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

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Summary

The housing market (primary, secondary or rental) is very often analyzed as a whole, big market in a selected country. Our analysis focuses on the fundamental determinants of this market in 16 biggest cities in Poland, which are the capital cities of the 16 voivodeships. We also clustered the cities to show groups of cities which's housing market behaves in a similar fashion. We confirm that the situation on housing market is driven by fundamental factors and the best way for a further econometric analysis is to divide the whole market into two groups of cities with a number of inhabitants below and over 400 thousand people.

Key words: housing market, house prices, primary and secondary market, rental market, fundamentals.

JEL classification: E21, R21, R31

1.   Introduction

Although the residential real estate sector in Poland is often analysed as a whole, it is a heterogeneous market characterised by significant diversification across 16 voivodeship cities. A cluster analysis was performed in order to identify convergence and identical tendencies in local voivodeship markets. Clustering of cities based on the adopted criteria (i.e. indicators presenting the housing situation, scale of construction, housing prices, fundamental factors, indicators of demographic burden in individual centres) proved to be a difficult task (see Figure 1 - Figure 6). While clusters of cities with similar trends or similar structure were differentiated using variables categorizing the markets, obtaining a homogenous division proved to be impossible (with each segregation generating different results). Another factor adding to the difficulty of the analysis and clustering of cities included structural changes in individual markets. The changes in the market taken together resulted in different clustering results, even with the same categorizing variables in subsequent years. The analysis of voivodeship centres confirmed that the most permanent division is the classification of cities in terms of their population, i.e. 7 cities with over 400 thousand inhabitants (Gdańsk, Cracow, Łódź, Poznań, Szczecin, Warsaw, Wrocław) and other 9 cities with a smaller population (Białystok, Bydgoszcz, Katowice, Kielce, Lublin, Olsztyn, Opole, Rzeszów, Zielona Góra).

In two groups of the analysed cities, the housing situation has slightly improved in 2012, due to deterioration of the majority of fundamental demographic factors. Regional markets were characterised by stability of phenomena observed within the last two years and low activity on the part of buyers. A slight recovery recorded in the final quarter of 2012 resulted from the approaching end of the government scheme *Rodzina na Swoim* (Family on

their own) (RNS) and not from improved sentiment in the housing market. As in the previous years, the primary market in voivodeship cities exhibited higher propensity for price reduction than the secondary market. In numerous regional markets the nominal price returned to the level from before the boom, i.e. 2007 (in some even from before 2006), in both the primary and the secondary market.

The changing situation of consumers in the real estate market in 2012 did not have an impact on the assessment of the housing market as compared to 2011, but the changes are clearly visible from the 5-year perspective (see Figure 7 - Figure 8). The inclusion of such factors as price per one square meter of housing, city population, unemployment rate, remuneration and housing availability in the analysis[1] of data for 2012 resulted in the following two cities at top positions, namely, Katowice (with relatively low prices and high salaries) and Warsaw (with low unemployment rate and high salaries). Gdańsk and Poznań competed for the third place. Places at the opposite end of the scale belonged to Białystok (with its distance from subsequent cities in the ranking increasing), as well as Kielce, Lublin and Rzeszów. There were no substantial changes in the middle of the ranking, but compared to 2011 the differences in the situation of consumers were more pronounced (i.e. in 2012 "the middle of the scale" was more dispersed).

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[1] The analysis involved clustering with the use of multi-feature similarity (ranking establishment) and establishing linear hierarchy in terms of given variables and summing up their unitized values and dividing by the number of variables.

Figure 1. Tree diagram of housing situation in voivodeship cities (average housing area, usable housing area per person, average number of rooms in a dwelling, average number of persons in a dwelling) in 2012
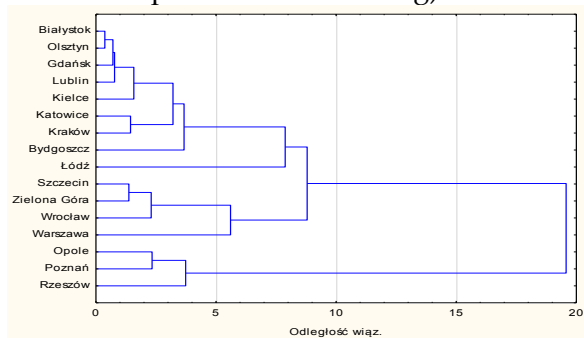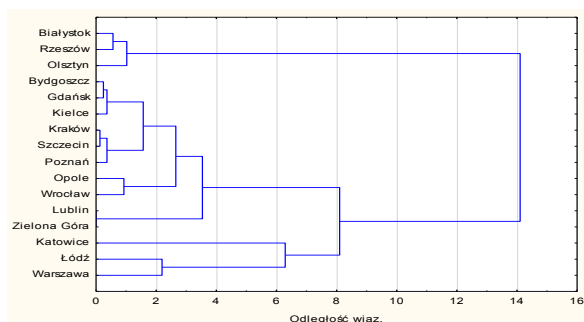

Source: GUS, NBP.

Figure 2. Tree diagram of demographic data (demographic growth, migration balance, marriages per 1000 inhabitants) in voivodeship cities in 2012
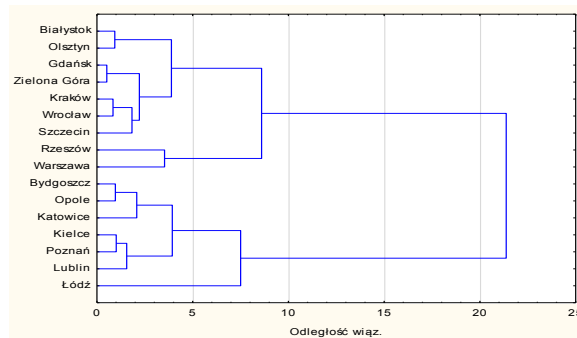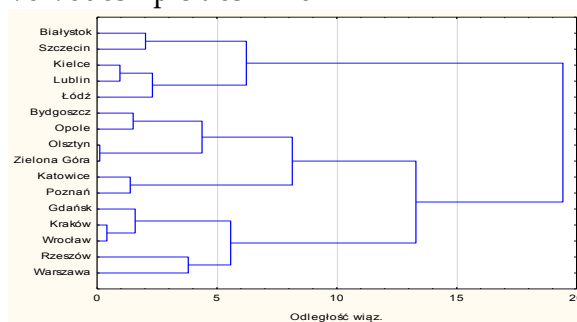

Source: GUS, NBP.

Figure 3 Tree diagram of population structure (at pre-production, production or post-production age) in voivodeship cities in 2012

Source: GUS, NBP.

Figure 4 Tree diagram of economic and demographic factors (unemployment rate and migration per 1000 inhabitants) in voivodeship cities in 2012
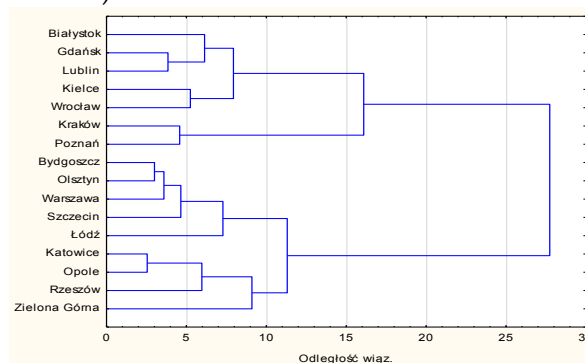

Source: GUS, NBP.

Figure 5 Tree diagram of the effects of housing construction (completed dwellings per 1000 inhabitants and per 1000 marriages) in voivodeship cities in 2012
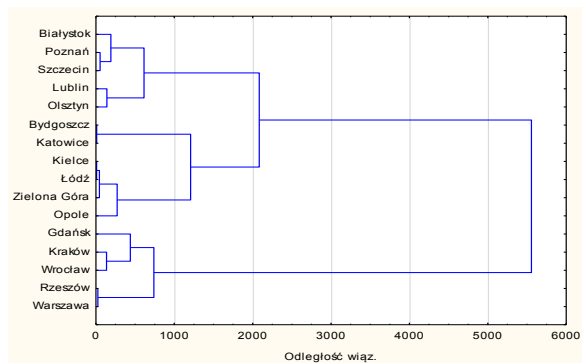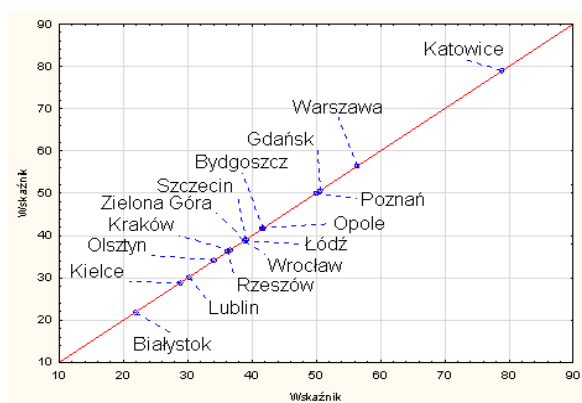

Source: GUS, NBP.

Figure 6 Tree diagram of quarter-to-quarter price growth in voivodeship cities in 2012 (sale transactions in the secondary market)
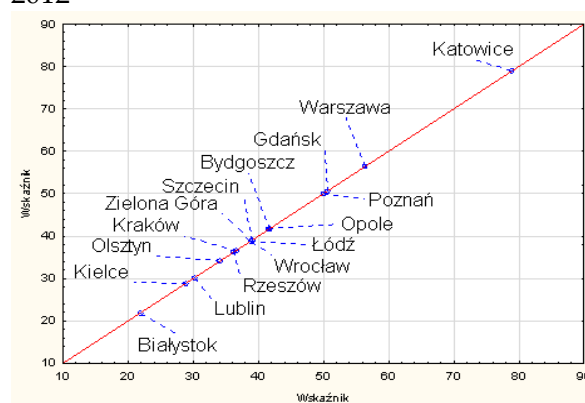

Source: NBP.

Figure 7. Situation of consumers in the housing market in voivodeship cities in 2007

Source: GUS, NBP.

Figure 8. Situation of consumers in the housing market in voivodeship cities in 2012

Source: GUS, NBP.

## 2.   Housing situation in 16 voivodeship cities

The housing situation in Polish voivodeship cities in 2012 has slightly improved compared to 2011 (see Figure 9 - Figure 16). Better housing saturation indicators in voivodeship cities resulted from more intensive activity, compared to other regions of Poland, of investors implementing new housing investments and the small-scale process of demolition and change of intended use of housing. The indicators presenting the fulfilment of housing needs were better in the seven largest voivodeship cities in terms of the population than in the group of nine smaller cities and were similar to the level recorded in the Western European countries. This should be attributed to more favourable fundamental factors in those markets.

Preliminary results of the National Population and Housing Census of 2011 corroborated that voivodeship cities differ in terms of the housing stock age structure. Housing units built in the years 1971-1988 prevailed in the majority of cities, with the exception of Warsaw and Cracow where the housing stock structure was dominated by housing units built in the years 1945-1970. In five cities, i.e. Katowice, Łódź, Opole, Szczecin and Wrocław, housing units from the pre-war period accounted for a significant part of the housing stock. The share of new housing buildings, i.e. built after 2003, was insignificant and ranged between 3,5% in Łódź and 14,5% in Warsaw. Housing units with usable area of 40-79 square meters constituted the largest group in the housing stock in voivodeship cities. Small housing units, i.e. up to 39 square meters, also made up a relatively large group, representing one third of housing units in Warsaw, Łódź and Cracow, and one fourth in other voivodeship cities (except for Opole).

In the years 2013-2014, the number of housing units in the stock should increase as a result of completion of new housing projects and a relatively

small decline in the number of the existing housing units. Since real estate developers adjust their supply to market conditions, i.e. they build smaller housing units, improvement in housing indicators (e.g. average usable housing area) may slow down.

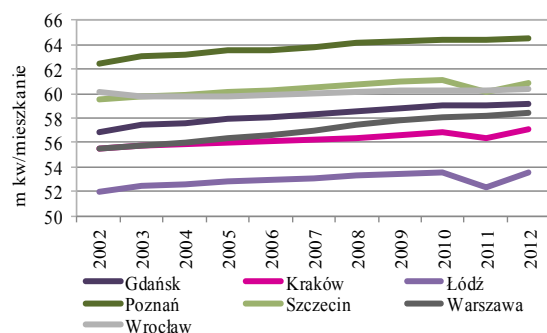Figure 9. Housing stock per 1000 inhabitants in 7 cities
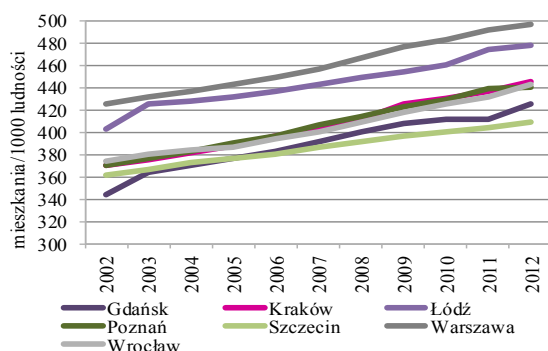
Source: GUS.

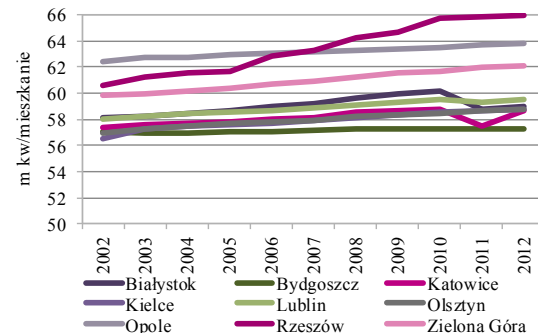Figure 10. Housing stock per 1000 inhabitants in 9 cities
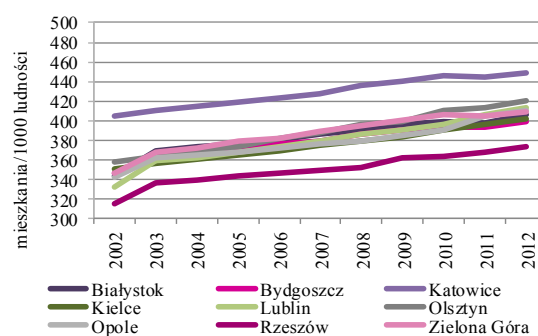
Source: GUS.

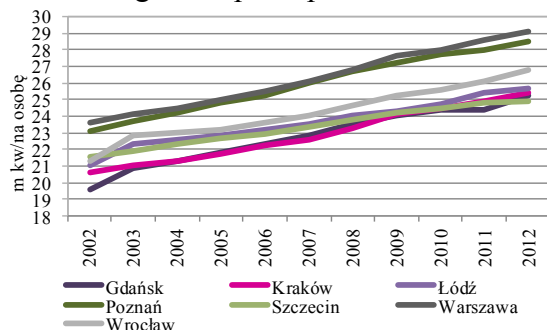Figure 11. Average usable housing area in the housing stock (square metres) in 7 cities

Source: GUS.

Figure 12. Average usable housing area in the housing stock (square metres) in 9 cities

Source: GUS.

Figure 13. Average usable housing area in the housing stock per 1 person in 7 cities
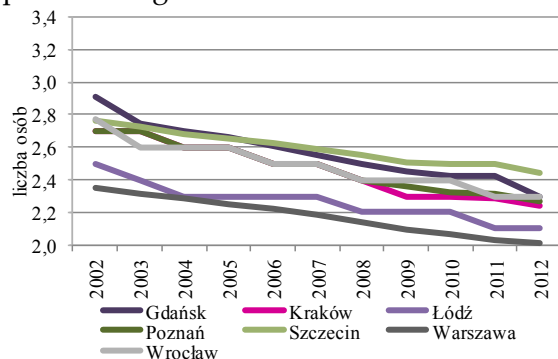

Source: GUS.

Figure 14. Average usable housing area in the housing stock per 1 person in 9 cities
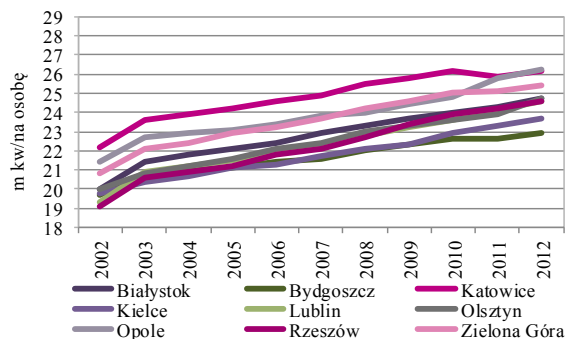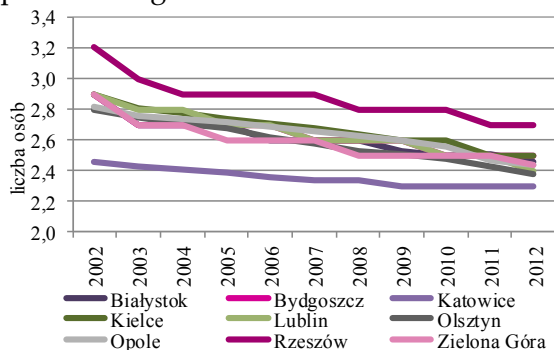

Source: GUS.

Figure 15. Average number of persons per dwelling in 7 cities

Source: GUS.

Figure 16. Average number of persons per dwelling in 9 cities

Source: GUS.

3. Demographic factors in 16 voivodeship cities

The year 2012 was a subsequent year of deterioration in demographic situation in the majority of Polish voivodeship cities. Fundamental demographic factors related to the process of the second post-war baby boom generations starting to get on their own two feet have decreased. In consequence, the indicators of the number of marriages (see Figure 21 - Figure 22) and demographic growth (see Figure 17 - Figure 18) declined in the majority of regional centres. A positive development was an improvement in the migration rate in larger cities (see Figure 19 - Figure 20). This can be attributed to economic slowdown and the movement of people from other Polish regions with higher unemployment rate than in the voivodeship cities. The population decline was often due to the fact that inhabitants of large cities settled down in the surrounding areas constituting the agglomeration. Despite the positive trends in larger cities, smaller cities still recorded a negative migration rate.

Demographic burden indicators in voivodeship cities of Poland reflect the progressing population ageing process. Within the last two years, an increase in the percentage of post-production population and a decline in the population at the production age (except for Katowice) have been recorded. Compared to 2011, in 2012 the percentage of population at pre-production age grew slightly in six cities, decreased in another six cities and remained at the similar level in four cities, thus failing to produce a single trend.

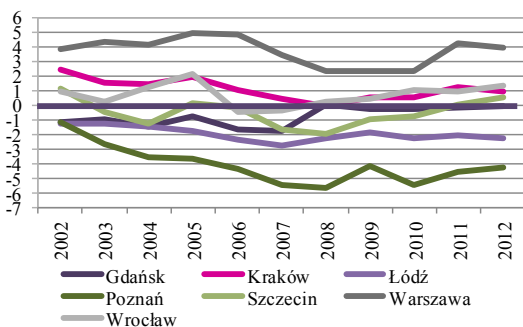Figure 17. Demographic growth per 1000 inhabitants in 7 cities
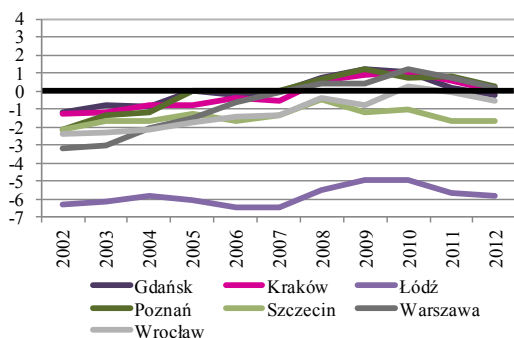
Source: GUS.

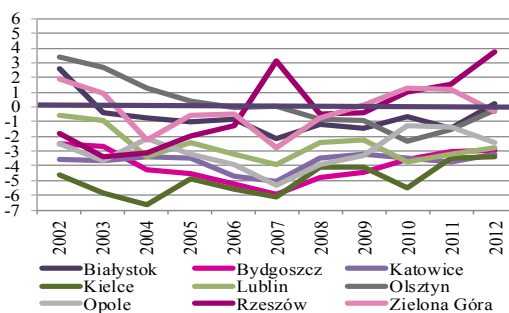Figure 18. Demographic growth per 1000 inhabitants in 9 cities
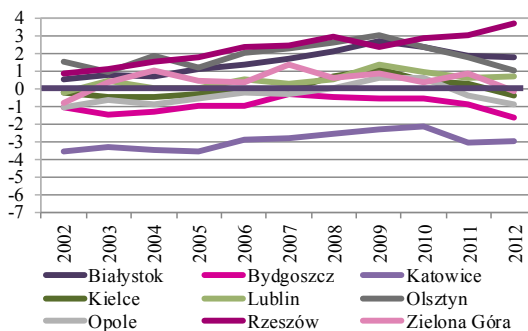
Source: GUS.

Figure 19. Migration per 1000 inhabitants in 7 cities
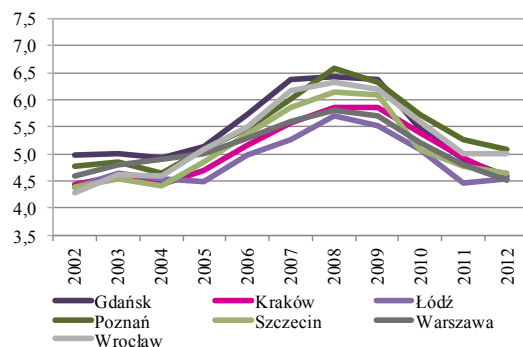

Source: GUS.

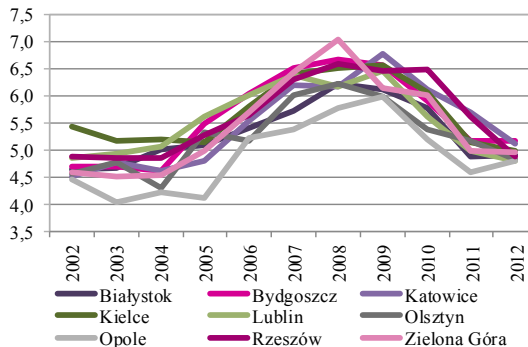Figure 20. Migration per 1000 inhabitants in 9 cities

Source: GUS.

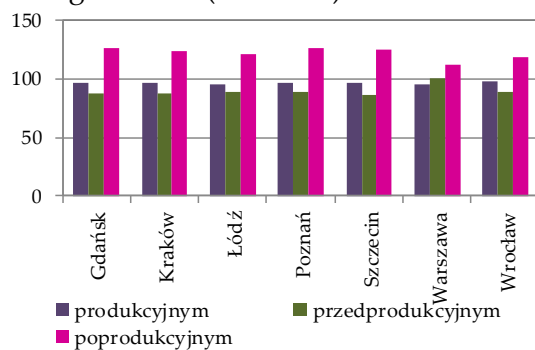Figure 21. Marriages per 1000 inhabitants in 7 cities

Source: GUS.

Figure 22. Marriages per 1000 inhabitants in 9 cities
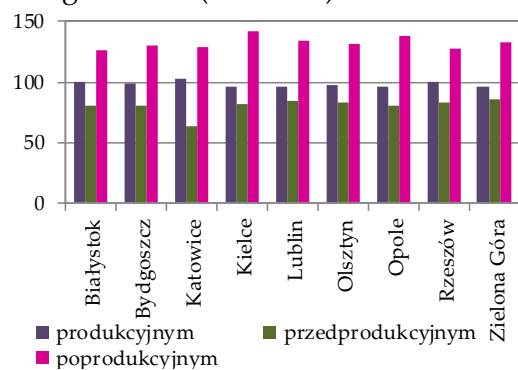

Source: GUS.

Figure 23. Ratio of population age change in 2012 (2002=100) in 7 cities

Source: GUS.

Figure 24. Ratio of population age change in 2012 (2002=100) in 9 cities

Source: GUS.

4. Economic factors in 16 voivodeship cities

In the majority of Poland's voivodeship cities, the impact of economic factors on demand for real estate was less favourable in 2012 as compared to the preceding year. Although both small and large cities recorded a growth of average wages in nominal terms, yet, accounting for CPI inflation, wages in real terms were higher in 5 cities only (in 11 cities in the previous year). The growth was insignificant and ranged from several to several dozen PLN across cities. Similarly to 2011, higher average wages were observed in the cities with the largest population (see Figure 29 - Figure 30), with the exception of Katowice where the largest wage level in the country was generated by wages in mining.

In 2012 the situation in the labour market deteriorated. Higher unemployment rates were recorded in 16 cities, compared to 2011, which may be attributed to persisting economic slowdown (see Figure 25 - Figure 26). Unemployment in voivodeship markets was lower than the average for the whole country. A positive development in the labour market of most voivodeship cities (except for Cracow and Katowice) was the continuing downward trend (started in 2010) in the share of persons up to 34 years of age in the structure of the unemployed (see Figure 27 - Figure 28).

In 2012 the availability of housing has improved as a result of an increase in average wages and a decline in annual average home price (see Figure 31 - Figure 34). As in the previous years, Katowice stood out in terms of housing availability. The city was characterised by a high average wage level and low home prices.

Within the analysed period, a decline (y/y) of potential PLN housing loan availability was recorded in 16 voivodeship cities (see Figure 35 -

Figure 36). Loan availability was limited by banks' restrictive lending policy (related to the amendment to Recommendation S) and higher bank margins. In 2012, despite a deterioration of PLN loan availability, a loan allowed to buy a larger dwelling in the majority of voivodeship cities. This is evidenced by the improved indicator of loan availability of housing (see Figure 37 and Figure 38) as a result of positive growth rate of wages and a drop in the prices of housing units.

In the majority of analysed cities (except for Białystok, Olsztyn and Rzeszów), the level of housing loans disbursed at the end of 2012 decreased considerably as compared to the previous year. This was due to adverse trends in the lending market and lower demand for credit as a result of deterioration in social sentiment. A lower annual growth was also recorded with respect to preferential loans granted under the government RNS scheme. The lower interest in such loans within the first three quarters of 2012, similarly to 2011 Q4, was due to the reduction of housing price thresholds for one square meter which decide about the subsidy to loan interest. The mismatch between the RNS limit and the median transaction price is presented in Figures 103 to 106. Increased demand for government-subsidized loans in all voivodeship markets in 2012 Q4 resulted from the approaching completion of the scheme scheduled for 31 December 2012. Despite lower price limits, numerous applications for subsidy were submitted by the end of last year.[2] In 2013 Q1, the number of households using the preferential loans was higher than in the corresponding period of 2012.

The recent interest rate cuts by the Monetary Policy Council will have a positive impact on the situation in the mortgage loan market in 2013 and should facilitate access to mortgage loans. The programme of "Subsidies to

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[2] Some applications were processed in 2013 Q1.

loans for building energy-efficient houses", approved by the National Fund for Environmental Protection and Water Management to be implemented in 2013, may also contribute to boosting demand for mortgage loans. The programme will be available to natural persons purchasing a flat in a multi-family energy-efficient building or a passive building or building single-family houses with low demand for energy.
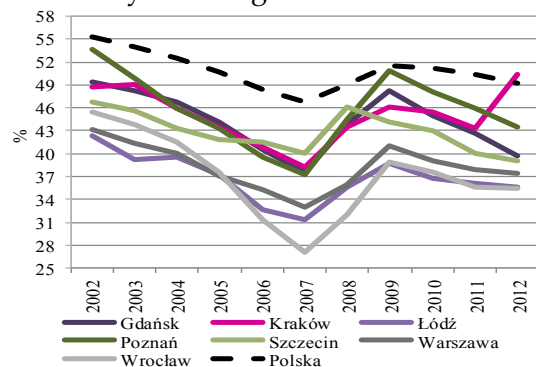
Figure 25. Unemployment rate in 7 cities
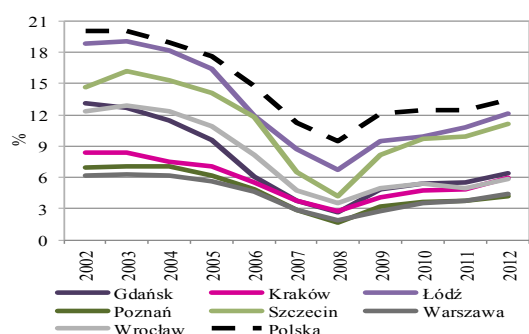
Source: GUS.

Figure 26. Unemployment rate in 9 cities
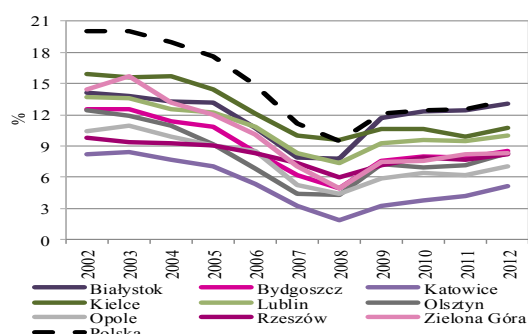
Source: GUS.

Figure 27. Percentage of the unemployed below 34 years of age in 7 cities

Source: GUS.

Figure 28. Percentage of the unemployed below 34 years of age in 9 cities
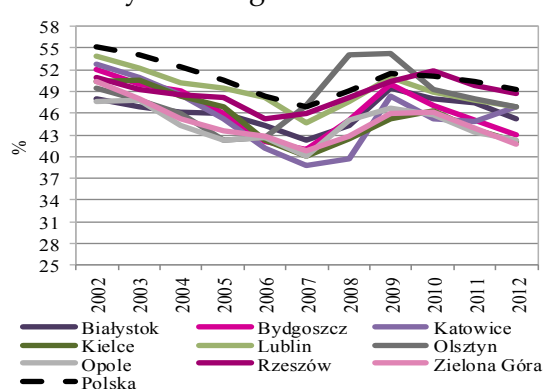
Source: GUS.

Figure 29. Average monthly wages in the enterprise sector in 7 cities
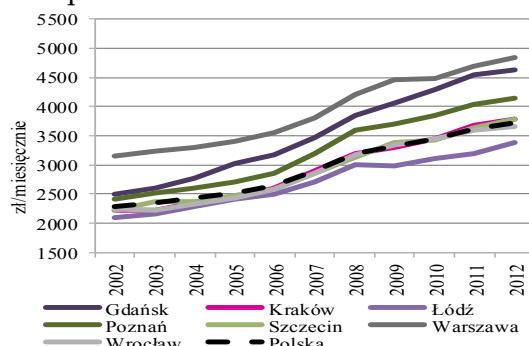
Source: GUS.

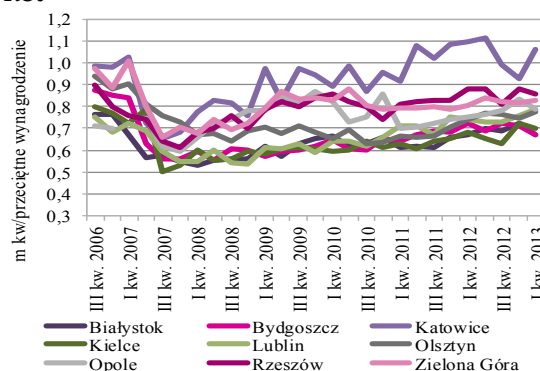Figure 30. Average monthly wages in the enterprise sector in 9 cities
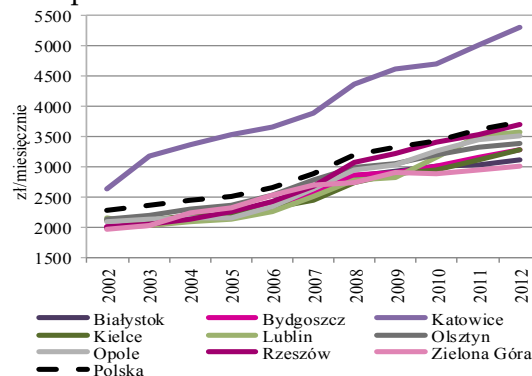
Source: GUS.

Figure 31. Housing availability for an average wage in 7 cities - primary market
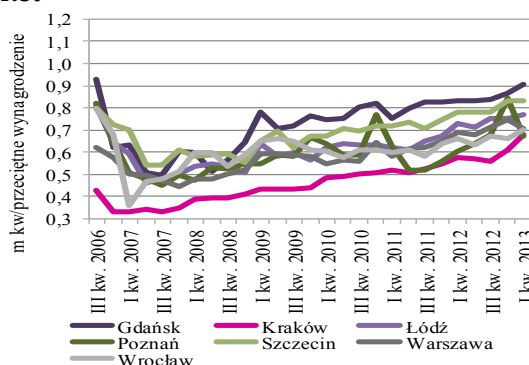
Source: GUS.

Figure 32. Housing availability for an average wage in 9 cities - primary market

Source: GUS.

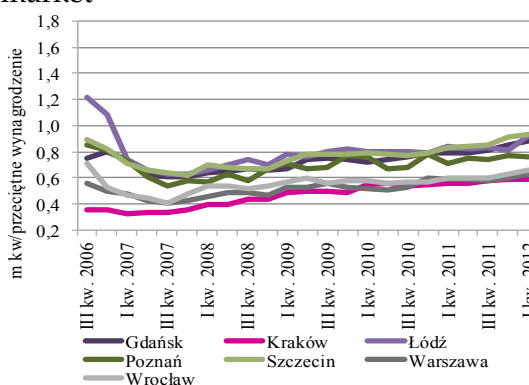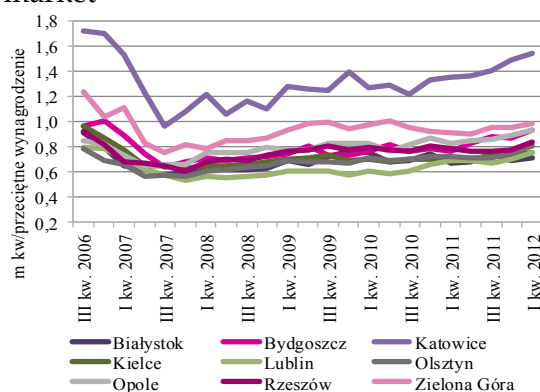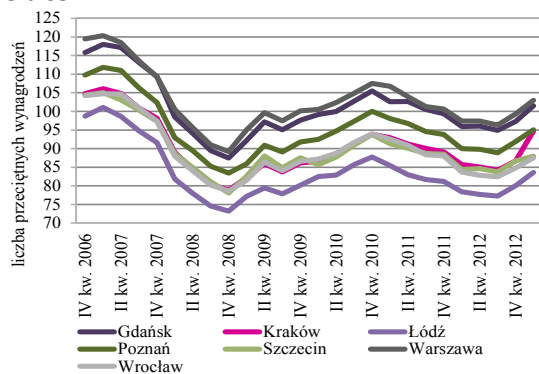Figure 33. Housing availability for an average wage in 7 cities - secondary market

Figure 34. Housing availability for an average wage in 9 cities - secondary market
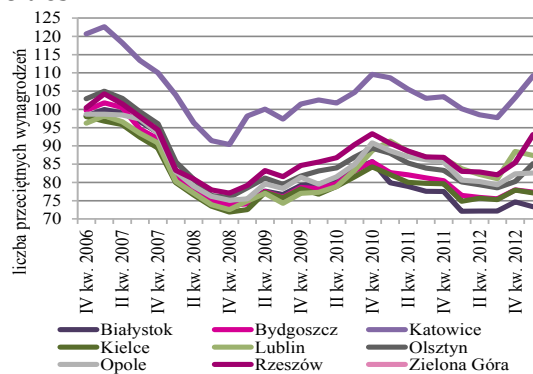
Source: GUS, NBP.

Source: GUS, NBP.

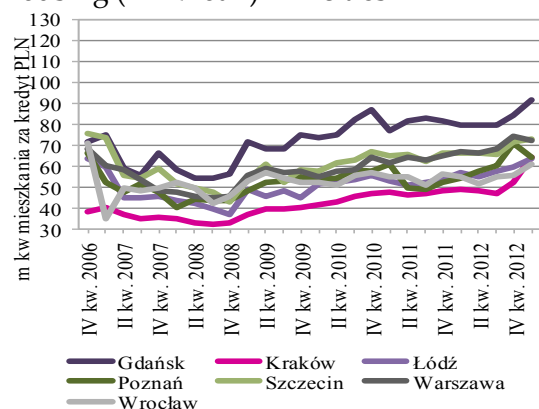Figure 35. Availability of PLN loans in 7 cities

Source: GUS, NBP.

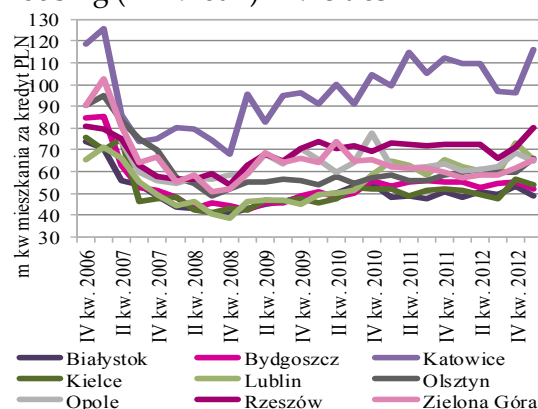Figure 36. Availability of PLN loans in 9 cities

Source: GUS, NBP.

Figure 37. Availability of loan-financed housing (PLN loan) in 7 cities
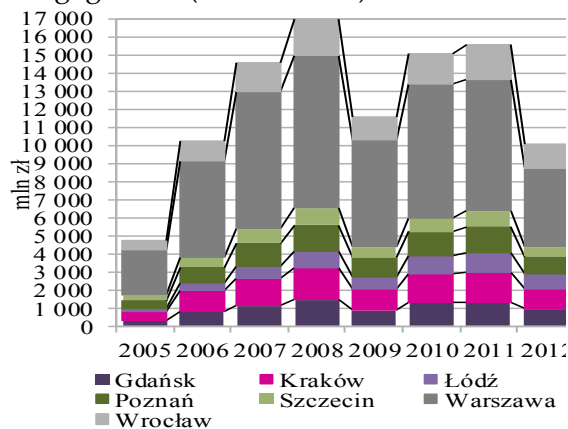

Source: GUS, NBP.

Figure 38. Availability of loan-financed housing (PLN loan) in 9 cities
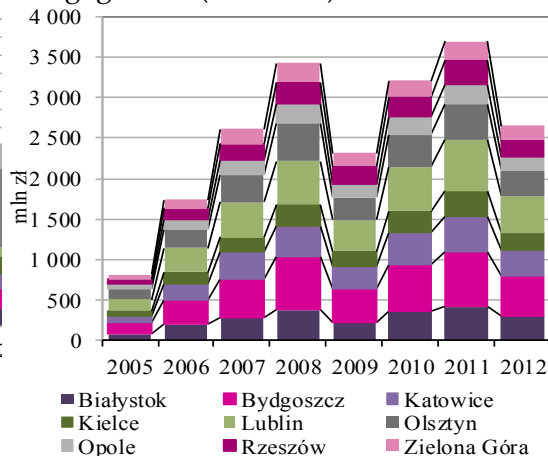

Source: GUS, NBP.

Figure 39. Estimated current value of
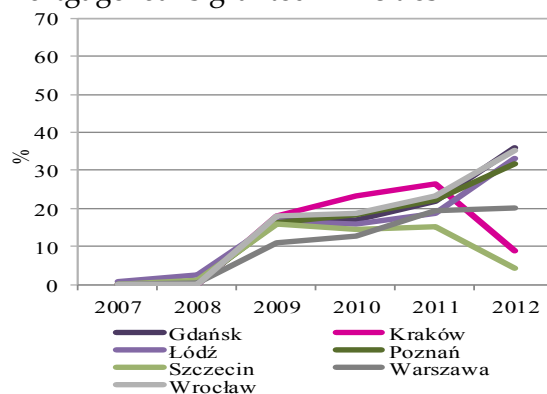mortgage debt (PLN million) in 7 cities

Source: BIK.

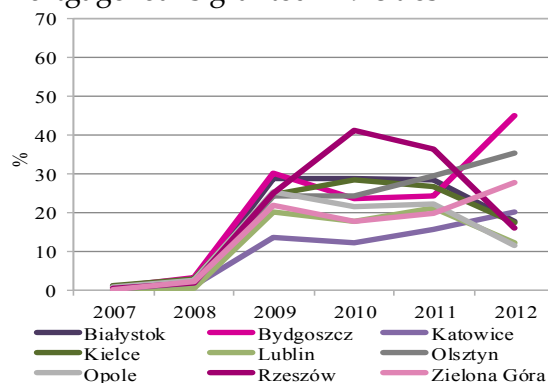Figure 40. Estimated current value of
mortgage debt (PLN mln) in 9 cities

Source: BIK.

Figure 41. Share of government-
subsidized (RNS) loans in the value of
mortgage loans granted in 7 cities

Source: BGK, BIK, NBP.

Figure 42. Share of government-
subsidized (RNS) loans in the value of
mortgage loans granted in 9 cities

Source: BGK, BIK, NBP.

Figure 43. Gap/surplus between RNS threshold prices and median transaction prices in 7 cities (% of median transaction price) – primary market
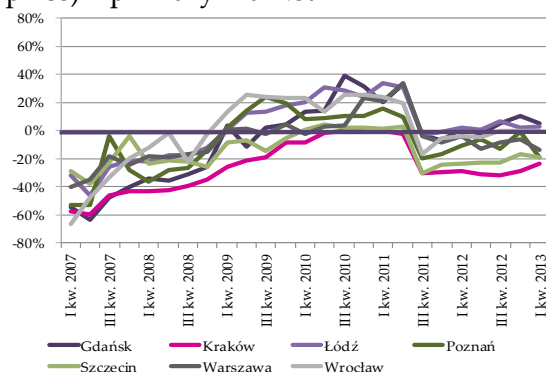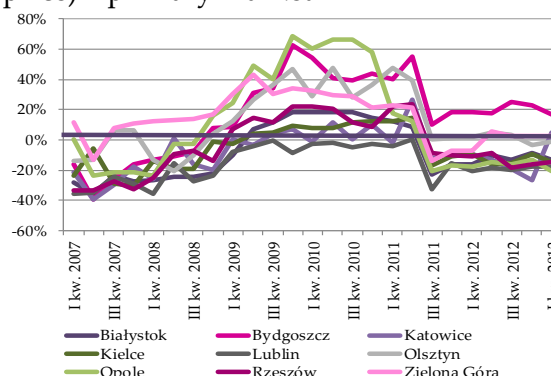

Figure 44. Gap/surplus between RNS threshold prices and median transaction prices in 9 cities (% of median transaction price) – primary market

Note to Figures 43-46: The gap is calculated as the difference between the maximum price (limit) under the RNS scheme 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 scheme finances homes with prices higher than the median, and otherwise.
Source: BGK, NBP.

Source: BGK, NBP.

Figure 45. Gap/surplus between RNS threshold prices and median transaction prices in 7 cities (% of median transaction price) – secondary market
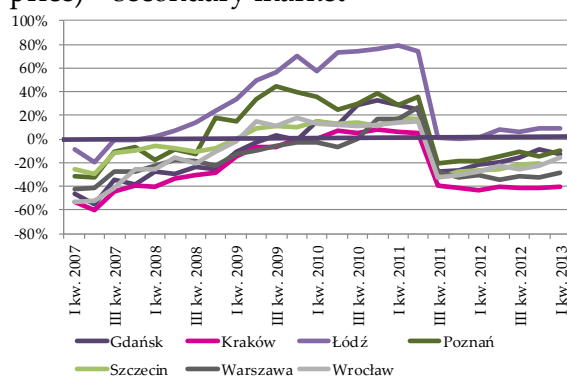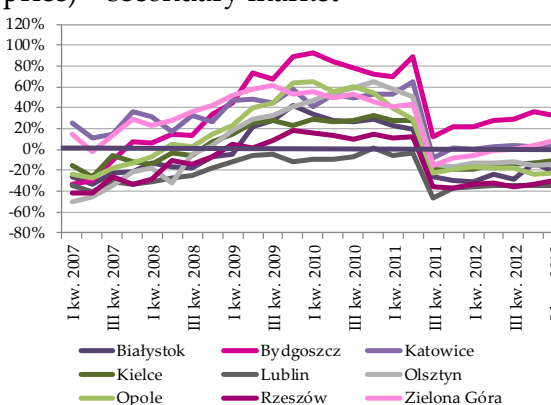

Figure 46. Gap/surplus between RNS threshold prices and median transaction prices in 9 cities (% of median transaction price) – secondary market

Source: BGK, NBP.

Source: BGK, NBP.

5. Housing construction in 16 voivodeship cities

In 2012, similarly to the previous years, the growth of housing construction varied across Poland's voivodeship cities. Apart from local determinants related to demographic and economic situation in individual markets, the behaviour of market participants on the supply and demand side was also affected by changes in legal regulations. In the period preceding the entry into force of the Act on the protection of home buyers' rights, whose *vacation legis* expired on 29 April 2012, a high level of new contracts and commenced housing investments was recorded in the majority of voivodeship cities. This was due to the need to postpone the implementation of costly obligations imposed on real estate developers by new legal regulations. Despite intensified activity of investors within the period January-April 2012, in particular those building housing for sale and rental, the number of new housing permits and the number of commenced housing investments have declined in annual terms in the majority of voivodeship cities (see Figure 53 - Figure 54). The decline of planned and implemented housing investments recorded in 2012 was due to a higher base in 2011 which is attributed to the so-called Act on real estate development activity and persisting oversupply of unsold housing unit in the market.

In the majority of analysed cities, the performance of housing construction measured by the number of housing completions was better in 2012 than in 2011 (see Figure 47 - Figure 50) due to the low reference level. The lower number of completed housing units in 2011 resulted from reduced housing investments in 2009. In 2012, a downward trend in usable area and number of rooms in completed buildings was recorded in the majority of cities (see Figure 51 - Figure 52). Such trend was observed in both

the investments implemented by companies building for sale and rental and the projects of individual investors and resulted from adjustment of supply to demand and financial capacity of home buyers or individual investors. The situation was different in Katowice, Łódź, Szczecin and Warsaw where the usable area of single-family houses completed by individual investors in 2012 was larger than in the previous year. In the case of investors building for sale and rental, a slight increase in the area of completed housing units was recorded only in Rzeszów and Olsztyn, while it remained at a similar level in Cracow and Poznań.

The years 2013 and 2014 are expected to see further decline in average usable area of completed housing, as a result of the trend to execute contracts for smaller size housing in the majority of cities. The reduced scale of commenced new housing investments in 2012 and between January and May 2013, and mainly of housing units for which permits were granted, will contribute to decreasing the number of completed housing in two or three years' time. Due to the duration of investment process, the phenomenon will be more pronounced in 2014. In mid-term perspective, the diminished number of new constructions will result in lower supply. New obligations imposed by the Act on real estate development activity on investors carrying out housing investments may contribute to increased consolidation in the real estate development sector. This will be driven by the fact that an escrow account will be required to implement new housing investments. Smaller companies, which had earlier financed housing contracts from their own funds or contributions of buyers, have problems with opening such accounts, since the banks see them as a group of new clients without any lending history that operate in a high risk sector. Large enterprises, which financed their earlier housing contracts with bank loans, are in a better posi-
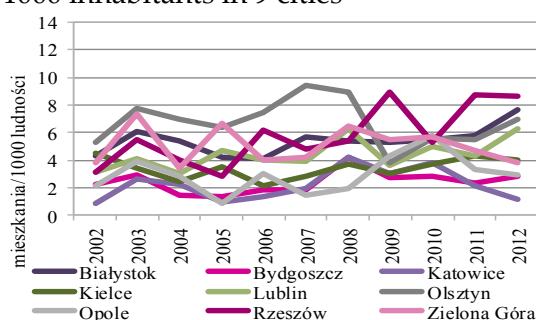
tion in the market. New entities planning to start business activity in the housing sector may also experience difficulties.

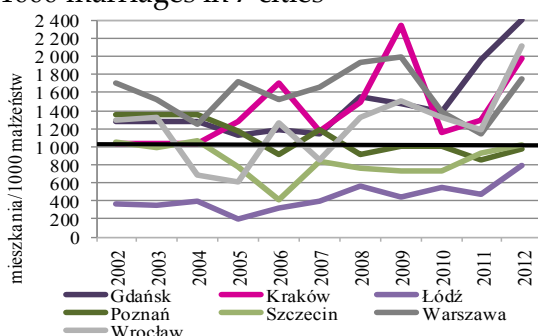Figure 47. Number of completions per 1000 inhabitants in 7 cities
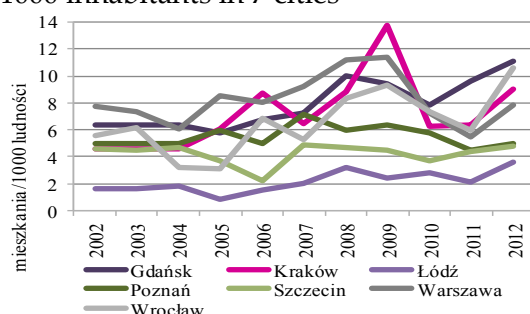
Source: GUS.

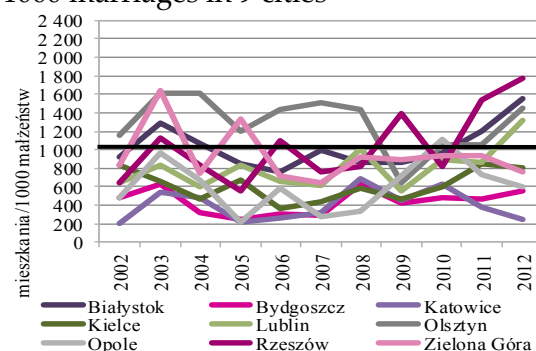Figure 48. Number of completions per 1000 inhabitants in 9 cities

Source: GUS.

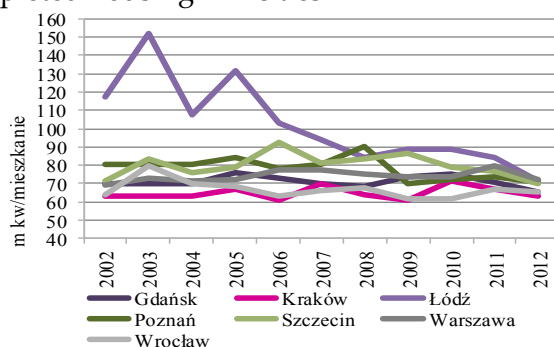Figure 49. Number of completions per 1000 marriages in 7 cities

Source: GUS.

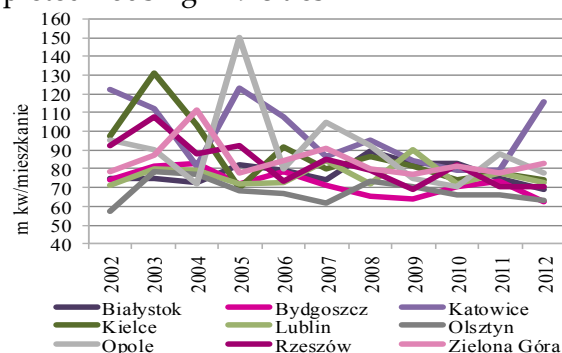Figure 50. Number of completions per 1000 marriages in 9 cities

Source: GUS.

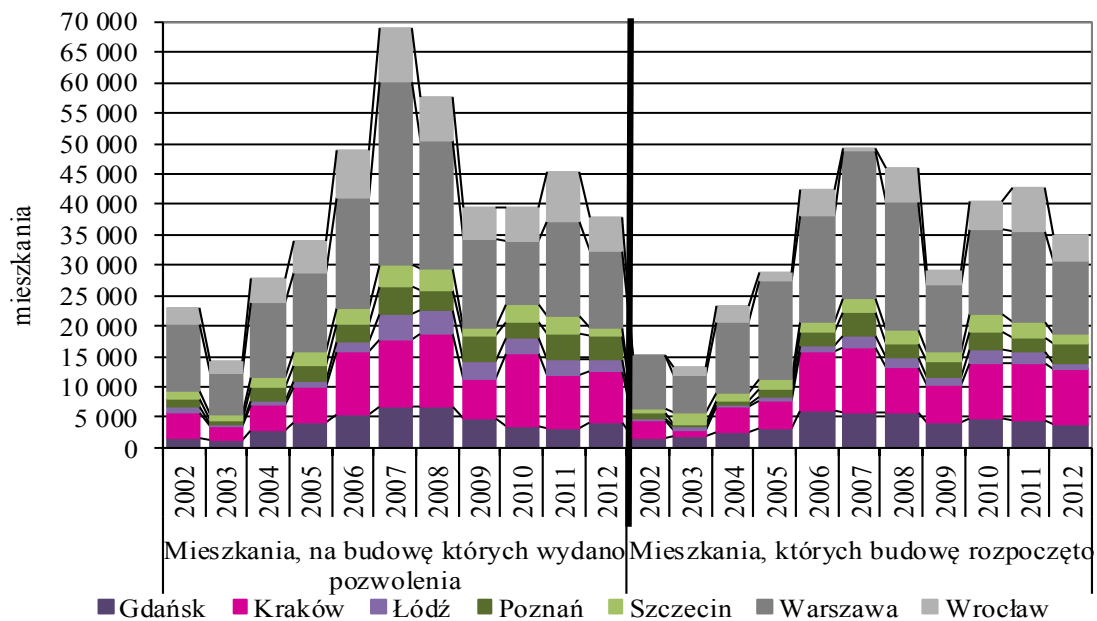Figure 51. Average usable area of completed housing in 7 cities

Source: GUS.

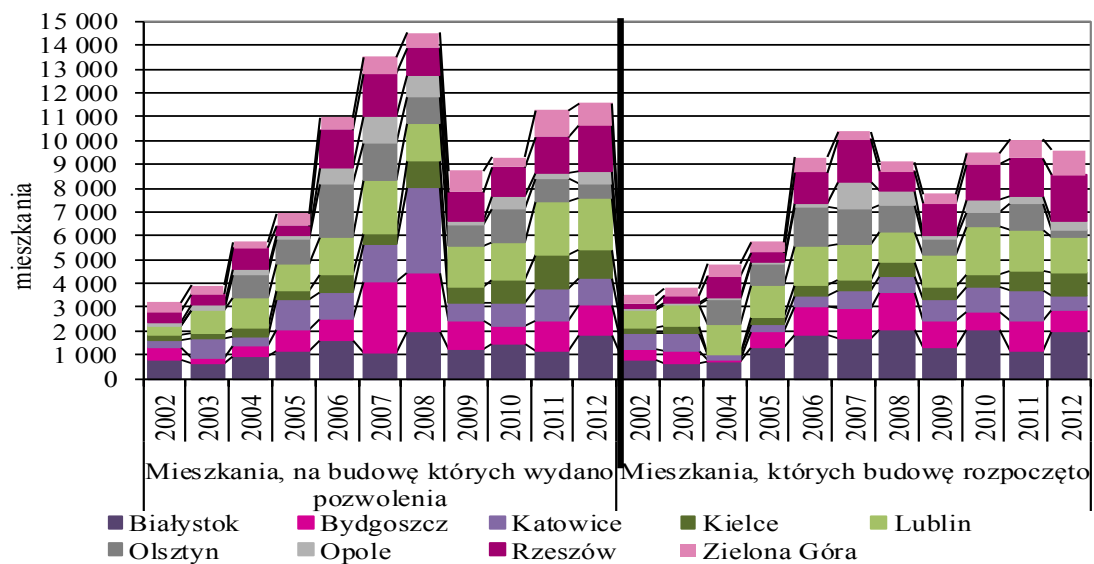Figure 52. Average usable area of completed housing in 9 cities

Source: GUS.

Figure 53. Housing construction in 7 cities

Source: GUS.

Figure 54. Housing construction in 9 cities

Source: GUS.

6. Analysis of BaRN data

Since the beginning of the monitoring of the real estate market, the database (BaRN) on asking and transaction prices in the housing market has been steadily expanding and currently is one of the largest such databases in Poland. Another advantage of its records is the multitude of data sources. This allows to ensure representativeness of the analysed sample in all regional real estate markets, enabling to identify the market trends and correlations. In 2012, the number of collected transaction data (excluding lease) in the primary and secondary markets amounted to almost 27 thousand records (see Figure 55). The volume of collected data on offers grew to the unprecedented level compared to the previous years and approached 150 thousand. The steady increase in the number of registered entries in the BaRN database does not result from a growing number of transactions in the market, but is driven by the higher number of cooperating entities and expanded market coverage. Due to the introduction of statistical obligation, 2013 Q1 saw an increase in the number of transactions by approx. 30% and the number of offers by approx. 26% compared to 2012 Q4.

Figure 55. Number of records in the BaRN database
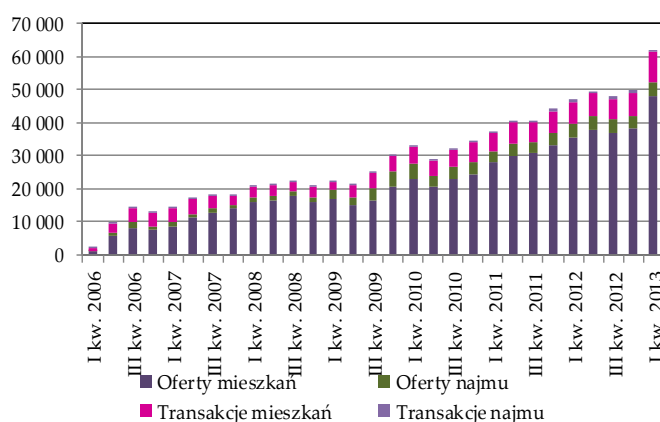
Source: NBP.

The majority of analysed cities saw a decrease in transaction prices in the primary and secondary markets in annual average terms in 2012. As regards the primary market, the most pronounced decline (by approx. 10%) has been recorded in Warsaw. An average annual price growth was observed only in Katowice (by approx. 4%) and in Rzeszów (by approx. 2%). In the secondary market, average prices in annual terms remained at a similar level only in Rzeszów. The other 15 markets saw a decline which was the most pronounced in Łódź, Bydgoszcz and Wrocław (9%, 8% and 8%, respectively). Average annual transaction price in the primary market in 16 cities (calculated as an arithmetic mean of average annual data for individual cities) in 2012 was by approx. 3% lower than in the previous year, while in the secondary market it went down by approx. 5%.

The analysed correlation between changes in the transaction price in the primary market and the volume of housing stock in a given city proved to be negative at -0.28, which means that the larger the city the more pronounced decline of prices. With Warsaw excluded, the negative correlation coefficient stood at -0.16. In the secondary market, the correlation between the analysed variables was stronger and the coefficient amounted to -0.33 (-0.42 with Warsaw excluded).

The highest asking and transaction prices are recorded in Warsaw, i.e. the largest market in Poland. In the primary market, the price difference between Warsaw and the second largest Polish city, i.e. Cracow, dropped to 265 PLN/square meter (compared to the previous year when it was around 600 PLN/square meter). In the secondary market, the difference between Warsaw and Cracow went down from approx. 1 500 PLN/square meter to approx. 1 200 PLN/square meter within a year. In smaller cities price differences are definitely less pronounced.

In 2012, the city size and the unemployment rate were the main factors affecting transaction prices in the secondary market. This means that respective correlations are weaker than in the previous year and amounted to 0.80 and -0.55 for the analysed data pair in 2012.

Small and medium-sized housing units continue to enjoy the highest interest, with their prices and the demand for them being the highest. The size of newly constructed housing in the market follows a downward trend in response to increased demand for small housing units. In the secondary market, the stock is stable and with rigid supply the prices of one square meter of the smallest housing units are usually the highest.

In 2012, the average time of secondary housing unit offer in the market extended by one week for all cities, as compared to the previous year, and equalled 146 days. In the 7 most active markets in Poland (Gdańsk, Cracow, Łódź, Poznań, Warszawa, Wrocław, Szczecin), the average time in the market amounted to 149 days, i.e. was slightly shorter (by 3 days) than in the previous year.

7.   Primary housing market according to the BaRN database

Figure 56. Year-on-year growth in asking prices in 7 cities - primary market
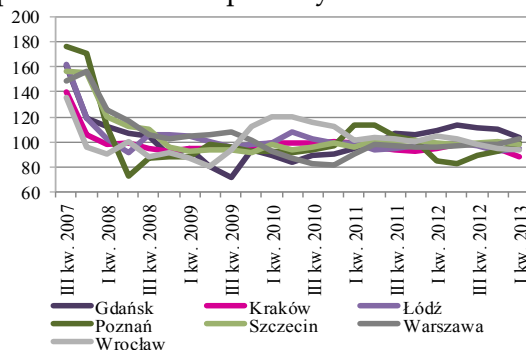
Source: NBP.

Figure 57. Year-on-year growth in asking prices in 9 cities - primary market
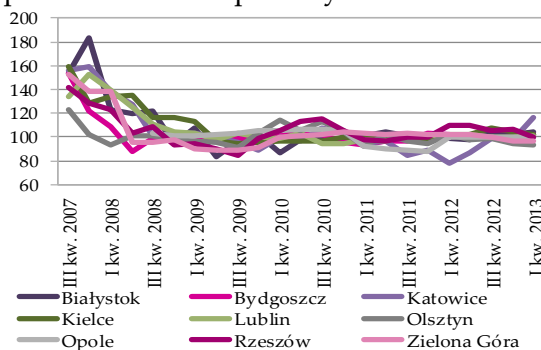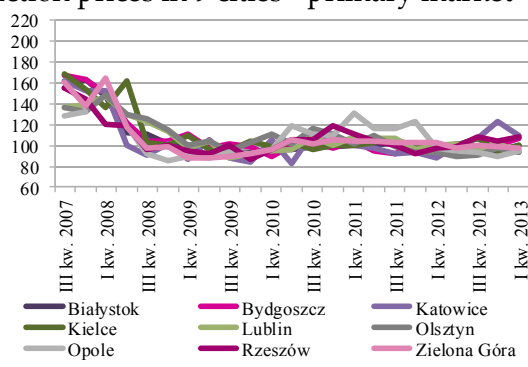

Source: NBP.

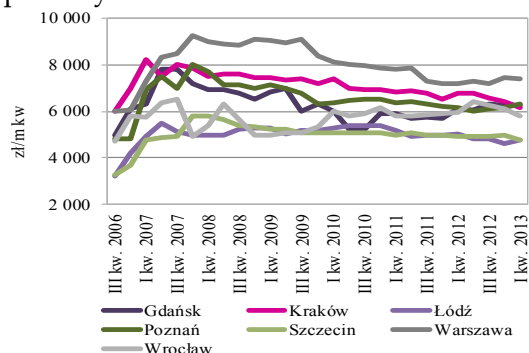Figure 58. Year-on-year growth in trans-action prices in 7 cities - primary market
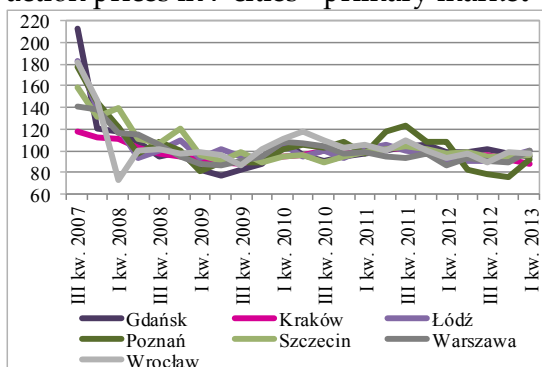
Source: NBP.

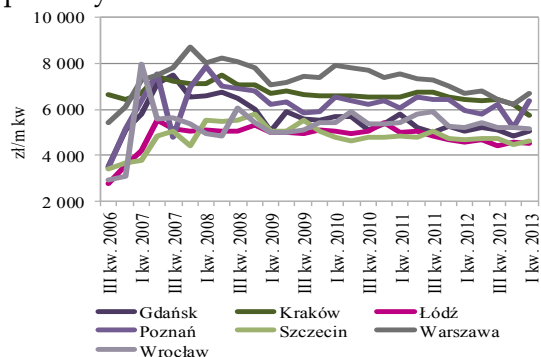Figure 59. Year-on-year growth in trans-action prices in 9 cities - primary market

Source: NBP.

Figure 60. Median offer price in 7 cities - primary market

Source: NBP.

Figure 61. Median sale price in 7 cities - primary market

Source: NBP.

Figure 62. Median offer price in 9 cities - primary market
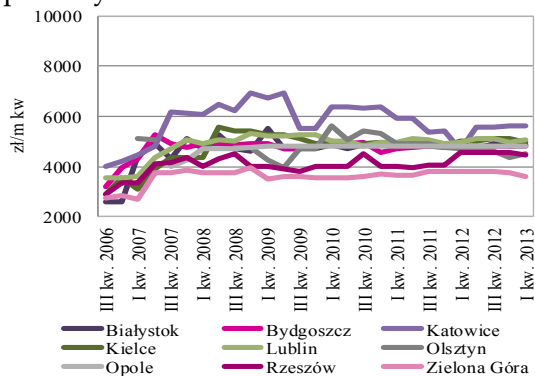
Source: NBP.

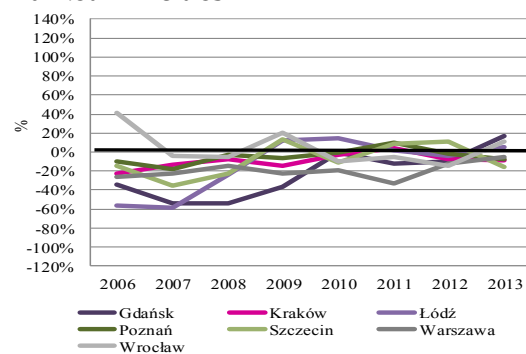Figure 63. Median sale price in 9 cities - primary market
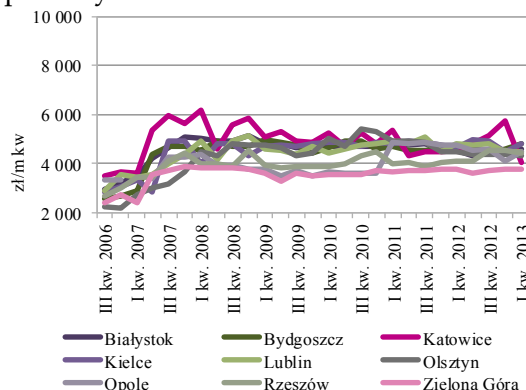
Source: NBP.

Figure 64. Supply and demand mismatch; units with usable area up to 40 square meters - primary market in 7 cities

Figure 65. Supply and demand mismatch; units with usable area over 40 and up to 59 square meters - primary market in 7 cities
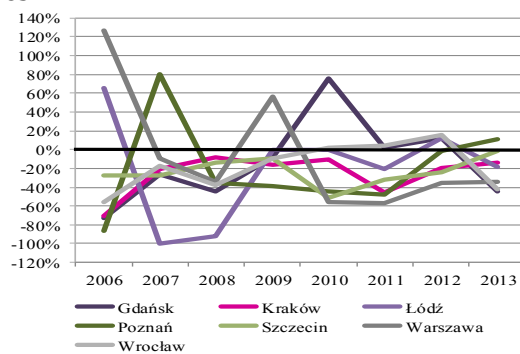
Note to Figure 64: The percentage mismatch between supply (housing offers by real estate developers) and estimated demand (housing transactions) with regard to housing unit area, according to the data from the BaRN database; the mismatch is measured as the share of housing units with usable area of up to 40 square meters on offer in relation to the share of transactions in housing unit with usable area of up to 40 square meters (average for the last four quarters). A positive result (above the line) indicates the surplus of housing units with the given usable area and a negative - their deficit. The same applies to Figures 65 to 67 and 76 to 83.
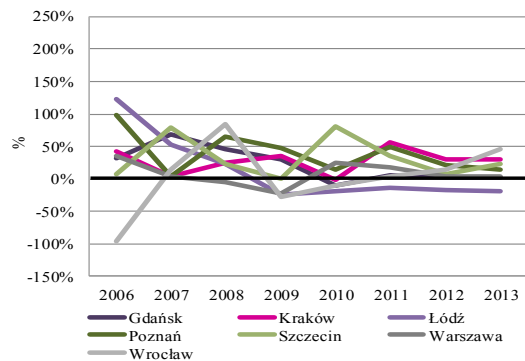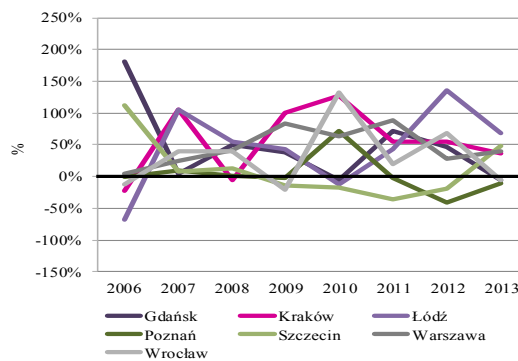
Source: NBP.   *Source: NBP.*

Figure 66. Supply and demand mis-match; units with usable area over 60 and up to 79 square meters - primary market in 7 cities
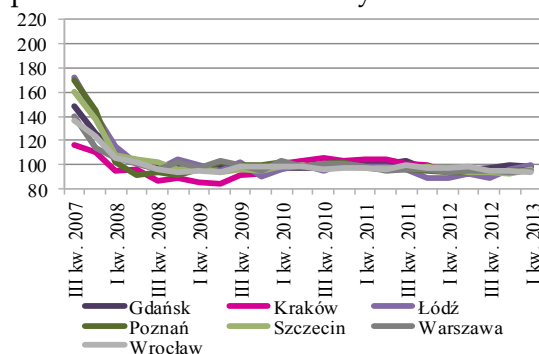

Source: NBP.

Figure 67. Supply and demand mis-match; units with usable area of 80 square meters and more - primary mar-ket in 7 cities
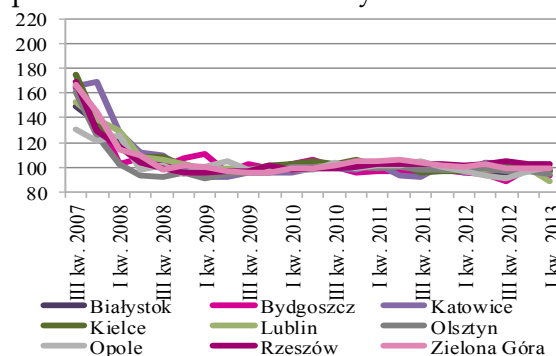

Source: NBP.

8. Secondary housing market according to the BaRN database

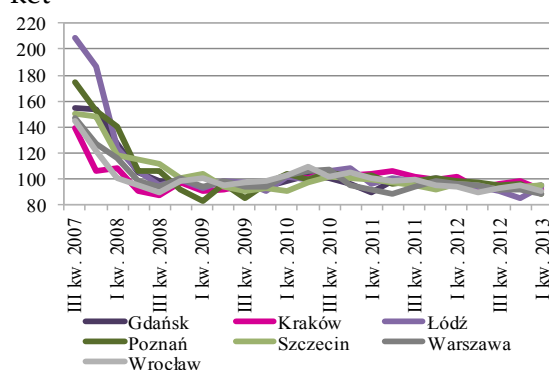Figure 68. Year-on-year growth in asking prices in 7 cities - secondary market

Source: NBP.

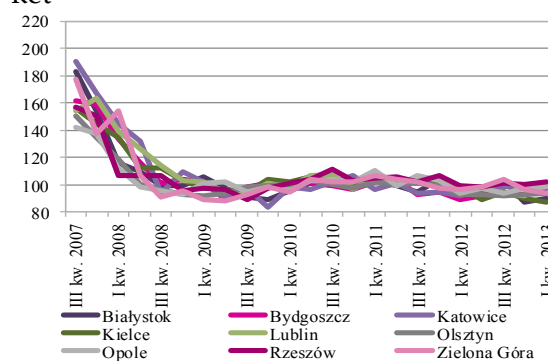Figure 69. Year-on-year growth in asking prices in 9 cities - secondary market

Source: NBP.

Figure 70. Year-on-year growth in transaction prices in 7 cities - secondary market
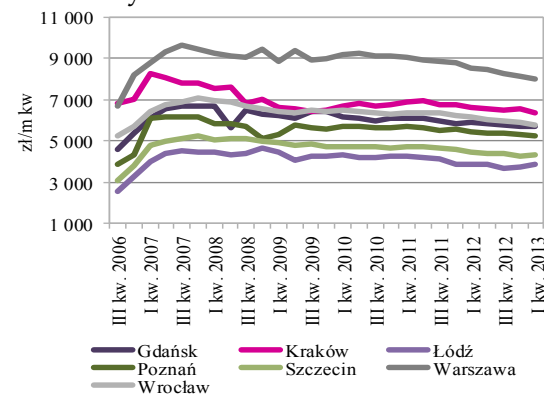

Source: NBP

Figure 71. Year-on-year growth in transaction prices in 9 cities - secondary market
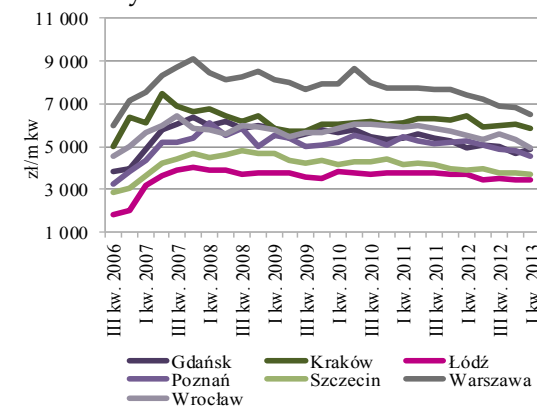

Source: NBP.

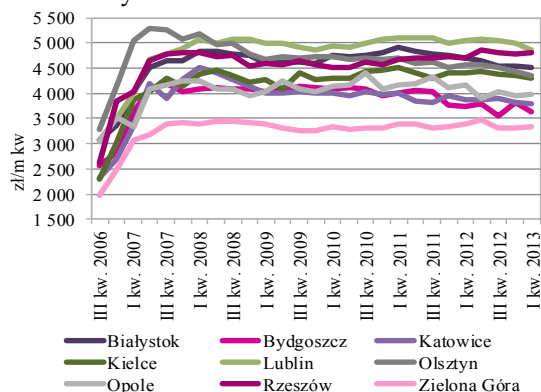Figure 72. Median offer price in 7 cities - secondary market

Source: NBP.

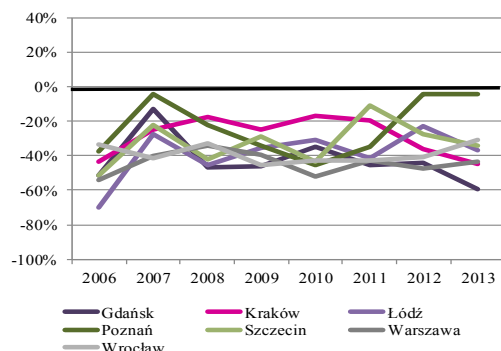Figure 73. Median sale price in 7 cities - secondary market

Source: NBP.

Figure 74. Median offer price in 9 cities - secondary market

Source: NBP.

Figure 75. Median sale price in 9 cities - secondary market
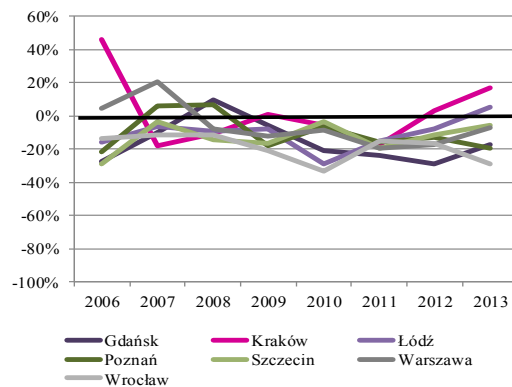

Source: NBP.

Figure 76. Supply and demand mismatch; units with usable area up to 40 square meters - secondary market in 7 cities

Source: NBP.

Figure 77. Supply and demand mismatch; units with usable area up to 40 square meters - secondary market in 9 cities
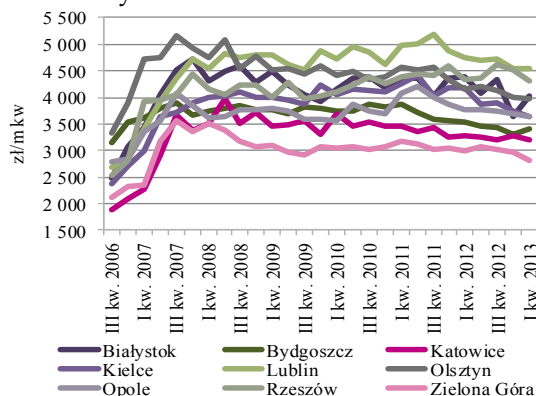

Source: NBP.

Figure 78. Supply and demand mismatch; units with usable area over 40 and up to 59 square meters - secondary market in 7 cities
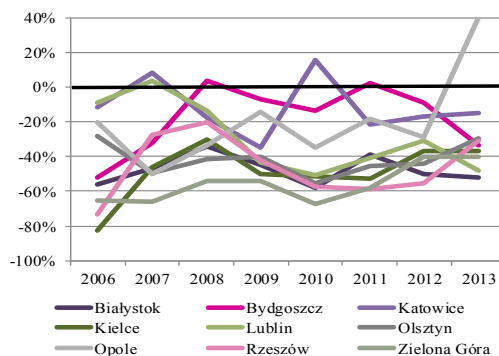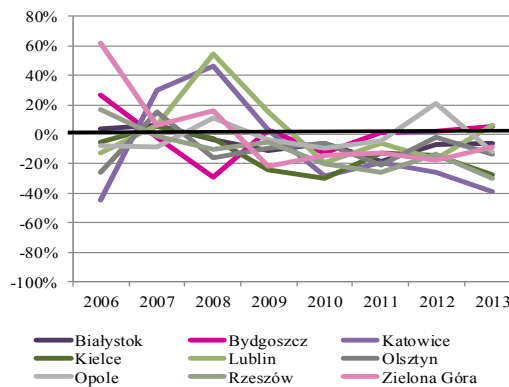

Source: NBP.

Figure 79. Supply and demand mismatch; units with usable area over 40 and up to 59 square meters - secondary market in 9 cities

Source: NBP.

Figure 80. Supply and demand mis-match; units with usable area over 60 and up to 80 square meters - secondary market in 7 cities
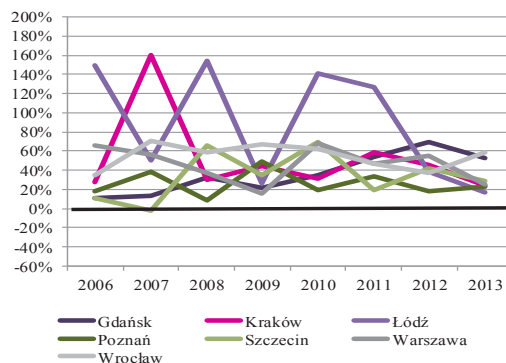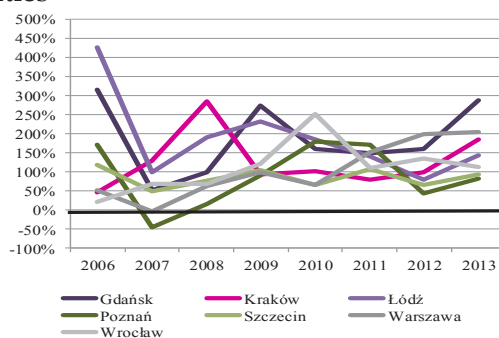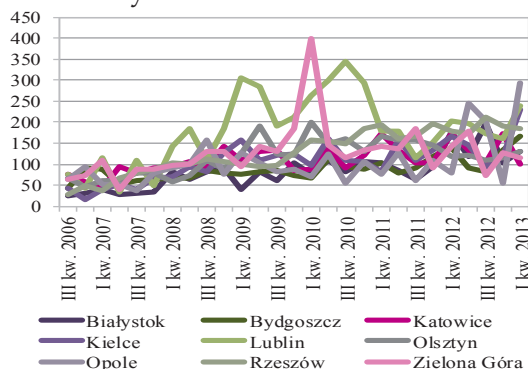

Source: NBP.

Figure 81. Supply and demand mis-match; units with usable area over 60 and up to 80 square meters - secondary market in 9 cities

Source: NBP.

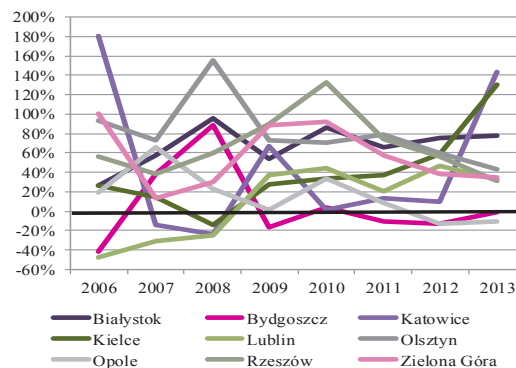Figure 82. Supply and demand mis-match; units with usable area over 80 square meters - secondary market in 7 cities

Source: NBP.

Figure 83. Supply and demand mis-match; units with usable area over 80 square meters - secondary market in 9 cities

Source: NBP.

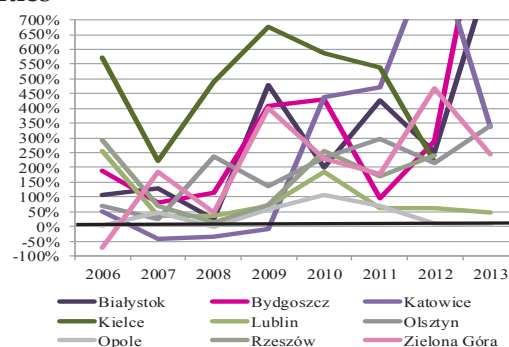Figure 84. Average selling time in 7 cities - secondary market

Source: NBP.

Figure 85. Average selling time in 9 cities - secondary market
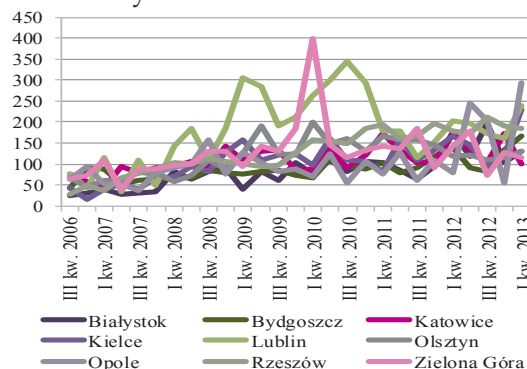
Source: NBP.

Figure 86. Correlation between average transaction price in the secondary market in 2012, average monthly wage in the enterprise sector in 2012, the city's population and the unemployment rate in 2012

Source: NBP, GUS.

9. Housing rental market according to the BaRN database

Figure 87. Year-on-year growth in rental offer prices in 7 cities
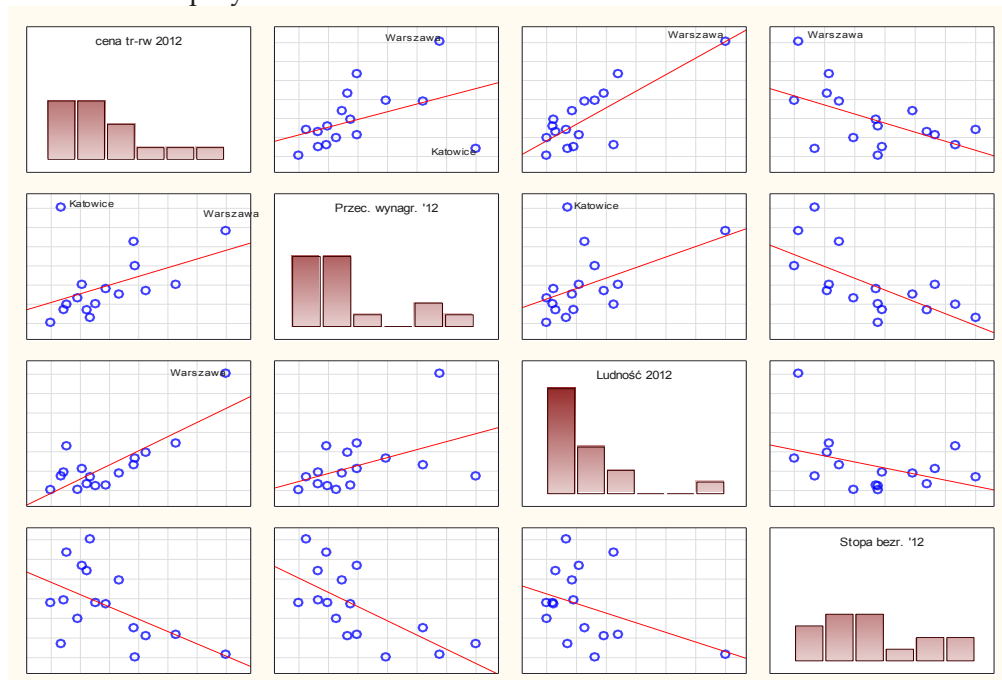

Source: NBP.

Figure 88. Year-on-year growth in rental offer prices in 9 cities

Source: NBP.

Figure 89. Year-on-year growth in rental transaction prices in 7 cities

Source: NBP.

Figure 90. Year-on-year growth in rental transaction prices in 9 cities

Source: NBP.

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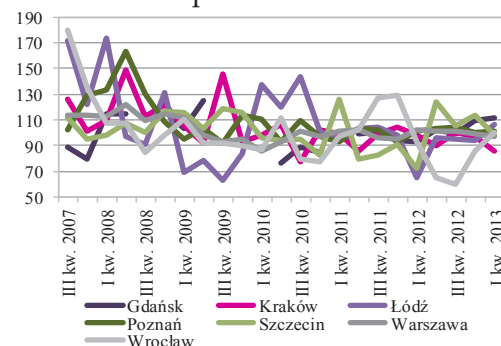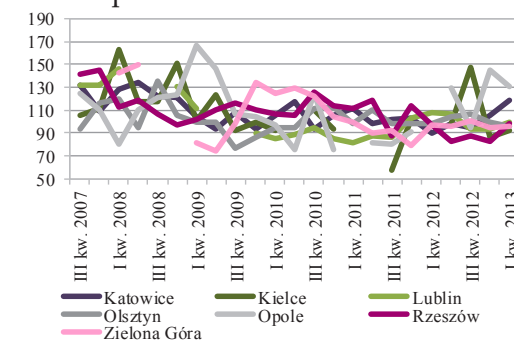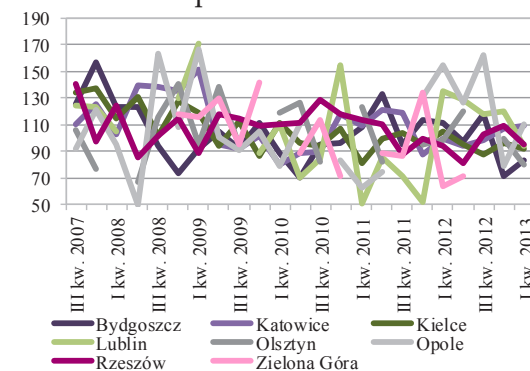
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