zloty loan) in 9 cities (sq. m. of zloty loan-financed housing)**
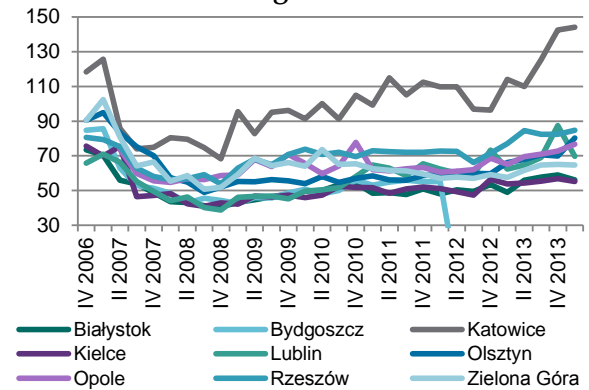
Source: NBP, GUS.

Figure 71 Estimated current value of mortgage debt (zloty million) in 7 cities
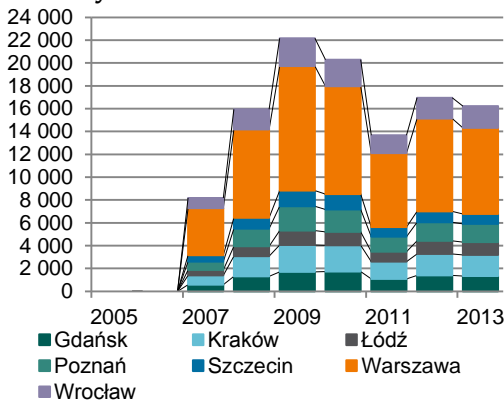
Source: BIK.

Figure 72 Estimated current value of mortgage debt (zloty million) in 9 cities

Source: BIK.

Figure 73 Gap/surplus between RNS/MDM threshold prices and median transaction prices in 7 cities – primary market
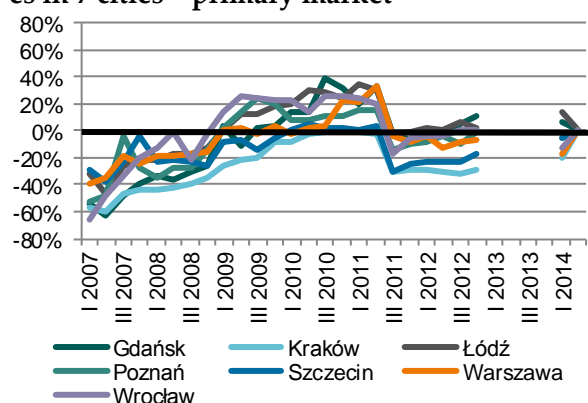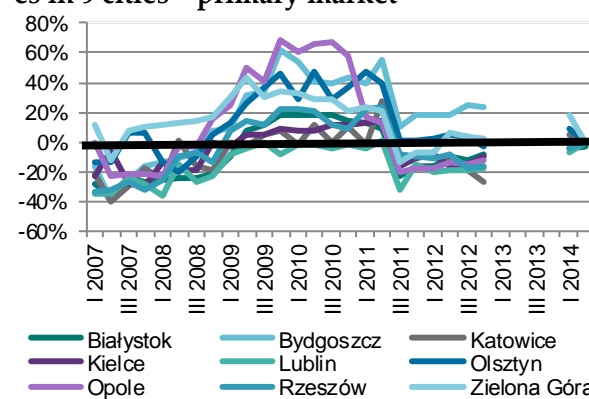

Figure 74 Gap/surplus between RNS/MDM threshold prices and median transaction prices in 9 cities – primary market

Note to Figures 73-74: The gap is calculated as the difference between the maximum RNS/MDM price (limit) and the median of the transaction price in the primary market in relation to the median of the transaction price. If the difference is positive, the programme finances homes whose prices are higher than the median.

Source: BGK, NBP.   Source: BGK, NBP.

Housing construction in 16 voivodship cities

In 2013 the housing sector in particular voivodship cities of Poland, as in the previous years, was developing with varied intensity. Apart from local determinants related to demographic factors and economic situation, the behaviour of home producers was also affected by earlier legal regulations, in particular, the so-called Developer Act. On the other hand, the additional demand might have been fuelled by S Recommendation of the Polish Financial Supervisory Authority. Intensified activity of construction companies (particularly real estate developers) concluding new contracts and launching housing investments, was observed in the majority of cities in 2011 and 2012 Q1, i.e. in the period directly preceding the entry into force of the Act on the protection of home buyers' rights. In 2013, as compared to 2011 and 2012, the majority of voivodship markets posted a decline in the number of commenced and planned housing investments (see Figure 81–Figure 82). It was the result of a large number of finished housing units held by developer companies and building permits held in surplus. The oversupply of housing was reduced at the end of 2013 thanks to growing home sales.

The effects of housing construction measured by the number of dwellings completed in the majority of analysed cities, excluding Wrocław, were lower in 2013 as compared to 2012 (see Figure 75–Figure 78). This could have been driven by delays in the completion of investments arising, among others, from problems with financing the projects or modifying them, in order to adjust the offer to the changing demand structure. In 2013 in half of voivodship cities the trend to reduce the usable area of housing continued. In the remaining eight cities a slight increase in the area of completed housing resulted from declining share of real estate developer construction in favour of individual construction, mainly single family houses, in the structure of completed housing.

Investors implementing projects intended for sale and rental demonstrated more flexibility –their activity depended on the situation in the local markets. In view of the reduction in the supply at the end of 2013 and the forecasted higher level of demand, the majority of the cities in January-April 2014 saw intensified activity of developer companies. They acquired new contracts and started new construction projects. Their expectations of growth in demand for housing are the result of the launch of two new programmes this year, i.e. programme of subsidies for young people buying their first home - MDM and the repurchase of housing of developer companies by the Fund of Housing for Rental, with the option to use it for rental purposes.

Figure 75 Number of completions per 1000 inhabitants in 7 cities (dwellings/1000 inhabitants)
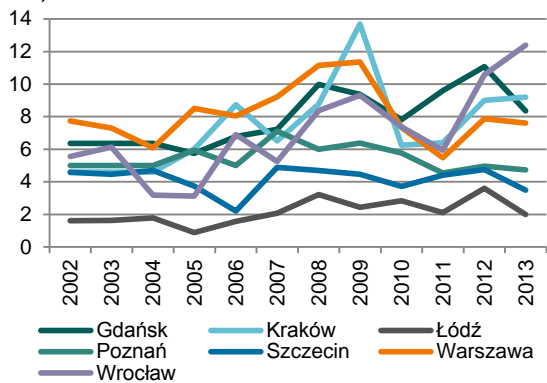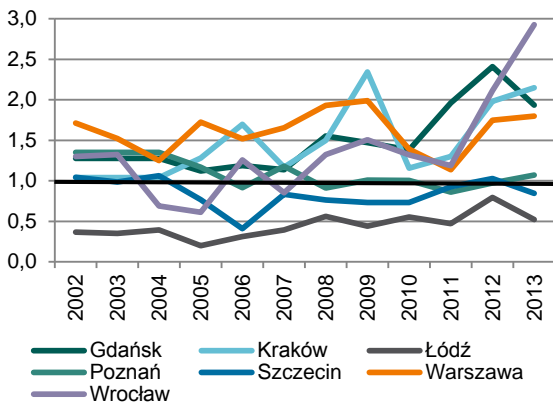

Source: GUS.

Figure 76 Number of completions per 1000 inhabitants in 9 cities (dwellings/1000 inhabitants)
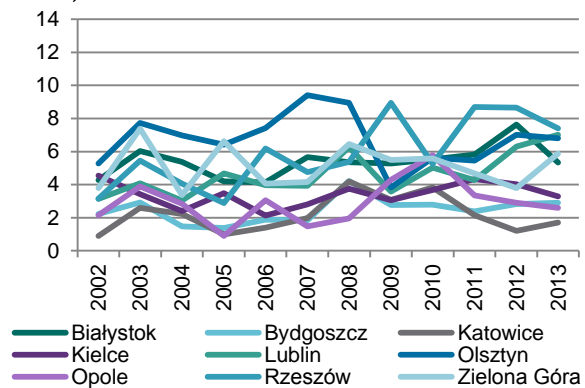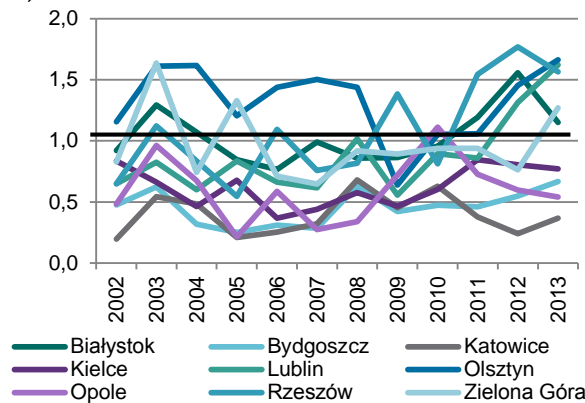

Source: GUS.

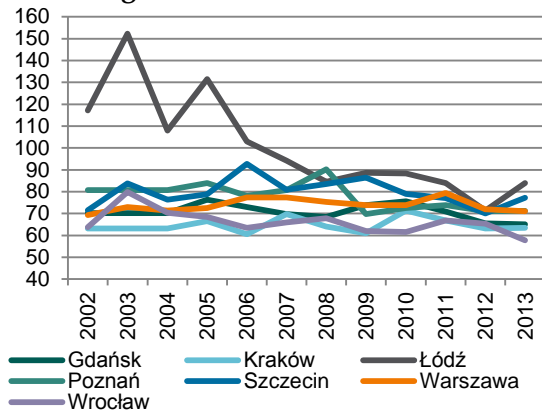**Figure 77 Number of completions per 1000 marriages in 7 cities (dwellings/1000 marriages)**

Source: GUS.

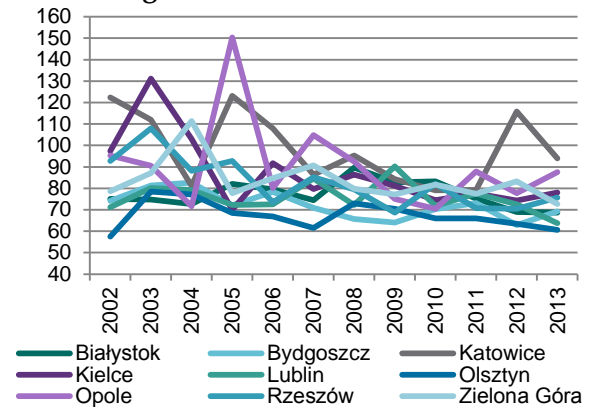**Figure 78 Number of completions per 1000 marriages in 9 cities (dwellings/1000 marriages)**

Source: GUS.

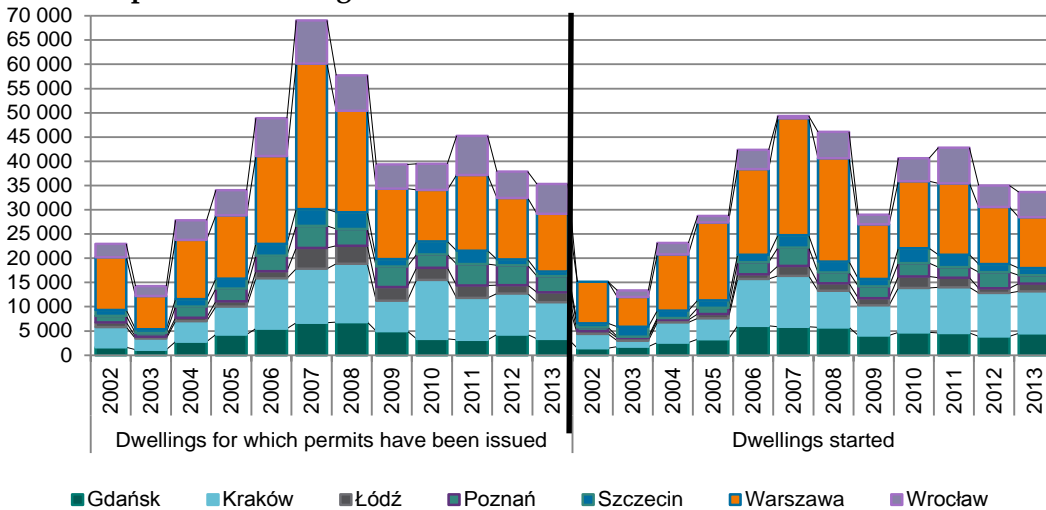**Figure 79 Average usable area of completed housing in 7 cities (in sq. m./dwelling)**

Source: GUS.

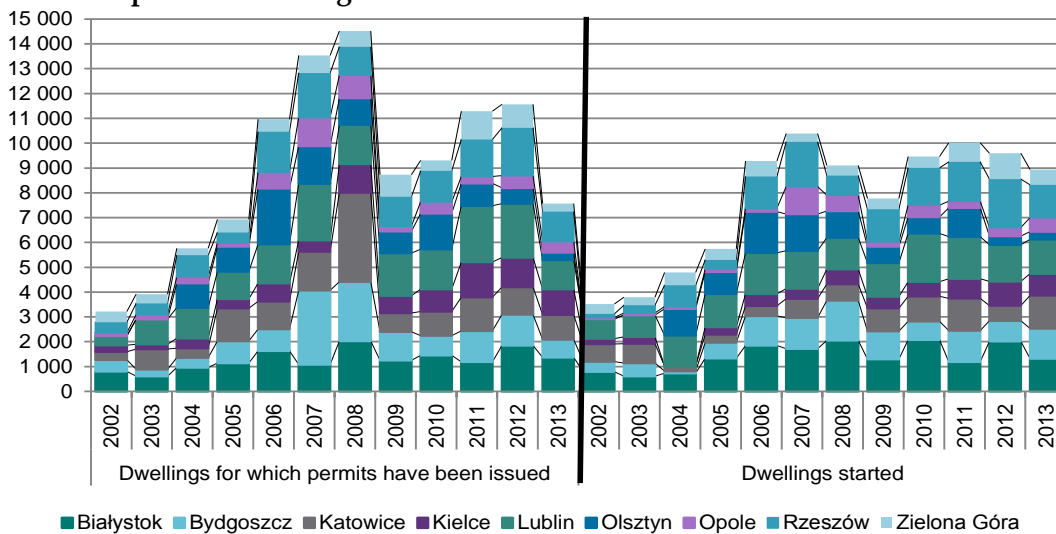**Figure 80 Average usable area of completed housing in 9 cities (in sq. m./dwelling)**

Source: GUS.

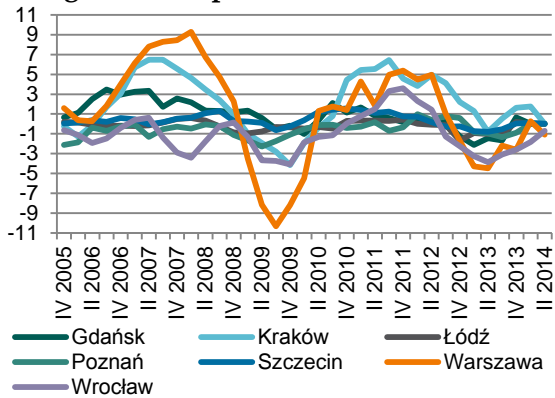**Figure 81 Prospects for housing construction in 7 cities**

Source: GUS.

Figure 82 Prospects for housing construction in 9 cities

Source: GUS.

Figure 83 Indicator of trends in housing production in 7 cities (in thousands, number of housing units commenced less number of housing units completed)
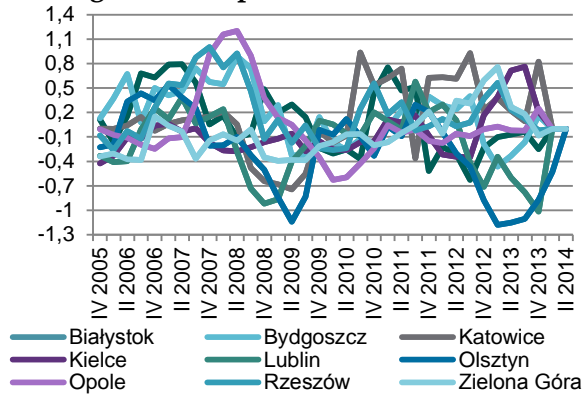

Source: GUS.

Figure 84 Indicator of trends in housing production in 9 cities (in thousands, number of housing units commenced less number of housing units completed)


Source: GUS.

Analysis of BaRN data

Since the launch of the surveys conducted by Narodowy Bank Polski, the number of registered records has been growing[37]. The growth results mainly from bigger number of entities submitting data within the BaRN surveys, but it is also the effect of slight increase in the number of transactions in the market (see Figure 85). This is reflected in better quality of analyses presented. Better quality data, in turn, enhance market transparency.

Figure 85 Number of records in the BaRN database
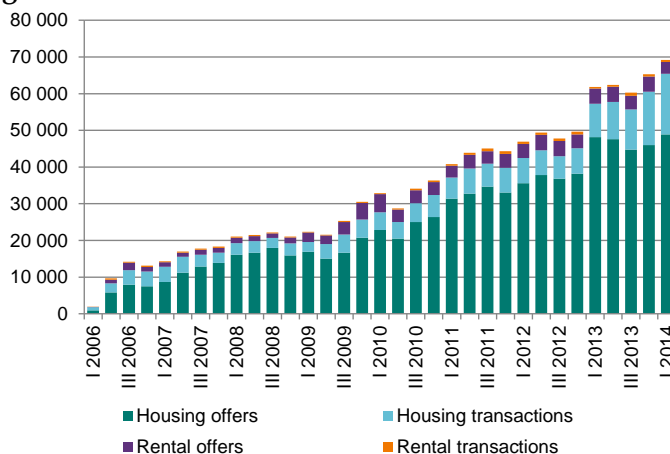
Source: NBP.

In the primary market the changes in transaction prices did not demonstrate any common trend on the national scale. Out of 16 analysed markets, 7 markets posted an average annual increase in

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[37] In connection with the statistical obligation, for the Database of Real Estate (BaRN) Survey on housing and commercial real estate prices in selected cities of Poland, which entered into force as of the beginning of 2013 in 2013, under number 1.26.09(078) almost 30% more records were entered to the database than in the previous year.

prices as compared to 2012 (the highest in Rzeszów – by 7% and in Warsaw – by 5%). The remaining 9 markets observed price declines (the strongest - in Kraków – by 11% and Kielce – by 3%). All the secondary markets posted price declines, except for Rzeszów, where the average annual transaction prices were maintained at a similar level. The strongest decline in transaction prices in the secondary market (YoY) was recorded in Białystok and Wrocław (by about 8% each). In Warsaw, the largest market, prices of secondary market housing dropped by an average of 6%. The average annual transaction price (calculated as the arithmetic mean for particular cities) in the primary market in 16 voivodship cities in 2013 remained at the previous year's level, whereas in the secondary market it was lower by approximately 4%.

The analysis of the relationship between the change in the average transaction price (YoY) in the primary market with the size of the housing stock for all markets, excluding Warsaw, showed a negative correlation at a level of -0.41 which means that the bigger the city the stronger the decline. In the secondary market the analysed variables showed a similar trend, and the correlation indicator for 15 cities, excluding Warsaw, was -0.40.

Invariably, since the launch of the survey, the highest offer and transaction prices in the primary market have been recorded in the Warsaw market (with the average annual transaction price at a level of PLN 7152/sq. m). Poznań ranked the second with the price of PLN 6005/sq. m, getting ahead of Kraków by PLN 170. In the secondary market the highest average annual transaction prices are recorded in Warsaw (PLN 6928/sq. m), Kraków (PLN 5830/sq. m) and Poznań (PLN 4941/sq. m).

The average selling time of housing in the secondary market in 2013 got extended in relation to the previous year by over 2 weeks to reach approximately 161 days. For 7 largest and most liquid markets (Gdańsk, Kraków, Łódź, Poznań, Warsaw, Wrocław, Szczecin) the selling time of housing extended by almost 3 weeks in relation to the previous year and reached 168 days.
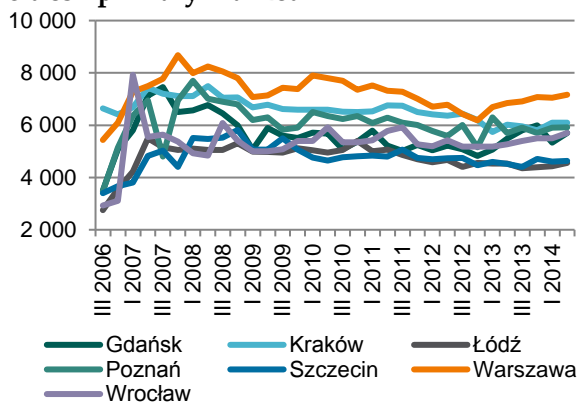
Primary housing market according to the BaRN database

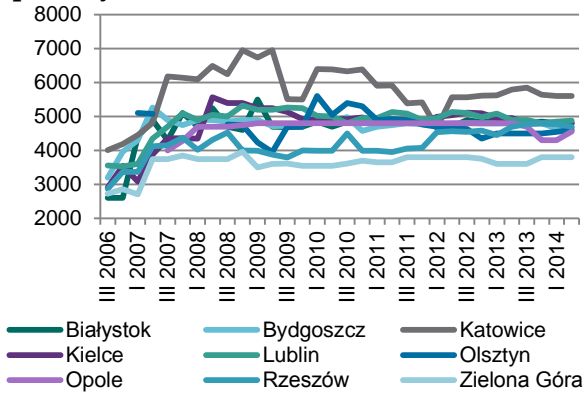**Figure 86 Median selling offer price in 7 cities - primary market**
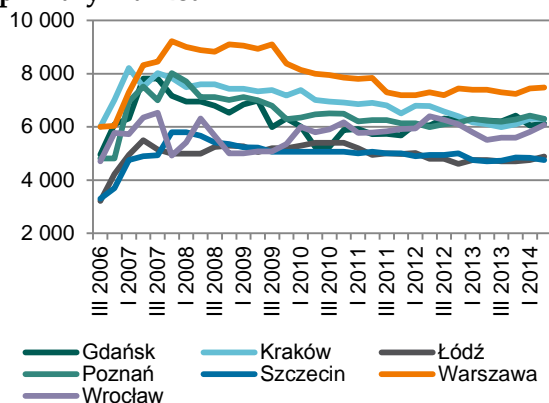
Source: NBP.

Figure 87 Median selling transaction price in 7 cities - primary market
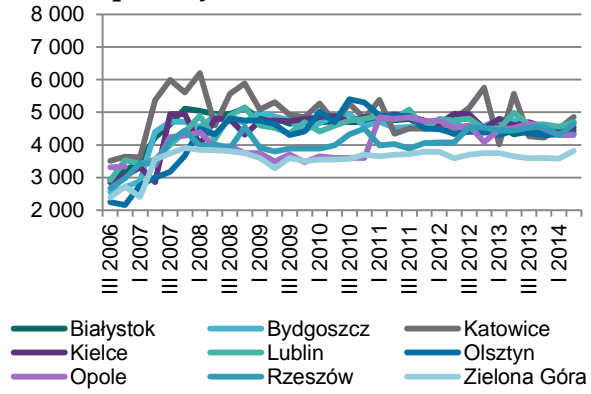

Source: NBP.

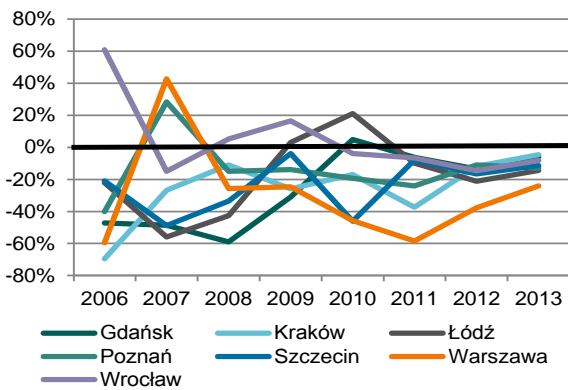**Figure 88 Median selling offer price in 9 cities - primary market**

Source: NBP.

Figure 89 Median selling transaction price in 9 cities - primary market

Source: NBP.

Figure 90 Supply and demand mismatch; units with area <= 50 sq. m - primary market in 7 cities
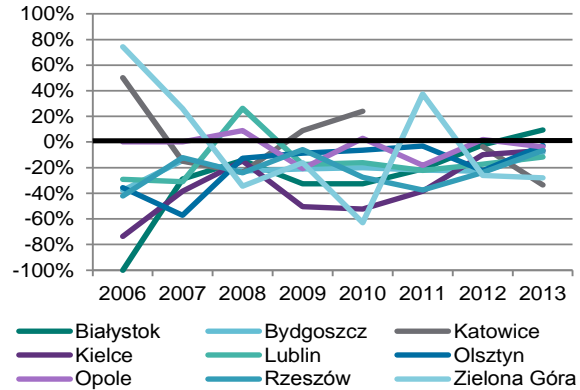

Figure 91 Supply and demand mismatch; units with area <= 50 sq. m - primary market in 9 cities

Note to Figure 90: The percentage mismatch between supply (housing offers by real estate developers) and estimated demand (housing transactions) with regard to the housing unit area, according to the data from the BaRN database; the mismatch is measured as the share of housing units with usable area of up to 50 square meters (average for the last four quarters). A positive result (above the black line) indicates the surplus of housing units up to 50 square meters, a negative result - their deficit. The same applies to Figures 91 to 93 and 98 to 101 (for the secondary market).
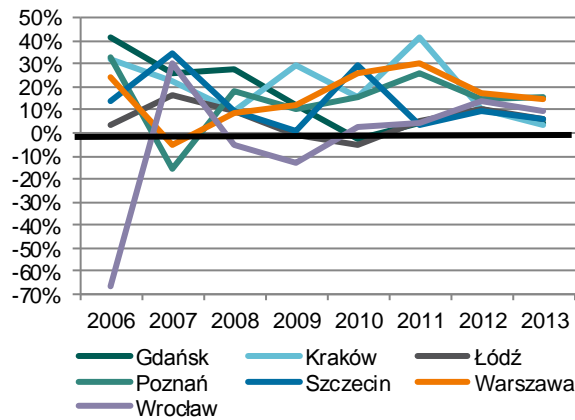
Source: NBP.

Source: NBP.

Figure 92 Supply and demand mismatch; units with area > 50 sq. m - primary market in 7 cities

Source: NBP.

Figure 93 Supply and demand mismatch; units with area > 50 sq. m - primary market in 7 cities

Source: NBP.

Secondary housing market according to the BaRN database

Figure 94 Median selling offer price in 7 cities - secondary market
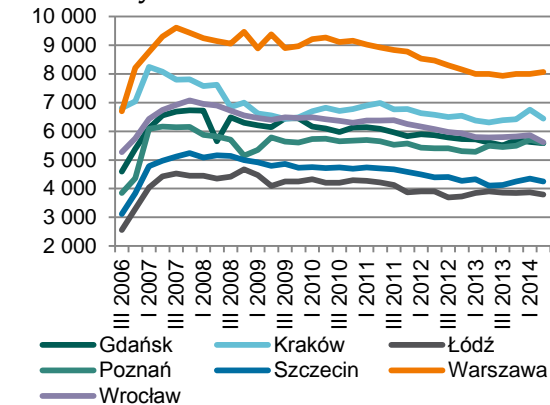
Source: NBP.

Figure 95 Median selling transaction price in 7 cities - secondary market

Source: NBP.

Figure 96 Median selling offer price in 9 cities - secondary market

Source: NBP.

Figure 97 Median selling transaction price in 9 cities - secondary market

Source: NBP.

Figure 98 Supply and demand mismatch; units with area <= 50 sq. m - secondary market in 7 cities

Source: NBP.

Figure 99 Supply and demand mismatch; units with area <= 50 sq. m - secondary market in 9 cities
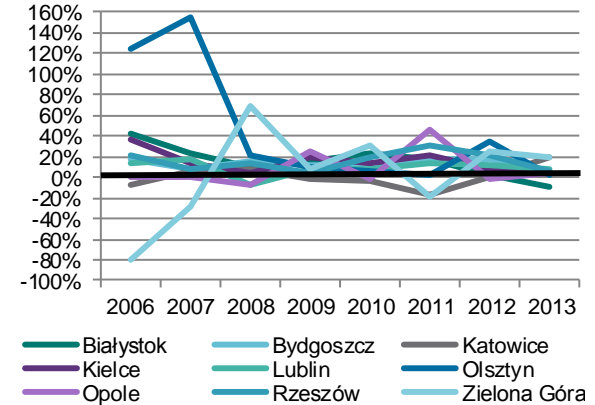

Source: NBP.

Figure 100 Supply and demand mismatch; units with area > 50 sq. m - secondary market in 7 cities
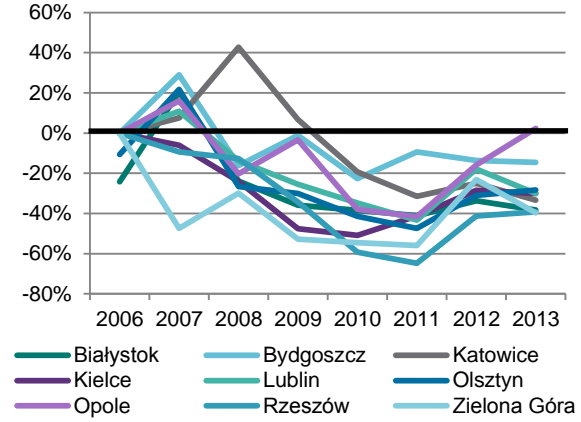
Source: NBP.

Figure 101 Supply and demand mismatch; units with area > 50 sq. m - secondary market in 9 cities
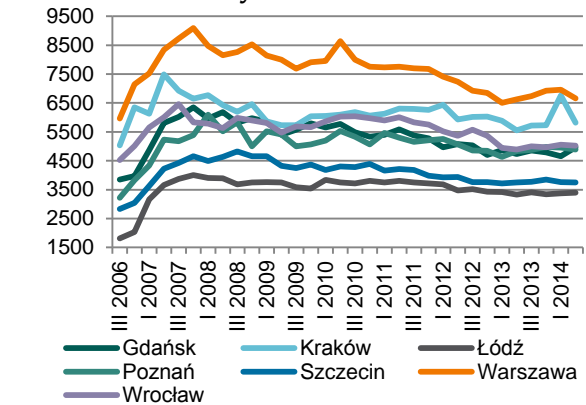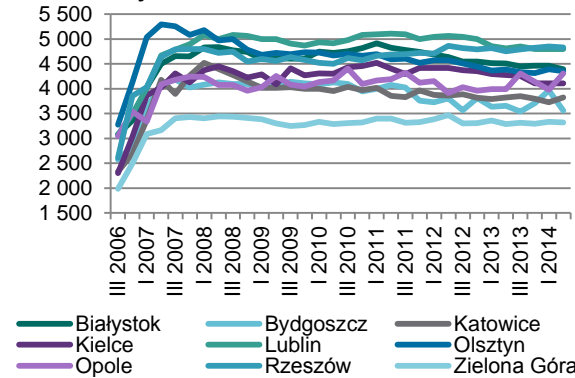

Source: NBP.

Figure 102 Median selling time in 7 cities - secondary market
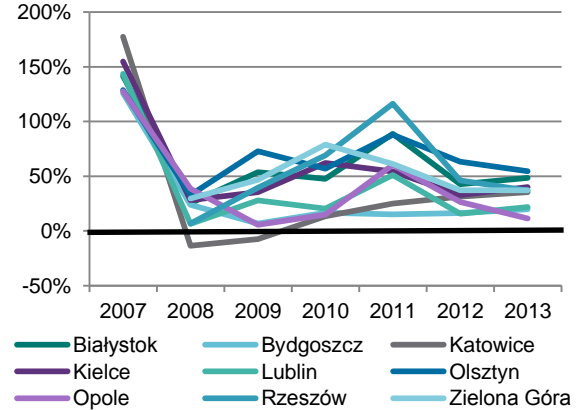
Source: NBP.

Figure 103 Median selling time in 9 cities - secondary market

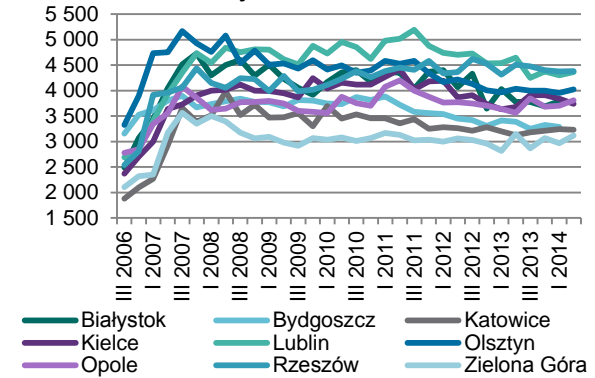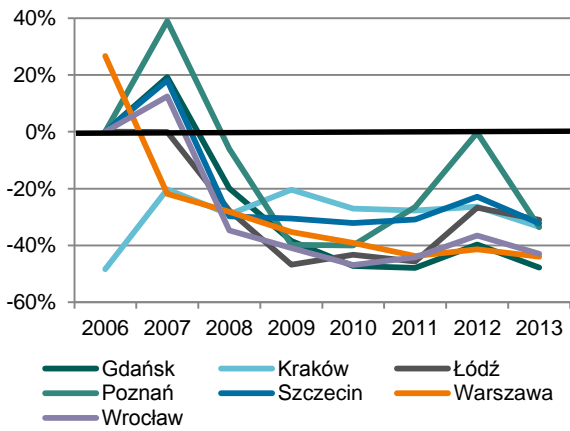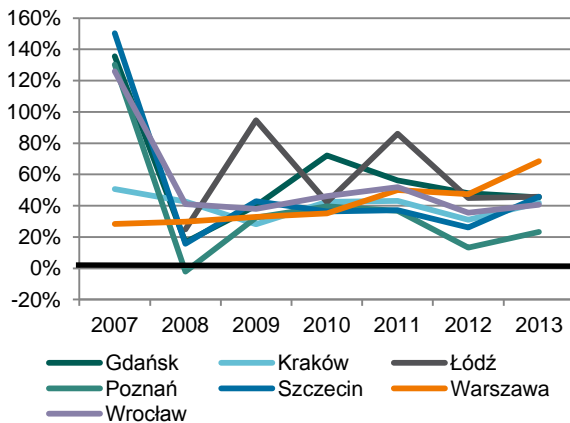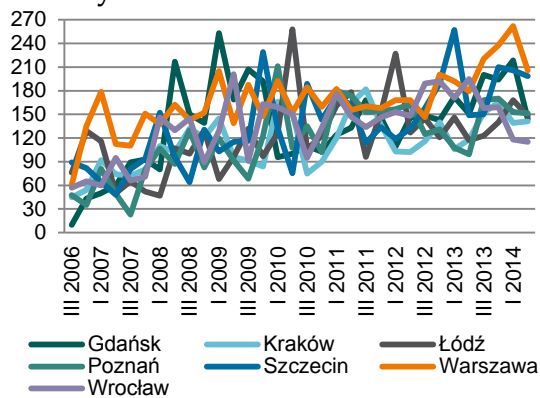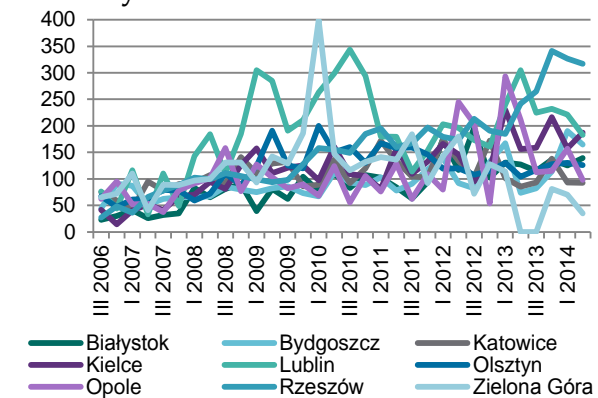Source: NBP.

Home rental market according to the BaRN database

In 2013 the offered rents in Kraków and Warsaw continued at a stable level, in Szczecin, Łódź and Gdańsk showed slight fluctuations, whereas in Poznań and Wrocław followed an upward trend. The average transaction rents differed considerably over the course of 2013. The housing rental market in the analysed cities, which are academic cities, is of seasonal nature. The highest demand is observed in the periods directly preceding the beginning of the academic year. It is worth noticing that in the case of Warsaw and Gdańsk the average transaction rents at the beginning of Q3 decreased whereas in the case of the remaining cities, increased. The level of rental rates of housing is affected by its standard, location, access to infrastructure, proximity of transport means and speed of reaching the city centre. The highest prices are usually recorded in city centres, in areas offering good public transport connection, in the close vicinity of universities, whereas lower prices are observed in the post-industrial districts.

Figure 104 Average offer rents in 7 cities (zloty/sq. m.)
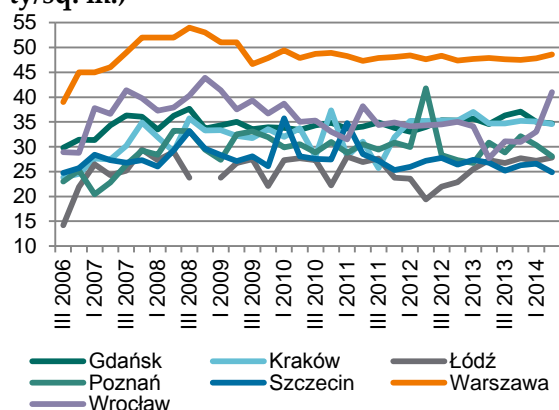
Source: NBP.

Figure 105 Average transaction rents in 7 cities (zloty/sq. m.)
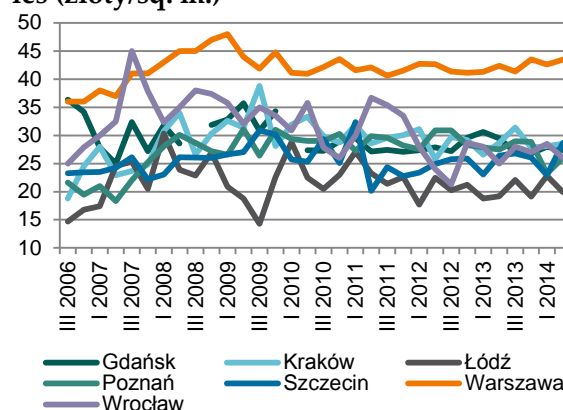
Source: NBP.

Glossary of terms and acronyms

AMRON – System for the Analysis and Monitoring of Real Estate Market Transactions.

Arbitrage – A sale/purchase transaction of all possible goods subject to commercial exchange (e.g. merchandise, securities, housing), enabling gaining the profits without any risk. The essence of Arbitrage is the balancing of price differences of the same product in various markets or in the same market. In case such a difference is higher than transaction costs, the investor shall gain profit by purchasing the product in a cheaper market and selling it in a more expensive market.

BaRN – Real Estate Market Database. The database containing offer and transaction prices of housing in the primary and secondary markets and data on rental market rates in 16 voivodeship capitals. The data come from real estate brokers, housing cooperatives and real estate developers who volunteered for the study and partially also from the Registers of Prices and Values of Real Estate kept by particular counties. The data are gathered and verified by the Regional Branches of the NBP.

BIK – Credit Information Bureau.

Shopping centre – retail real estate that has been planned, constructed and managed as a single retail entity. It consists of common parts, with a minimum gross leasable area (GLA) of 5,000 sq. m, and a minimum of 10 shops.

BPO - (*Business Process Outsourcing*) are the centres for outsourcing of business processes oriented to external clients.

COB – (Central Business Area) the area separated by Warsaw Research Forum, located in the centre of Warsaw, delimited by the Vistula River from the east, by Al. Solidarności from the north, Al. Armii Ludowej from the South and ul. Towarowa (west).

DI - (*Disposable Income*) households' gross disposable income.

Loan availability – measure defining the amount of the average monthly wage in the enterprise sector in a given market, considering the lending requirements of the bank and loan parameters (interest rate, depreciation period, social minimum understood as the minimum income after the payment of loan instalments). Important information is provided by the rate of changes and regional differentiation rather than the indicator value alone.

Housing availability – measure of potential ability to purchase housing at the offer price for the average monthly wage. It indicates the number of square metres of housing with an average offer price in a particular market (PONT Info) that can be purchased for the average wage in the enterprise sector in a particular city (GUS).

DTI - (*Debt to Income*) – the indicator defining the level of loan service costs (repayment) to the average gross income available to households.

Nine cities – Białystok, Bydgoszcz, Katowice, Kielce, Lublin, Olsztyn, Opole, Rzeszów, Zielona Góra.

Financial leverage –ratio of liabilities and provisions for liabilities to equity.

PONT – database holding data on housing real estate offer prices, gathered by the company of PONT Info Nieruchomości.

Global creditworthiness – measure indicating overall creditworthiness (mortgage loans) of all households in Polish cities. It is calculated based on individual income available to households (household budgets according to GUS) as well as bank lending requirements and loan parameters.

Hedonic housing price index – reflects the 'pure' price, i.e. resulting from factors other than home quality differences. The price of a standardised housing unit, common on a given market, created based on an econometric model, is always analysed. The index adjusts the average price from the sample with a change in quality of housing in the sample in each of the periods. This distinguishes it from the dynamics of average price, or a median in the sample, which would strongly react to a change in the sample composition, e.g. by increasing the prices against a higher number of small housing units with a higher price of a square metre. [38]

Availability of loan-financed housing –measure specifying how many square metres of housing at an average offer price in a particular market (PONT Info) may be purchased for a mortgage loan obtained based on the average monthly wage in the enterprises sector in a particular market (GUS), in view of loan parameters (interest rate, depreciation period, social minimum understood as the minimum income after payment of loan instalments) and the lending parameters of the bank. Index growth rate and spreads between particular markets also provide important information.

LTV – (*Loan to Value*) – ratio of the value of the loan granted to the value of the loan collateral.

Small and large real estate developers – analysed real estate development companies selected on the basis of economic activity classification number PKD2007. They were divided into large and small companies taking into account both the headcount and the level of revenues. Companies employing less than 50 people are considered as small, others are large companies.

Mieszkanie dla Młodych (MDM – housing for young) – a new government-subsidized programme intended to support housing construction through subsidies for housing loan. The programme entered into force at the beginning of 2014.

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[38] More information in the article by M. Widłak (2010), *Metody wyznaczania hedonicznych indeksów cen jako sposób kontroli zmian jakości dóbr* [Methods of determining hedonic price indices as a way to control quality changes of goods], „Wiadomości Statystyczne" [Statistical News] No 9.

MDR - (*Mortgage Debt Ratio*) – percentage share of mortgage loans repayment in the borrower's budget.

Cities 200-500 – means all cities in Poland with a population from 200 to 500 thousand.

MLS – (*Multiple Listing System*) a system which enables the real estate brokers to exchange information concerning offers of housing for sale.

Building type 1121 – a residential multi-family five-storey building, which since 2004 has served to the central bank as the basis for monitoring the average price of construction of one square metre of an average housing unit (see: the Construction Prices Bulletins by Sekocenbud).

OOH – (*Owner Occupied Housing*) dwellings inhabited by the owner.

P/I – *Price to Income*), ratio determining the relationship of the price of an average housing unit in a particular year to the average available income.

Sub-rental –means the process temporary rental by home owner of the whole or part of his real estate against a specific fee.

PSBD – Polish Association of Home Builders.

P/R - (*Price to Rent Ratio*), relation of interest costs on a housing loan to rent, per 1 square metre.

Pre-let – rental of commercial real estate space during the real estate construction process. Its defined level is required by the bank financing the investment as a security of income from the investment.

Credit rationing – - means restricted lending resulting from banks' own assessment of growing risk. In specific situations this may lead to declines in the value of newly granted loans, despite the absence of major changes in the current creditworthiness of the borrower, which may lead to self-fulfilling forecast.

S Recommendation – represents a collection of good practices regarding mortgage-secured credit exposures. It was introduced in 2006 by the Polish Financial Supervisory Authority, issued pursuant to Article 137 item 5 of the Banking Law Act (Journal of Laws No. 72/2002, item 665, as amended).

T Recommendation - refers to the collection of good practices in managing the risk of retail loan exposures. It was introduced in 2010 by the Polish Financial Supervisory Authority, issued pursuant to Article 137 item 5 of the Banking Law Act (Journal of Laws No. 72/2002, item 665, as amended).

Re-commercialisation of commercial facilities - re-rental of facilities which were rented before.

Rodzina na Swoim (RnS) (Family on their own) – the governmental programme intended to support housing construction through subsidies to interest rates on housing loans. The program was closed at the end of 2012.

SARFIN – Analytical System for the Real Estate Financing Market.

PM – primary market of housing.

SM – secondary market of housing.

SCC – (*Shared Services Centres*) are the centres of common services, i.e. departments or independent economic operators separated from the parent entity and relocated outside the country the company originates from.

Sekocenbud –publishing house issuing quarterly data on costs in construction: Construction Prices Bulletins (BCO) – part I, large building facilities.

Office real estate standard – office space is classified according to the standard offered. The classification depends on the age of the building, its location, possibility to customize the space, technical specification (e.g. raised floors or suspended ceilings), underground and over ground parking lots and other factors important from the tenant's point of view.

Capitalisation rate – a quotient of net operating income that may be gained in the market and the market price of real estate (in accordance with the General Domestic Valuation Principles).

Seven cities – Gdańsk, Gdynia, Łódź; Kraków, Poznań, Szczecin, Wrocław.

TBS (Social Building Society) – a company operating under the Act of 26 October 1995 on certain forms of subsidizing housing construction (consolidated text Journal of Laws No. 98/2000, item 1070, as amended), the subject of which is housing construction and maintenance based on rental, provision of management and administration services and conducting business related to housing construction and accompanying infrastructure. It was planned that the TBS offer would be addressed to non-affluent families eligible for loan subsidy from the National Housing Fund (KFM). The tenants pay rent, which is usually higher than in municipal housing (as the loan is repaid from the rent) but lower than the market rent.

TDR - (Total *Debt Ratio*) – the indicator determining the percentage share of mortgage loans repayment in the borrower's budget.

Vacancy rate – relation of non-rented space to the accumulated (total) supply of commercial space in a particular location, e.g. town or district.

Profitability ratios – ROA (*return on assets*) – relation of net income to assets at the end of the period, **ROE** (*return on equity*) – relation of net income to equity at the end of the period, profitability of net sales – net profit in relation to sales income.

Professional rental – the process of renting housing space constructed for the purpose; the owner of the stock for rental may be both a legal entity (municipality, local government, real estate fund) and a natural person; in Poland this market is limited and decapitalised.

ZBP – Polish Bank Association.

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Report

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Olszewski Krzysztof	Financial Stability Department
Waszczuk Joanna	Financial Stability Department

Attachment – analyses of voivodship cities (people that are underlined are also authors of parts of the Report)

<u>Baldowska Grażyna</u>	Regional Branch in Warsaw
Barska Ewa	Regional Branch in Bydgoszcz
Białach Ewa	Regional Branch in Lublin
Borzym Henryk	Regional Branch in Olsztyn
Broniecki Waldemar	Regional Branch in Olsztyn
Burghardt Anna	Regional Branch in Gdańsk
Czapka Izabela	Regional Branch in Katowice
Gałaszewska Krystyna	Regional Branch in Gdańsk
Hulboj Izabela	Regional Branch in Zielona Góra
Kiernicki Jarosław	Regional Branch in Bydgoszcz
Książczyk Jolanta	Regional Branch in Łódź
Jakubowski Andrzej	Regional Branch in Warsaw
Lekka Marta	Regional Branch in Szczecin
<u>Leszczyński Robert</u>	Regional Branch in Białystok
Leśniewicz Artur	Regional Branch in Poznań
Mach Barbara	Regional Branch in Rzeszów
Mach Łukasz	Regional Branch in Opole
Masiak Małgorzata	Regional Branch in Wrocław
Messyasz-Handschke Arleta	Regional Branch in Poznań
Mikołajczyk Łukasz	Regional Branch in Opole
Misztalski Maciej	Regional Branch in Wrocław
Modzelewska Renata	Regional Branch in Warsaw
Mogielnicką Urszula	Regional Branch in Lublin
<u>Myszkowska Barbara</u>	Regional Branch in Warsaw
Opioła Zbigniew	Regional Branch in Katowice
Orliński Sławomir	Regional Branch in Kielce
Osikowicz Grażyna	Regional Branch in Kraków
Perczak Jacek	Regional Branch in Kielce
Piwnicka Małgorzata	Regional Branch in Poznań
Przewoźniak Kinga	Regional Branch in Kraków
Tomska-Iwanow Anna	Regional Branch in Szczecin
Tyszkiewicz Robert	Regional Branch in Łódź
Warzocha Jolanta	Regional Branch in Rzeszów
Żywiecka Hanna	Regional Branch in Poznań

Annex: Analysis of voivodship cities

1.   Białystok

2.   Bydgoszcz

3.   Katowice

4.   Kielce

5.   Kraków

6.   Lublin

7   Łódź

8.   Olsztyn

9.   Opole

10.   Poznań

11.   Rzeszów

12.   Szczecin

13.   Trójmiasto

14.   Warszawa

15.   Wrocław

16.   Zielona Góra