
The Functioning of the Real Estate Market: Dynamics of Price Formation and the Sale of Apartments

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Abstract:

Purpose: The aim of this publication is to analyse how the dynamics of apartments' price formation correlates with the development of the apartment market.

Design/Methodology/Approach: We analysed data about real estate markets of Polish communes located in Central Pomerania. The values of the analysed indicators were calculated using Excel program and the results were presented in the form of Tables and Figures in Microsoft Excel and ArcMap.

Findings: This publication focuses on issues related to price formation on the housing market with the objective to illustrate a correlation between the dynamics of price formation of apartments and the development of the apartment market. This study concentrates on the pricing behaviour of transactions in the primary and secondary real estate markets of apartments. Research results indicate that there is a relationship between the dynamics of price formation and the development of the apartment market in both the primary and secondary markets. The hypotheses have been positively verified. The analysis of the obtained data does not indicate the same tendencies in the transaction prices of the apartment properties in the researched seaside communes in the years 2014-2018.

Practical Implications: The most important practical implication is that the analyzed seaside areas still have a large investment space for newer, more expensive and larger apartments.

Originality/Value: Research analysis of the two markets shows that the primary market is characterised by a much greater volatility of the average transaction price per sqm of apartment's usable floor area, while the secondary market is much more stable in terms of the average transaction price. There is also a very large variation in the average price per sqm between the surveyed municipalities.

Keywords: Economy, tourism, market of apartments, economic activity, entrepreneurship.

JEL Codes: R11, R12, L8, M1.

Paper type: Research article.

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1. Introduction

The issue of the real estate market, especially the price formation process, is complex and is determined by a number of external and internal factors. It is also relevant for the proper functioning and development of national economy (Khar and Thomsett, 2005; Shui, 2014; Booth and Marcato, 2004; Olkiewicz, *et al.*, 2019; D'Arcy and Talatvull, 2009) and its particular areas, e.g. tourism. Despite the many conducted researches, the real estate market still remains poorly examined, complicated and opaque. Because of the diversity of this market (Glaeser and Resseger, 2010) various pricing policies are used that result in disparities in the offered products (apartments) in the primary (Wong *et al.*, 2017; Agboola and Scofield, 2018; Katzler, 2016) and secondary markets (Olaleye and Abebara, 2019; Abere *et al.*, 2018). This means that the price formation process is of a supply and demand nature for entities interested in buying and selling specific goods (Topintzi *et al.*, 2008, Xu *et al.*, 2010; Radzewicz and Wiśniewski, 2011; Hamilton, 2011; Olkiewicz *et al.*, 2020).

The opposition to supply and demand at a specific place and time leads to prices being set for particular, traded “qualities”, which result in certain transactions to be successfully executed (Kulpaka, 2017). The said qualities are one of the most important determinants constituting the assessment of the apartments’ value judgement performed by potential customers.

Currently, the apartment market is developing strongly and is becoming somewhat a city-forming factor (Yai-Hungh and Chun-Kei, 2006; Renigier-Biłozor and Wiśniewski, 2014), especially in the seaside regions or places with significant natural and tourist (historical) values. Natural qualities are particularly valued, i.e. the views (landscapes) and the proximity of nature, creating an added value that attracts investors to purchase apartments and perform development activities. The created diversity in the spatial and functional arrangement of areas, in particular the seaside areas, have practical application in the valuation of a property and the transaction activity of apartments.

The objective of this publication is to analyze how the dynamics of apartments’ price formation correlates with the development of the apartment market.

2. Literature Review

The real estate market has been defined and analysed by many researchers (Zhi and Tien, 2017; Wong, 2019; Ji *et al.*, 2018; Newell, 2016; Tsai *et al.*, 2015), because it performs important functions for both the economic system (Kishor and Marfatia, 2017; Haran *et al.*, 2016) and the quality of life. The development of the real estate market, which also fulfils residential and investment functions, depends on both macroeconomic and microeconomic factors. The national economic, monetary and financial policies also determine its development (Beger *et al.*, 2008; Kishor and

Marfatia, 2017; Nyakabawo *et al.*, 2018). Thus, local real estate markets have their own special characteristics resulting from both the features of the market itself and the offered products, including apartments. The diversity of the apartment supply may be partly due to the agglomeration economy, e.g. the size of the city/commune, the economic structure, the developments plans, the potential economic benefits in the development process (Duranton and Puga, 2005; Glaeser, 2011; Jowsey, 2011; Wolniak, 2019; Wolniak and Grebski, 2018). Therefore, it is so difficult to provide an explanation why some communes/cities are more successful on the apartment market or are more attractive than others. The analysis of theoretical and empirical literature shows that success may be achieved, among others, from:

- the agglomeration costs (incurred, inter alia, from taxes, utilities, etc.) (Glaeser *et al.*, 2001; Rosenthal and Strange, 2004; Kemeny and Storper, 2012);
- the infrastructure of small and medium-sized enterprises (Partridge, 2010; Glaeser and Gottlieb, 2009; Glaeser *et al.*, 2001; Clark, 2003);
- the entertainment infrastructure (Boarnet, 1994; Storper and Scott, 2009; Kemeny and Storper, 2012; Biag *et al.*, 2011);
- the natural values (Wallner, 2012; Filippova, 2009; Bourasa *et al.*, 2004; Hansen and Benson 2013).

From the perspective of assessing the development of communes/cities, a change in prices of the real estate's is very important, especially for the evaluation of economic or social indicators (Glaeser *et al.*, 2006). A differentiation in real estate prices (time and values) can be hard to identify because of the low frequency of transactions (Cho, 1996; Ghysels *et al.*, 2012; Rapach and Strauss, 2007). Therefore, qualities such as nature, particularly the view (Bourasa *et al.*, 2004) and the proximity to water (lake, sea) (Hansen and Benson, 2013) can have a significant impact on the price of an apartment. Developers use their own pricing strategy based on environmental conditions, e.g. the air and water quality, the possibility to conduct physical/recreational activities, the distance from the industrial plants or polluted areas.

The main pricing strategies used in practice by the developers (Smith *et al.*, 2016; Rattermann, 2007; Cupal, 2017; Gordon and Winkler, 2017) include:

- demand strategy – the use of apartment prices shaped by consumer demand;
- cost strategy – the use of apartment prices based on the analysis of the expenditure incurred to build and finish an apartment;
- competitive strategy – the use of prices based on the analysis of prices used by the competition and free market conditions;
- preference strategy – the use of prices based on quality parameters (high price – high quality) or/and market luxury (elements of natural values);

- high price strategy (skimming) –the use of the highest possible price level within a short term to maximise profits;
- low price strategy (market penetration) – using low prices to increase market share.

The process of price formation and the adoption of a specific apartment price strategy can be difficult, thus mixed strategies are often used in practice, e.g. the demand-competitive strategy.

3. Methodology

The subject of study in this article are the real estate markets, particularly the local real estate markets – sector of commercial investments – of apartments located on the seaside. The primary objective of this publication is to *analyze how the dynamics of apartments' price formation correlates with the development of the apartment market*. As part of the research work, the following hypotheses were stated:

H1: The dynamics of price formation correlate strongly with the development of the local real estate markets constituting apartments in Central Pomerania Province.

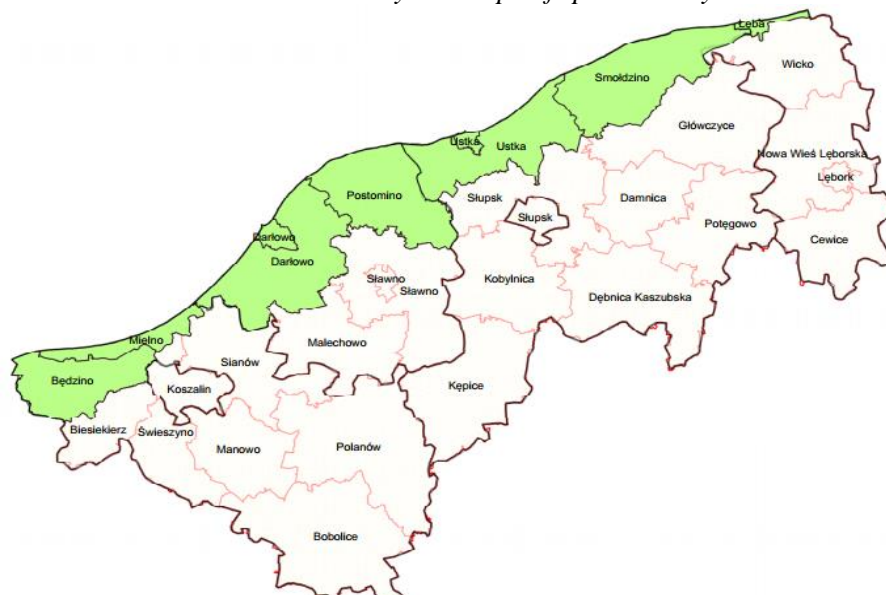
H2: The secondary market is more stable for local real estate apartments than the primary market in Central Pomerania Province.

A ranking method was used to verify the adopted hypotheses. By assigning rank-based indicators to the communes, a ranking system was achieved that selected the most developed communes. The development of the local real estate markets was assessed based on four variables:

- number of transactions;
- value of transactions;
- average transaction price;
- average price for a square metre of usable apartment area.

The spatial scope of analyses covered selected Polish communes located in Central Pomerania Province. In this study the following communes were taken into account (Figure 1):

- the rural commune of Będzino, the urban-rural commune of Mielno – Koszalin District;
- the urban commune Darłowo, the rural commune of Darłowo, the rural commune of Postomino – Sławno District;
- the Ustka urban commune, the Ustka rural commune, the Smołdzino rural commune – Słupsk District;
- the Łeba urban commune – Lębork District.

Figure 1. Seaside communes covered by the scope of spatial analysis

Source: Own.

The analyses were carried out by using the method of analysis and synthesis of the obtained research material. The data for the analyses were collected from the Central Statistical Office (and the Register of Real Estate Prices and Values from the following districts: Koszalin, Sławno, Słupsk and Lębork). The time scope of the analyses covered the years 2014–2018 (first quarter). The values of the analysed indicators were calculated in Microsoft Excel, and the results are presented in the form of Tables and Charts in Microsoft Excel and ArcMap.

4. Research Results

A number of apartments were selected from the data received from the Price and Value Register as part of the research work covering a period of 4 years. The data presents 20,895 transactions, of which a number of 2,252 local real estate transactions were selected. The premises owned by the State Treasury or local government authorities as well as those that did not have a status of an apartment or on which a discount was obtained during the market transaction process, were rejected (1,122) (Table 1).

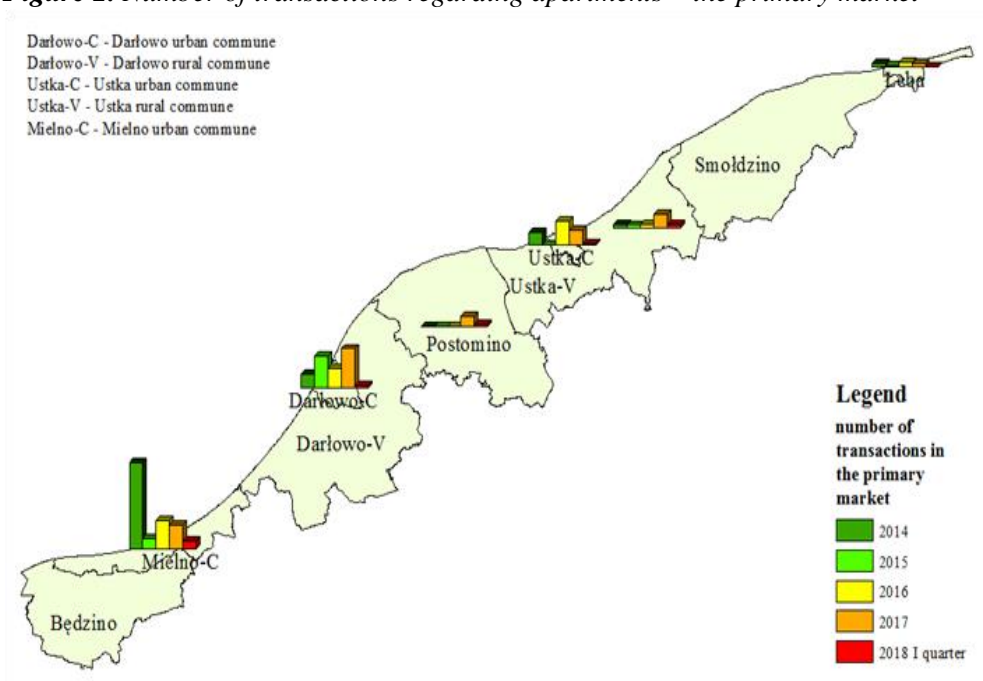
Following the selection process, the chosen apartments were assigned to the communes in which they are located and the realised transactions were divided between the primary and secondary market for further analysis.

Table 1. Selection stages

| District | Total number of transactions | Number of transactions after selection (housing properties) | Number of rejected transactions (non-market) | Number of apartments | The share of apartments in the total number of district transactions |
|--------------|------------------------------|---|--|----------------------|--|
| koszaliński | 5 546 | 646 | 156 | 490 | 8% |
| sławieński | 3 811 | 725 | 430 | 295 | 8% |
| słupski | 7 890 | 766 | 448 | 318 | 4% |
| łęborski | 3 648 | 115 | 78 | 37 | 1% |
| Total | 20 895 | 2 252 | 1 112 | 1 140 | 5% |

Source: Own.

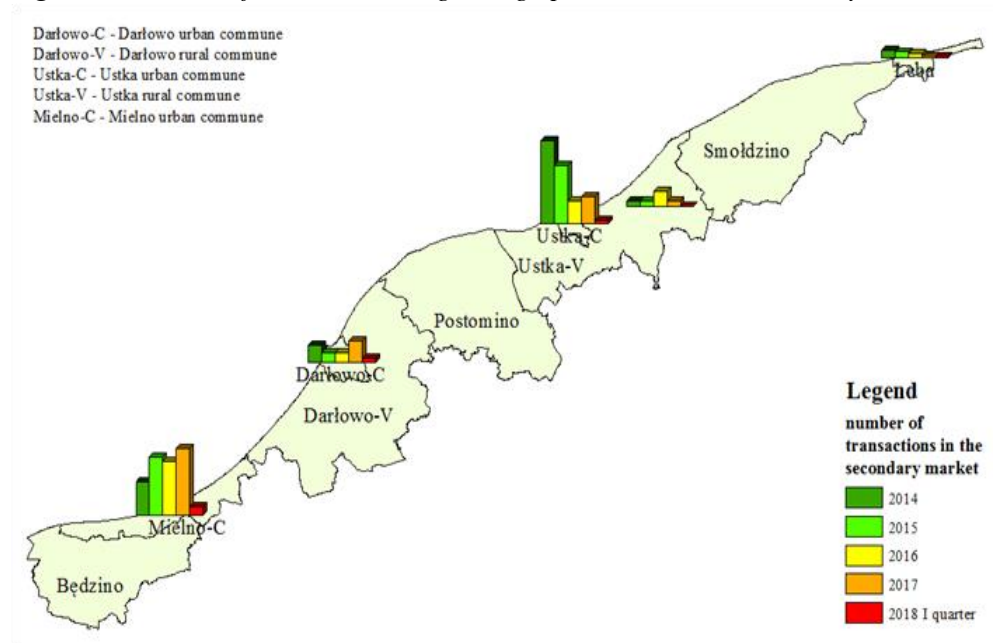
Figure 2. Number of transactions regarding apartments – the primary market



Source: Own study based on a list obtained from the Register of Real Estates and Values.

As part of the analysis of the completed transactions, a number of 767 sale contracts were concluded on the primary market in the analysed period of time with the largest part in Mielno – 334 transactions. This accounts for 44% of all considered values (Figure 2). Such high percentage is the result of 183 transactions recorded in 2014. The subsequent places in the structure of transaction were taken by: Darłowo (city) 29%, Ustka (city) 14%, Ustka (village) 7%, Łeba (city) and Postomino (village) with 3% each.

Figure 3. Number of transactions regarding apartments – the secondary market.



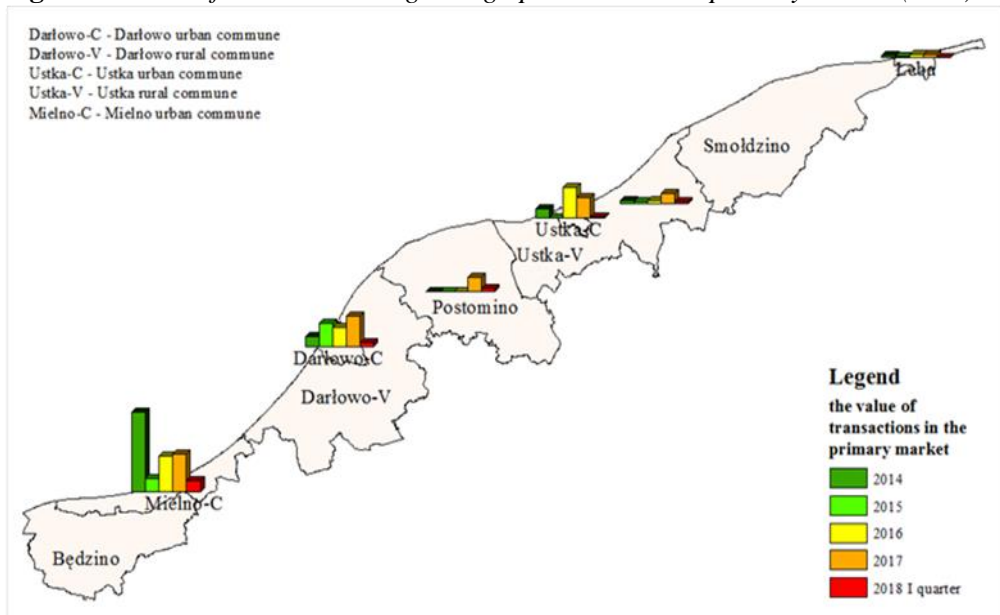
Source: Own study based on a list obtained from the Register of Real Estates and Values.

A similar situation can be observed when analysing the secondary market. A number of 373 transactions were made in the period considered with the largest number also in Mielno (156 transactions). This accounts for 42% of all transactions concluded on the secondary market.

The largest number of sales contracts in the Mielno commune was recorded in the years 2015–2017, which allowed it to dominate over the entire area covered by the analysis and indicated that the interest in the market remained at a high level. On the subsequent places in the structure of transactions regarding the apartment market were: Ustka (city) 36%, Darłowo (city) 12%, Ustka (village) 6% and Łeba (city) 4%.

It was noted during the research works that the overall value of transactions on the primary market reached PLN 212,848 in the analysed period. The analysis of the value of transactions concluded that nearly half of them took place in Mielno (49%) with the total value of PLN 102,902 (Figure 4). Subsequent places in the structure of the value of transactions regarding apartments belonged to: Darłowo (city) 24%, Ustka (city) 16%, Ustka (village) and Postomino (village) with 5% each and Łeba (city) 2%. For the purpose of this study, realised transactions were analysed on a quarterly basis (Figure 5). The results indicate that in all of the communes in the considered period of time the value of transactions have a wavy progress. This means that there is a lack of stability among the communes regarding the value of transaction on a quarterly and annual basis.

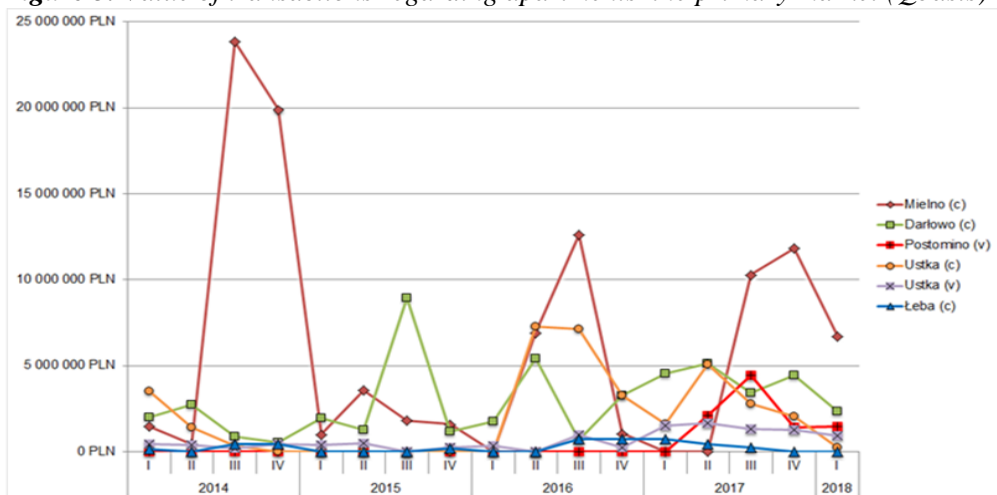
Figure 4. Value of transactions regarding apartments – the primary market (PLN).



Source: Own study based on a list obtained from the Register of Real Estates and Values.

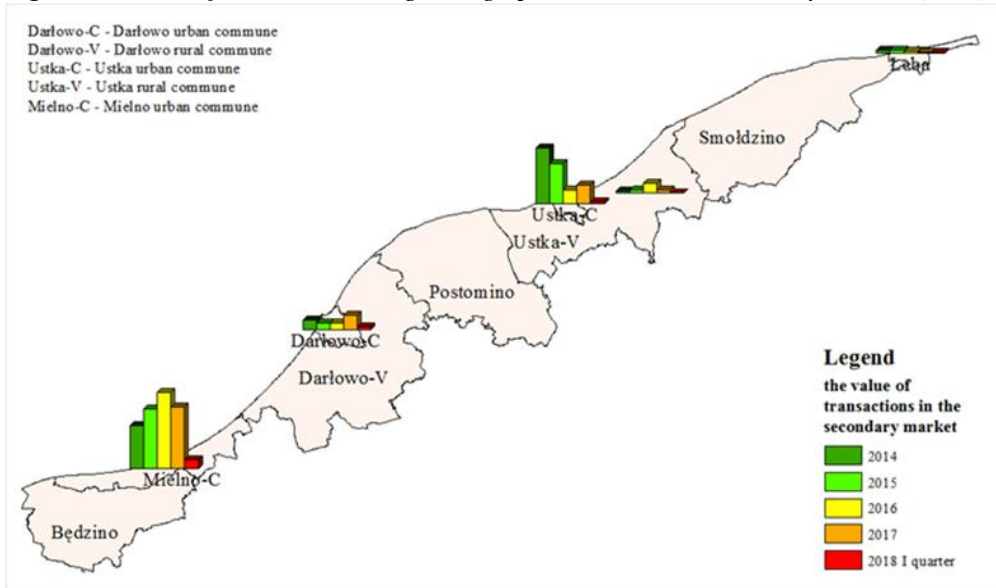
From the analysis of the secondary market it can be stated that as much as 56% of the overall transactions value is achieved by Mielno (PLN 70,305) with the following localities placed subsequently, based on the value of transactions regarding apartments: Ustka (city) 29%, Darłowo (city) 9%, Ustka (village) 4% and Łeba (city) 2%.

Figure 5. Value of transactions regarding apartments – the primary market (Qbasis)



Source: Own study based on the Price and Value Register.

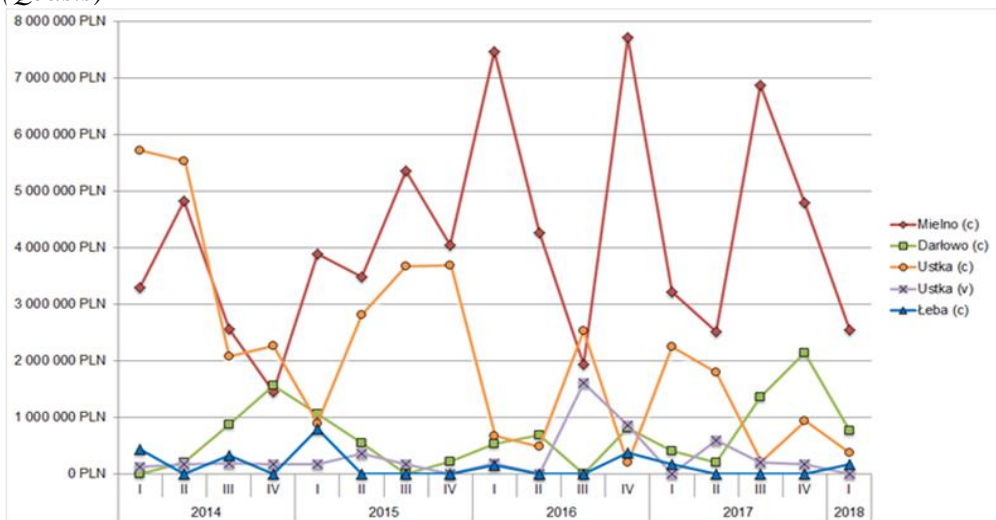
Figure 6. Value of transactions regarding apartments—the secondary market (PLN).



Source: Own study based on the Price and Value Register.

The analysis of the distribution of the transaction values on a quarterly basis indicate that Łeba was the most stable commune among all the other communes due to the minor differences between the quarterly values (Figure 7). In the Mielno commune, however, because of the high transaction values, a very regular value jumps between quarters can be noticed.

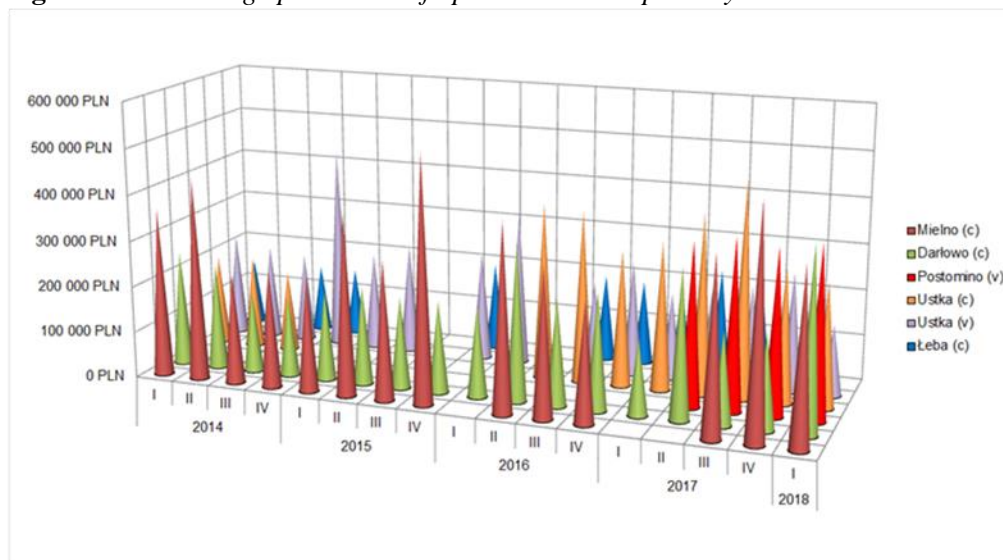
Figure 7. Value of transactions regarding apartments—the secondary market (Qbasis)



Source: Own study based on the Price and Value Register.

The value of transactions regarding apartments in both the primary and secondary market depended on the average transaction price, which further determined the average price per square metre of usable floor area.

Figure 8. *The average price level of apartments – the primary market.*



Source: *Own study based on the Price and Value Register.*

The analysis of the average transaction price of properties showed that Mielno dominated on the primary market and achieved the highest price level (PLN 531,000 in the 4th quarter of 2015). The lowest price level was achieved by Łeba (ranging from PLN144,000 in the 1st quarter of 2014 to PLN 235,000 in the 3rd quarter of 2017).

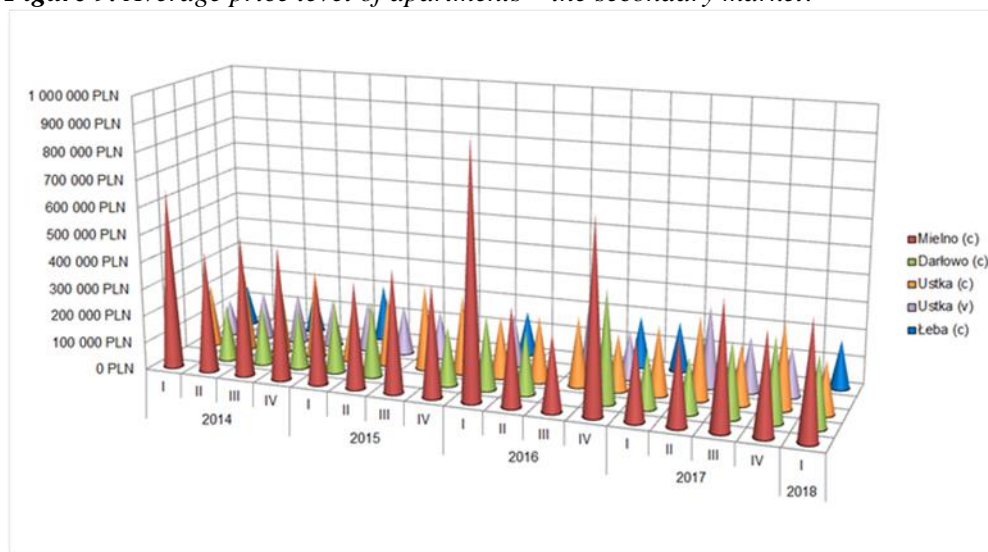
On the primary market, the highest price of a square metre of the usable apartment's floor area was recorded in the Mielno commune (PLN 9,825 per sqm) based on the average transaction price in the 4th quarter of 2015 with the lowest in Łeba (PLN 3,800 per sqm) during the whole period considered.

Fluctuations of the average prices can be noticed in all of the communes, which indicates that in none of the chosen communes the average prices were very stable throughout the period of 5 years. On the secondary market an exceedingly large variation in the average prices per square metre between the surveyed communes was indicated.

The highest average price of a square metre of useable apartment's floor area in the analysed period was recorded in the Mielno commune with PLN 9,587,31 per square metre in 2014. The lowest average price was noted in the rural commune of Ustka not exceeding the amount of PLN 4,200 per square metre in 2015.

It is worth noting that 30,736 square metres of usable apartment's floor area were sold on the primary market with the largest share in Mielno with 12,168 square metres, which constituted 36% of the total area sold. Subsequent places belonged to: the Darłowo commune – 9,526 square metres (31% of the total area sold), the city of Ustka – 5,203 square metres (17% of the total area sold), the rural commune of Darłowo – 1,843 square metres (6%), the rural commune of Postomino – 1,121 square metres (4%) and the city of Łeba with only 873 square metres (3%).

Figure 9. Average price level of apartments – the secondary market.



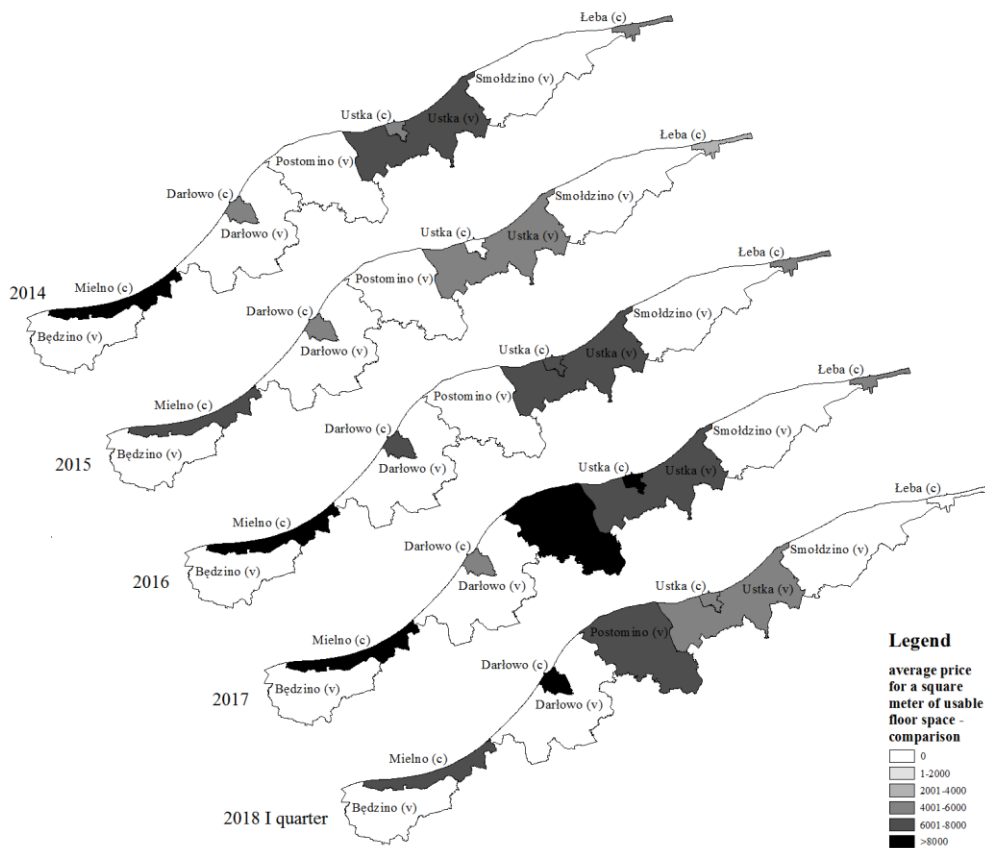
Source: Own study based on the Price and Value Register.

The analysis of the area sold on the secondary market shows that it only constituted 57% of the overall area sold on the primary market (17,673 square metres). Two communes were dominating on the former market: Mielno with 7,550 square metres (42%) and the city commune of Ustka– 6,730 square metres (38%). On the subsequent places were: the city of Darłowo – 2,038 square metres (12%), the rural commune of Ustka - 853 square metres (5%) and the city of Łeba – 547 square metres (3%).

The assessment of the average area sold shows that in the primary market the largest numbers were achieved by Mielno and the city of Ustka. However, in Mielno a considerable drop in the size of an average apartment floor area was noticed from 57 per sqm in the 1st quarter of 2014 to 49 per sqm in the 1st quarter of 2018. On the other hand, in the city of Ustka an increase in the size of an average apartments area from 46 per square metre in the 1st quarter of 2014 to 52 per square metre in the 1st quarter of 2018 was indicated. On the secondary market, the average area sold in the majority of the communes was in the range between 30 to 50 square metres with

only Mielno achieving a significant increase to 84,65 per square metre in the 1st quarter of 2016.

Figure 10. Average price per sqm of usable apartment's floor area – the primary market (PLN).

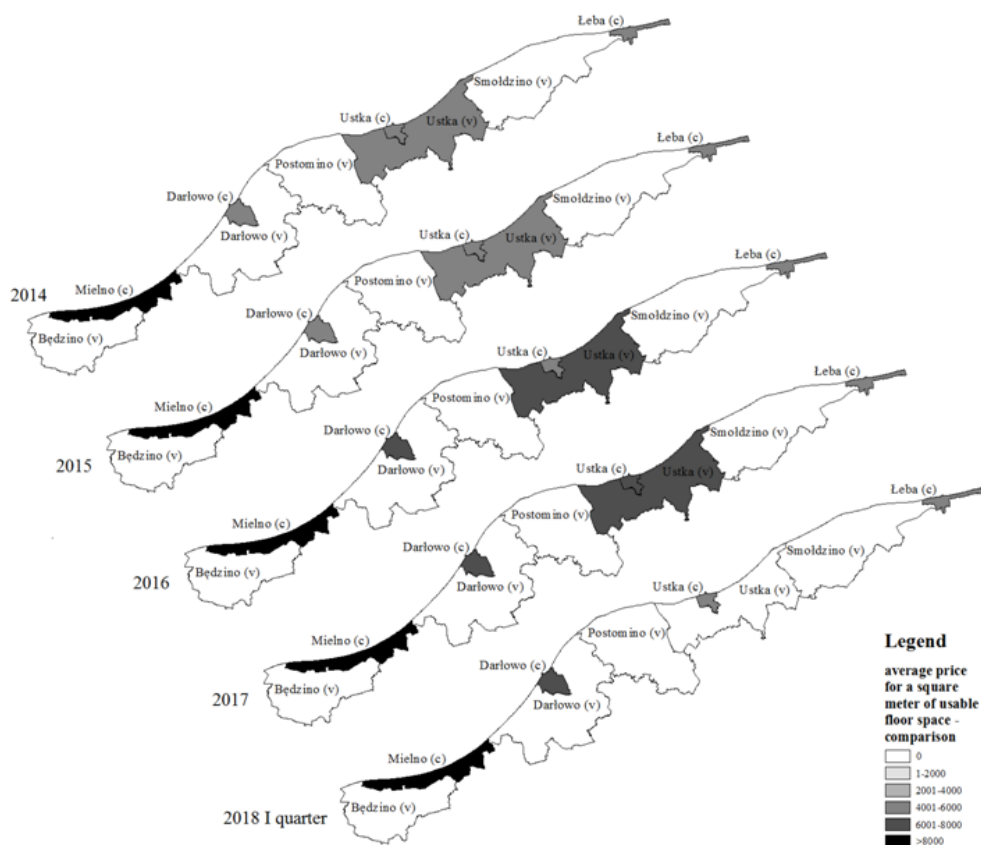


| Year \ Commune | Będzino (v) | Mielno (c) | Darłowo (c) | Darłowo (v) | Postomino (c) | Ustka (v) | Ustka (v) | Smołdzino (v) | Łeba (v) |
|----------------|-------------|------------|-------------|-------------|---------------|-----------|-----------|---------------|----------|
| 2014 | nt | 8 324,08 | nt | 4 973,04 | nt | 6 129,00 | 4 182,40 | nt | 4 549,93 |
| 2015 | nt | 7 953,68 | nt | 4 748,55 | nt | 5 238,95 | nt | nt | 3 800,00 |
| 2016 | nt | 8 728,47 | nt | 6 067,57 | nt | 6 363,73 | 7 381,82 | nt | 4 716,47 |
| 2017 | nt | 8 787,14 | nt | 5 041,78 | 8 374,50 | 6 150,31 | 8 155,02 | nt | 5 024,76 |
| 2018 | nt | 7 109,63 | nt | 8 456,48 | 7 964,26 | 4 697,07 | 5 258,03 | nt | nt |

Note: nt. – no transaction.

Source: Own study based on a list obtained from the Register of Real Estates and Values.

Figure 11. Average price per sqm of usable apartment's floor area – the secondary market (PLN).



| Commune \ Year | Smoldzino (v) | Ustka (v) | Ustka (c) | Leba (c) | Darlowo (c) | Darlowo (v) | Postomino (v) | Będzino (v) | Mielno (c) |
|----------------|---------------|-----------|-----------|----------|-------------|-------------|---------------|-------------|------------|
| 2014 | nt | 4 334,61 | 5 102,55 | 4 280,32 | 5 155,35 | nt | nt | nt | 9 587,31 |
| 2015 | nt | 4 135,46 | 5 286,16 | 4 684,14 | 4 846,10 | nt | nt | nt | 8 502,92 |
| 2016 | nt | 6 743,81 | 5 478,19 | 4 308,54 | 6 061,56 | nt | nt | nt | 8 609,05 |
| 2017 | nt | 6 965,74 | 6 621,34 | 5 787,78 | 6 823,39 | nt | nt | nt | 8 455,53 |
| 2018 | nt | nt | 4 690,13 | 5 000,00 | 6 058,72 | nt | nt | nt | 8 624,79 |

Note: nt. – no transaction.

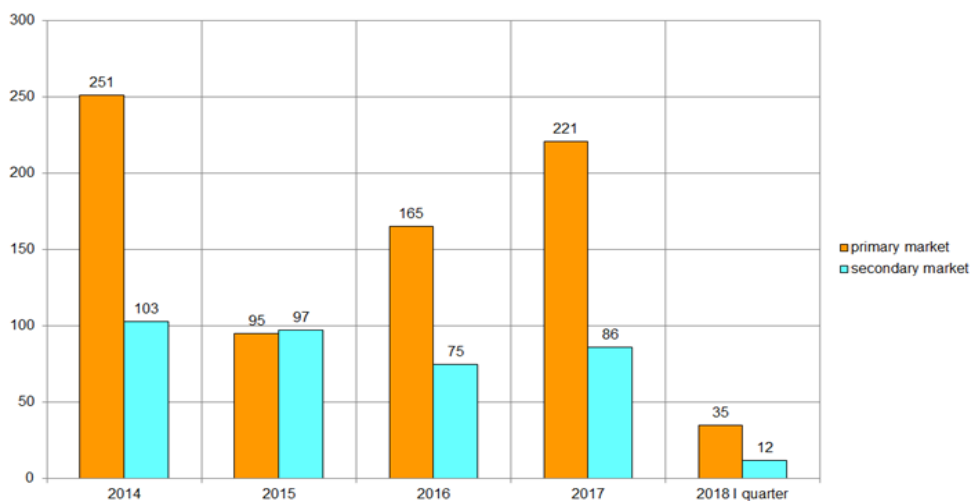
Source: Own study based on a list obtained from the Register of Real Estates and Values.

5. Discussion

In the analysed time period, a total of 1,140 transactions were concluded in the surveyed communes, of which 767 in the primary (67%) and 373 in the secondary market (33%). Year 2014 turned out to be a record year with 31% of total transactions, i.e. 354 apartments were sold (Figure 12). In the following year the number of overall transactions dropped by 14%, i.e. 17% - 192 transactions, and the

year after the number reached 240 transactions (what constitute 21% of total transactions in the period covered by this analysis). In 2017 a number of 307 sales contracts were concluded (27%), while in the 1st quarter of 2018 only 4% of overall transactions were recorded (47 sales contracts).

Figure 12. Overview of the number of transactions regarding apartments on the assessed markets.



Source: Own study based on the Price and Value Register.

The largest number of transactions was achieved by Mielno with 490 sales contracts representing 43% of overall transactions (Table 2). The second place was taken by the town of Darłowo with 269 transactions (24%) and the third by the Municipality of Ustka with 244 sales contracts (21%).

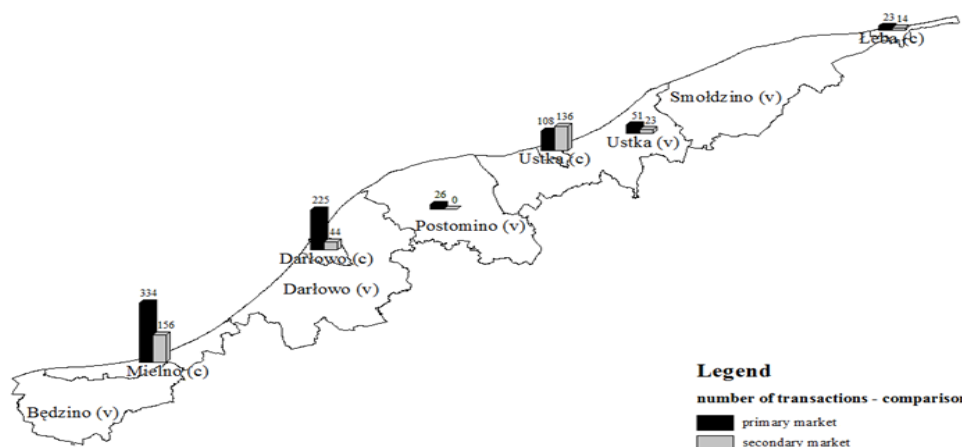
Table 2. Number of transactions regarding apartments –a comparison of the markets.

| Commune \ Markets | Mielno (c) | Darłowo (c) | Postomino (c) | Ustka (c) | Ustka (v) | Łeba (v) | Average |
|-------------------|------------|-------------|---------------|------------|-----------|-----------|------------|
| Primary | 334 | 225 | 26 | 108 | 51 | 23 | 128 |
| Secondary | 156 | 44 | nt | 136 | 23 | 14 | 75 |
| Total | 490 | 269 | 26 | 244 | 74 | 37 | 190 |

Note: nt. – no transaction

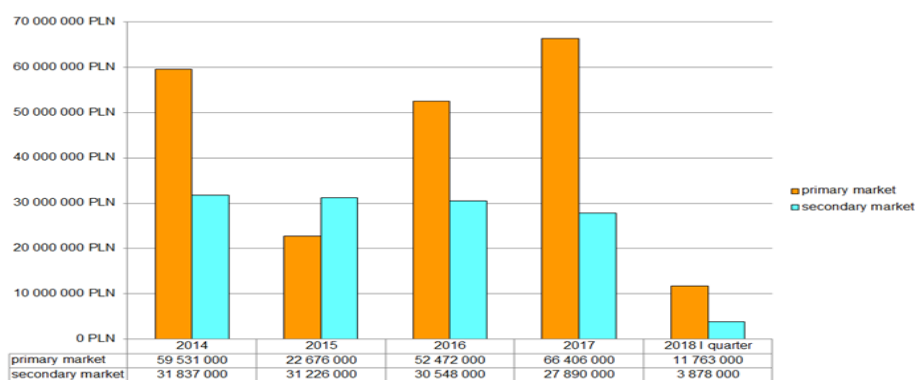
Source: Own study based on a list obtained from the Register of Real Estates and Values.

On average, 128 transactions were recorded on the primary market and 75 on the secondary market. Communes that were above the average are Mielno and the city of Darłowo, where Mielno achieved 48% more sales contracts compared to the city of Darłowo.

Figure 13. Number of transaction regarding apartments on the assessed market.

Source: Own study based on a list obtained from the Register of Real Estates and Values.

In the secondary market, however, Mielno and the city of Ustka were above the average and the city of Darłowo, the rural commune of Ustka and Łeba were below the average. The average rate on both markets amounted to 190 transactions, and among the municipalities with a higher number of sales were: Mielno, the city of Darłowo and the city of Ustka. Postomino, Ustka and Łeba communes were placed below the average. In the analysed time period, a total number of 338,227 transactions were concluded among the assessed communes, of which 63% (PLN 212,848) in the primary and 37% in the secondary market. Year 2017 turned out to be a record year in terms of turnover value with concluded transactions for a total amount of PLN 94,296 (Figure 14). About 3% less was recorded in 2014 and in 2018 it was only 17% (PLN 15,641).

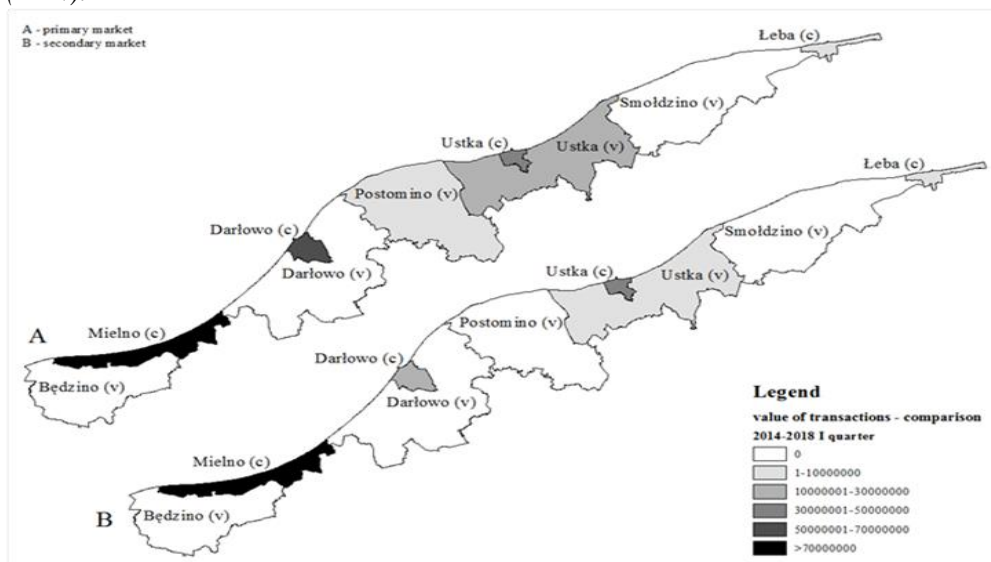
Figure 14. Number of transactions regarding apartments on the assessed market.

Source: Own study based on a list obtained from the Register of Real Estates and Values.

Substantial differences can be noticed when comparing the primary and secondary market in terms of the value of concluded transactions between the municipalities. The largest among them are PLN 98,802 on the primary market (difference between Mielno and Łeba) and PLN 67,836 on the secondary market (in the same communes). In both the assessed markets, only Mielno achieved a number of over PLN 70,000 (Figure 15).

The city of Ustka remained in the same price range (PLN 30,001– PLN 50,000) on both of the markets, while the following municipalities are classified in the price range below PLN 10,000: Łeba on the primary and secondary market, Postomino on the primary market and the rural commune of Ustka on the secondary market (with a result more than twice lower than it achieved on the secondary market).

Figure 15. Value of the transactions regarding apartments on the assessed markets (PLN).



Source: Own study based on a list obtained from the Register of Real Estates and Values.

Table 3. Value of the transactions regarding apartments on the assessed markets in years 2014- 1st quarter of 2018 (in PLN thousands).

| Commune \ Markets | Ustka (v) | Ustka (c) | Łeba (c) | Darłowo (c) | Postomino (v) | Mielno (c) | Average |
|-------------------|-----------|-----------|----------|-------------|---------------|------------|---------|
| Primary | 10 905 | 34 781 | 4 100 | 50 672 | 9 488 | 102 902 | 35 475 |
| Secondary | 5 015 | 36 183 | 2 469 | 11 407 | bt | 70 305 | 25 076 |
| Total | 15 920 | 70 964 | 6 569 | 62 079 | 9 488 | 173 207 | 46 025 |

Note: Będzino, the rural commune of Darłowo and Smoldzino are not listed in the table due to lack of transactions.

nt. – no transaction.

Source: Own study based on a list obtained from the Register of Real Estates and Values.

The average transaction value amounted to PLN 35,475 on the primary market with the municipalities of Mielno and Darłowo above the average.

On the secondary market the average transaction was PLN 25,076. Mielno and the city of Ustka were above the average, and below were the rural communes of Ustka, Łeba and the city of Darłowo. On both of the markets, Mielno exceeded the average transaction value almost thrice. In Łeba, on the other hand, the average transaction value was more than eight time lower on the primary and more than ten times lower on the secondary market. When comparing the primary and secondary markets, a significant price differentiation can be noticed in terms of the average transaction price – from the PLN 176,000 on the secondary market in Łeba to PLN 451,000 in the urban-rural commune of Mielno on the same market.

Table 4. Average transaction value regarding apartments in the assessed period of time.

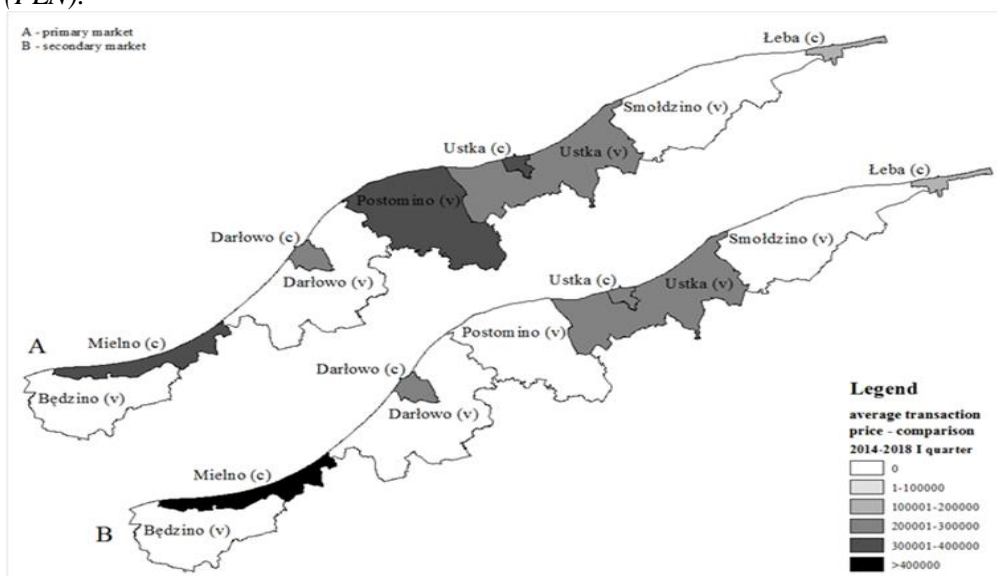
| Commune | Ustka (v) | Ustka (c) | Łeba (c) | Darłowo (c) | Postomino (v) | Mielno (c) | Average |
|-----------|-----------|-----------|----------|-------------|---------------|------------|---------|
| Markets | | | | | | | |
| Primary | 214 | 322 | 178 | 225 | 365 | 308 | 269 |
| Secondary | 218 | 266 | 176 | 259 | bt | 451 | 274 |

Note: Będzino, the rural commune of Darłowo and Smoldzino are not listed in the table due to lack of transactions.

nt. – no transaction.

Source: Own study based on a list obtained from the Register of Real Estates and Values.

Figure 16. Average transaction value regarding apartments on the assessed market (PLN).

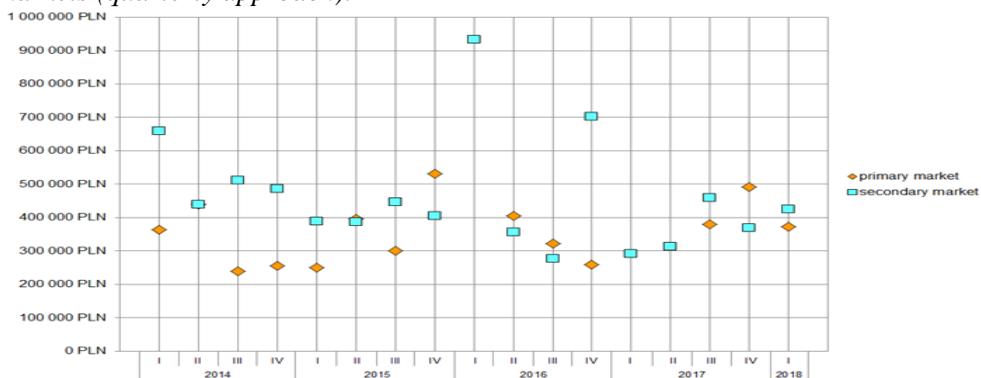


Source: Own study based on a list obtained from the Register of Real Estates and Values.

The average transaction price reached PLN 274,000 on the secondary market. Mielno is the only commune that succeeded in obtaining a higher average value (the value indicator was 65% higher than the average). Other communes, i.e. the city of Darłowo, the rural commune of Ustka and the city of Ustka, achieved lower values. A detailed analysis showed that:

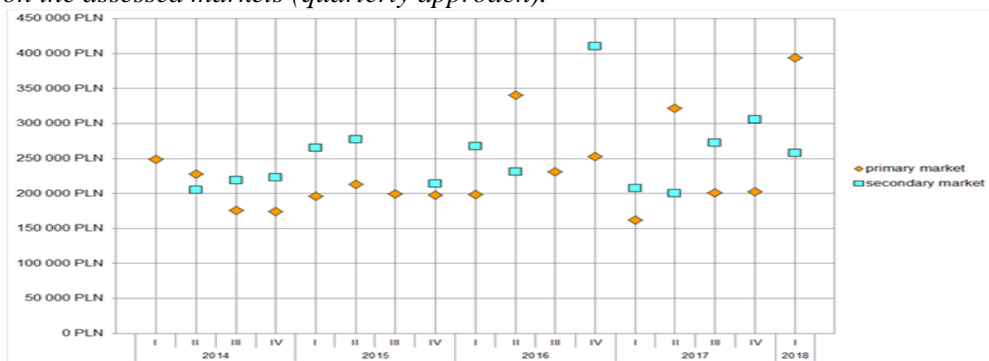
- in the Mielno commune, for almost two first years, the average prices on the secondary market were higher than those on the primary market and the fluctuation amplitude was also lower (Figure 17);
- in the city of Ustka, the fluctuation amplitude was lower in the secondary market compared to the primary market (Figure 18);
- in the city of Ustka, the average transaction value in the first three quarters reached the lowers values out of all the values analysed in the primary market, whereas from the second quarter of 2016 it became very irregular (Figure 19).

Figure 17. Average transaction price of apartments in Mielno on the assessed markets (quarterly approach).



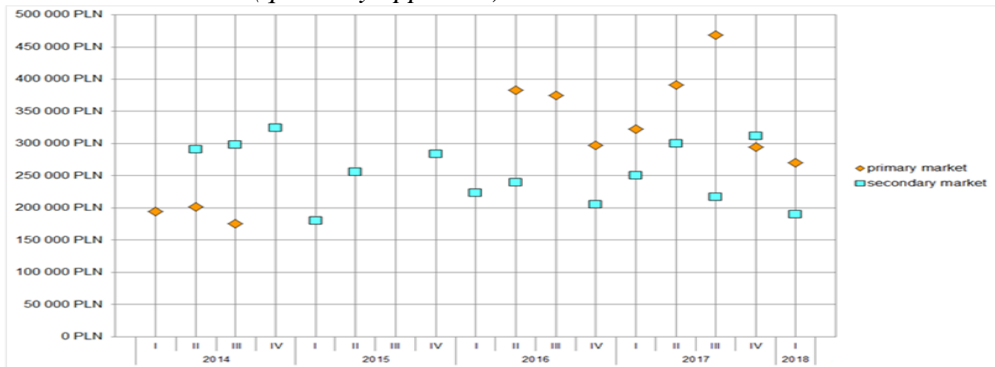
Source: Own study based on a list obtained from the Register of Real Estates and Values.

Figure 18. Average transaction price of apartments in the city commune of Darłowo on the assessed markets (quarterly approach).



Source: Own study based on a list obtained from the Register of Real Estates and Values.

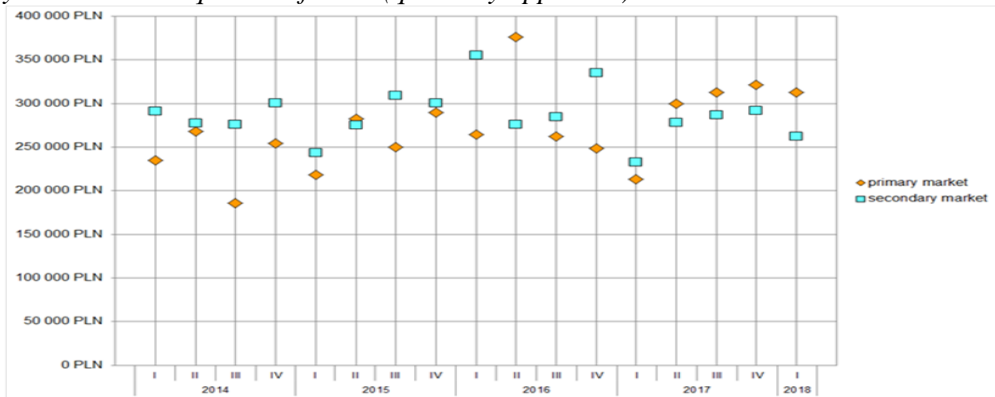
Figure 19. Average transaction price of apartments in the city commune of Ustka on the assessed markets (quarterly approach).



Source: Own study based on a list obtained from the Register of Real Estates and Values.

The secondary market did not experience such an uneven dynamics of the average price, as is shown in Figure 20.

Figure 20. Average transaction price of apartments on the assessed market in the years 2014- 1st quarter of 2018 (quarterly approach).



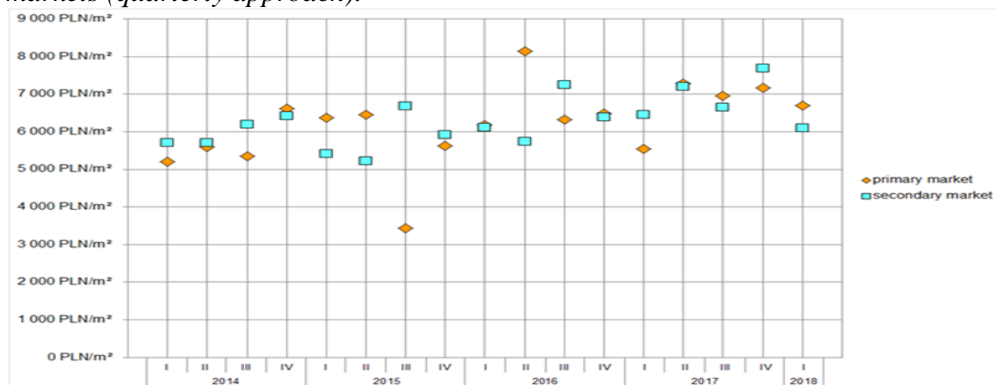
Source: Own study based on a list obtained from the Register of Real Estates and Values.

On the secondary market, in comparison to the primary market, no large scale fluctuations in the average transaction price were noticed. However, similarly to the primary market, the average value indicator is not regularly shaped but alternately variable, thus it is impossible to define whether there is a market boom or a slump on the local real estate market.

When comparing the primary and secondary market in terms of the average price for a square metre of usable floor area, a differentiation in prices can be noticed – from PLN 3,590 per square metre (2nd quarter of 2015) on the secondary market in the rural commune of Ustka to PLN 11,500 per square metre (3rd quarter of 2014) in the urban and rural commune of Mielno on the same market. Throughout the period

considered, the average price per square metre was sometimes higher on the primary and sometimes on the secondary market – it cannot be claimed that prices were higher in one market over the other for a longer period of time as the dynamics were alternate in relation to the markets concerned. In the average price per square metre of usable apartment's floor area there was an overall increase in prices compared to the base period over the entire considered period in both of the markets (Figure 21). The lowest and highest average price per square metre was recorded on the primary market.

Figure 21. Average price for a sqm of apartment's usable floor area on the assessed markets (quarterly approach).

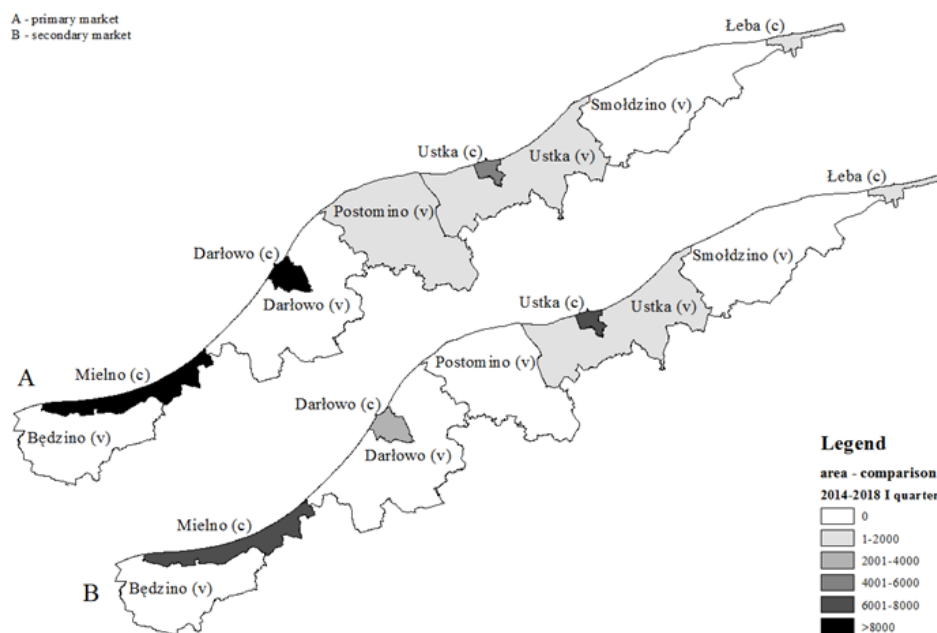


Source: Own study based on a list obtained from the Register of Real Estates and Values.

The average price for a square metre was quite stable in the secondary market, while in the primary market there was a tendency of sudden price jumps. This may be due to the nature of the market where modern facilities are being built and their price is constantly rising, whereas on the secondary market residential buildings do not change their technical condition and location.

A total of 48,406 a square metre of floor area was sold in the analysed period of time in the communes covered by the analysis, of which 30,736 sqms in the primary (63%) and 17.673 sqms in the secondary market (37%).

When comparing the two markets, one can notice a significant difference between them in the municipalities of Darłowo and Mielno. Both these municipalities are in the range above 8,000 sqms on the primary market (Figure 22). Only the rural communes of Ustka and Łeba remained in the same respective range in both of the markets, while the city of Darłowo suffered a drop from 8,000 sqms to the range of 2,001-4,000 sqms in the secondary market (sold floor area decreased more than four times on this market).

Figure 22. Floor area of sold apartments in the assessed markets (sqm).

| Commune | Ustka (v) | Ustka (c) | Łeba (c) | Darłowo (c) | Postomino (v) | Mielno (v) | Average |
|--------------|--------------|---------------|--------------|---------------|---------------|---------------|--------------|
| Primary | 1 843 | 5 203 | 873 | 9 526 | 1 121 | 12 168 | 5 122 |
| Secondary | 853 | 6 730 | 547 | 2 038 | nt. | 7 505 | 3 535 |
| Total | 2 696 | 11 933 | 1 420 | 11 564 | 1 121 | 19 673 | 8 068 |

Note: Będzino, the rural commune of Darłowo and Smoldzino are not listed in the table due to lack of transactions.

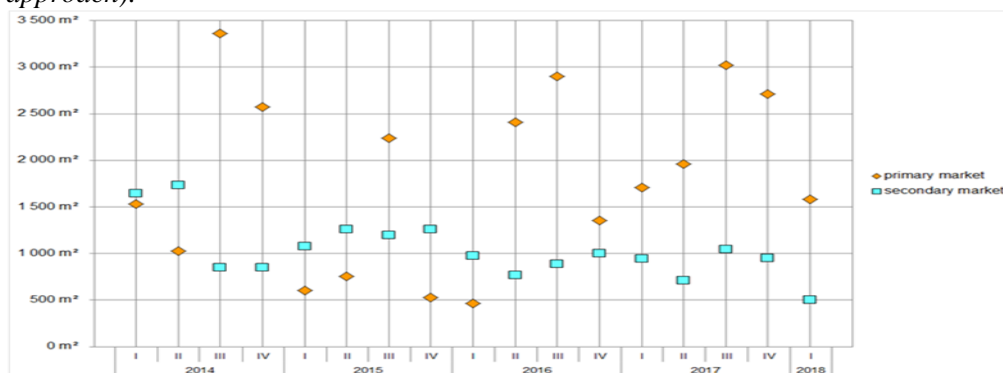
nt. – no transaction.

Source: Own study based on a list obtained from the Register of Real Estates and Values.

Only in the Ustka commune it can be noticed that the floor area sold on the secondary market exceeded the area sold on the primary market. Both the Ustka and Mielno communes are in the respective range of 6,001-8,000 sqms. Because of the lack of transaction in Postomino, both markets cannot be compared.

The average floor area sold on the primary market was 5,122 sqms and 3,535 sqms on the secondary market. A significant discrepancy between the two markets can be noticed in Figure 23 in the sold floor area. In many cases the area on the primary market exceeds that in the secondary market more than twice.

Figure 23. Floor area of sold apartments in the assessed markets (quarterly approach).

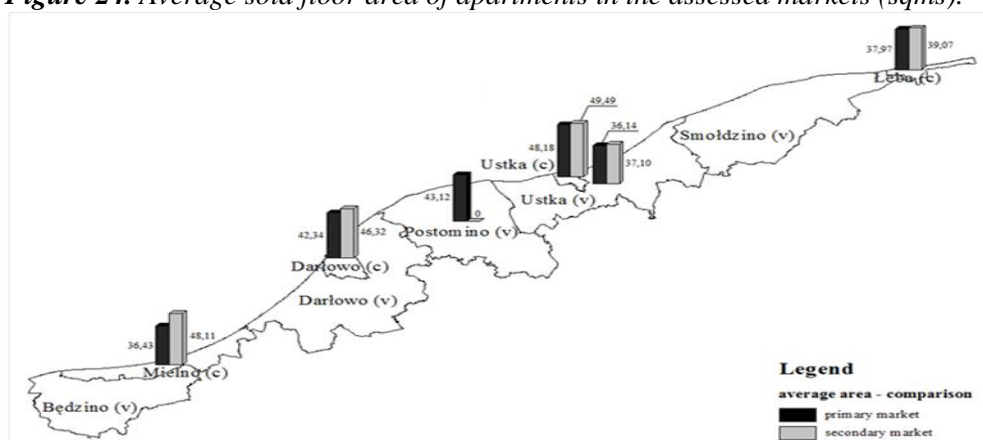


Source: Own study based on a list obtained from the Register of Real Estates and Values.

The primary market was much more dynamic – frequent fluctuations of sold floor area occur depending on the quarter. The sum of the area sold on the primary market at the end of the analysed period of time was similar to the first quarter of 2014, while it dropped more than threefold on the secondary market. The average floor area was the highest in the city of Ustka in both the primary (48,18 sqm) and secondary market (49,49 sqm). In the rural commune of Ustka, on the other hand, it was the lowest with 36,14 sqms in the primary and 37,10 sqms in the secondary market (Figure 24).

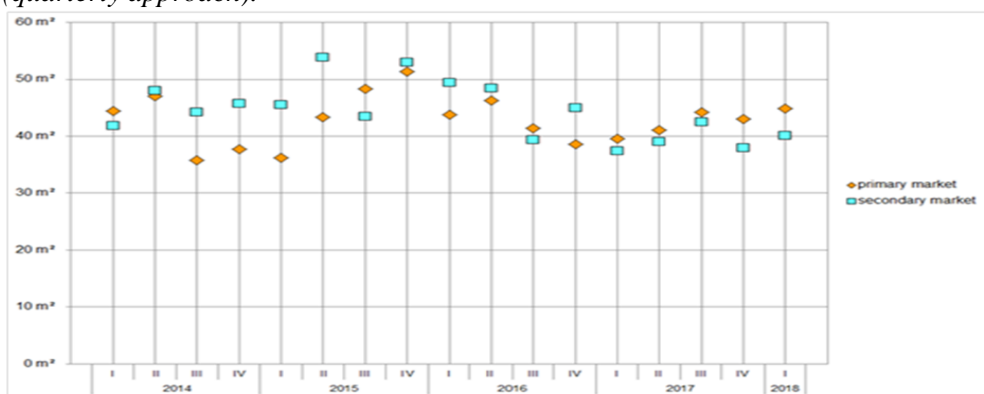
Based on a quarterly distribution, a cyclical nature of changes can be noticed in both of the markets with the biggest average area sold in 2015 taking place in the secondary market (Figure 25). The average sold floor area on both markets is characterised by a similar distribution, where once the primary and once the secondary market prevails.

Figure 24. Average sold floor area of apartments in the assessed markets (sqms).



Source: Own study based on a list obtained from the Register of Real Estates and Values.

Figure 25. Average sold floor area of apartments in the assessed markets (sqms) (quarterly approach).



Source: Own study based on a list obtained from the Register of Real Estates and Values.

The differences in the surface of apartments were not as pronounced as it has been indicated by the previously compared indicators. The average floor area was higher on the primary market both at the beginning and ending of the analysed period.

6. Conclusions

Research conducted in this publication shows that there is a correlation between the price formation of apartments and the development of the apartment market. The hypotheses have been verified positively with the most important conclusions, among others, being:

- the number of transaction in the analysed period: 1,140 of which 67% in the primary and 33% in the secondary market. The highest number of transactions were concluded in Mielno (490), Darłowo (269) and Ustka (244), with the lowest number recorded in Postomino;
- the overall number of transactions reached 338,227 sold contracts of which 63% (PLN 212,848) in the primary and 37% (PLN 125,379) in the secondary market. Mielno, Darłowo and Ustka achieved the highest values on the primary market, while the lowest value in this market was recorded in Łeba;
- there was a large differentiation in terms of the average transaction price, i.e. PLN 35,475 in the primary and PLN 25,076 in the secondary market.

The highest and lowest average transaction price was recorded in the primary market. Research analysis of the two markets shows that the primary market is characterised by a much greater volatility of the average transaction price per sqm of apartment's usable floor area, while the secondary market is much more stable in terms of the average transaction price. There is also a very large variation in the average price per sqm between the surveyed municipalities:

- a total number of 48,409 sqms of apartment's floor areas was sold, where 30,736 sqms in the primary and 17,673 sqms in the secondary market;
- 5,122 sqms was the average floor area sold on the primary and 3,535 sqms on the secondary market; with Mielno, Darłowo and Ustka above the average on the primary and Mielno and Ustka on the secondary market.

Through the analysis of the transactions, it can be assumed on the basis of the number of apartments sold in the first quarter of 2018, in regard to the first quarters of the previous years that the year 2018 could have exceeded in the number of sales contracts over the period of 5 years and even this number could have increased every year (taking under consideration the year 2019 and the following years). Seaside areas still have a large investment space for newer, more expensive and larger apartments.

The main limitation of the presented work is that only nine municipalities were surveyed in this study. Research results have implications for the development of tourism areas regardless of their location. However, the research area should be extended in the future. Typically used indicators for the purpose of operationalisation of variables related to the development of the real estate market were used in this study, but other indicators for the operationalisation of variables can be chosen when measuring the examined phenomena. In the future, for comparative and scientific purposes, the scope of research can be expanded and include all municipalities in the Polish coastal belt.

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