Analysis of Transaction Prices on one of the Housing Estates in Szczecin: Do the Buyers Differentiate Prices on Local Markets with Respect to the Kind of the Right to Own?

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Abstract

The results of researches on housing market dealing with dependencies between prices and attributes and the results of classifications of purchased apartments according to their attributes are very useful tool supporting decisions of housing market participants. One of the most essential attributes of real estate is the right to own.

In case of apartments it could be property, limited rights in rem and law of obligations. The widest ones are property, co-operative title to premises, tenant law and rent. The aim of the paper is comparison of transaction prices in case of two strong laws: property and co-operative title to premises in different stages of business cycle on homogeneous housing estate. The key question is: do the buyers differentiate prices with respect to the kind of the right to own? The tendencies of average quarterly prices of these two kinds of rights will be analyzed. The distributions of transaction prices in consecutive years will be assigned.

The research is based on information concerning all transactions on local housing market in Szczecin in 2006-2017 found in notary deeds collected by Authors. The transactions were conducted on one of housing estate in Szczecin named "Zawadzkiego-Klonowica". The choice of this housing estate was caused by its characteristics such as constant number of apartments and the same type and technology of buildings.

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1 Introduction

Real estate market is very dynamic market and is strongly dependent on changes on social and economic environment. Especially housing market is very sensitive to economic situation of households, changes of demand from households and their preferences concerning attributes of purchased apartments. Housing market participants are interested in dependency between price and attributes of apartments during every stage of business cycle.

This knowledge enables each transaction party to estimate the value of apartment in case of information asymmetry and make a reasonable decision to buy or sell it (Springer, 1996).

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The fore mentioned dependency is also important for property appraisers in case of evaluation of apartments by means of comparative approach.

The main problem in the analysis of the real estate market is its low information effectiveness (Case and Shiller, 1989) and the change of preferences of purchasers over time, especially disturbed in periods of economic downturn (Nicholas and Scherbina, 2013). An additional problem in analyses using econometric methods (Francke, 2010) to study sales contracts is the heterogeneity of data (Foryś, 2011) and features measured on weak scales (Foryś and Gaca, 2016). Real estate properties are by definition not identical but similar. Similarity may be interpreted as the absence of distinguishing features, which significantly affect value or comparison by virtue of the list of legally imposed features.

In this approach the first step is choice of similar apartments in respect of attributes strongly influencing market value of apartment. Therefore the results of researches on housing market dealing with dependencies between prices and attributes and the results of classifications of purchased apartments according to their attributes are very useful tool supporting decisions of housing market participants (Foryś and Nowak, 2012). One of the most essential attributes of real estate is the right to own. In case of apartments it could be property, limited rights in rem and law of obligations. The widest ones are property, co-operative title to premises, tenant law and rent.

The aim of the paper is comparison of transaction prices in case of two strong laws: property and co-operative title to premises in different stages of business cycle on homogeneous housing estate. The key question is: do the buyers differentiate prices with respect to the kind of the right to own? The tendencies of average quarterly prices of these two kinds of rights will be analyzed. The distributions of transaction prices in consecutive years will be assigned.

The research is based on information concerning all transactions on local housing market in Szczecin in 2006-2017 found in notary deeds collected by Authors. All transactions were conducted on one of housing estate in Szczecin named “Zawadzkiego-Klonowica”. The choice of this housing estate was caused by its characteristics such as constant number of apartments and the same type and technology of buildings during the research period. Sales contracts were concluded there with each property right tested.

2 Literature revive

The problem of property ownership in the real estate market is widely discussed primarily in legal literature, where the issue of ownership rights and the extent to which a given right is exercised are discussed.

Property valuation assumes that the same type of rights trading is used for comparison, which is also indicated by Polish law. On the other hand, due to the decisions of the real estate market participants, it turns out to be important whether if weaker and stronger rights are not fully recognizable by them, they differentiate them in the purchase price of real estate. In addition, is trade in these rights balanced on the local market, or does the preference of purchasers change over time due to the lower price of one of them?

Harding et al. in their research note that ownership is associated with a greater tendency to care for your property, and thus better maintained properties have a higher value on the market (Harding et al., 2000; Zeithaml, 1988). Germans prefer to rent apartments rather than buy them, unlike the British who value having their own flat or house (Sivesand, 2005). This applies especially to the young generation entering the labor market and thus the real estate market. In the countries of Central and Eastern Europe, the communist system deprived many citizens of the ownership of real estate, limited the acquisition of real estate, hence the desire to have unlimited ownership of real estate, especially a flat, is very strong.

Following the political changes, the right of ownership of a dwelling in Poland is a disposable, hereditary and one on which a mortgage can be established. Similarly, the limited right to a dwelling in a housing cooperative (cooperative law) is a transferable, hereditary and one that can serve as collateral for a mortgage claim (Foryś and Nowak, 2012). So what is the difference between the two rights, which could make it possible to differentiate their prices on the market?

The ownership right of a dwelling in multi-family buildings also includes the right to participate in common parts of a property not used exclusively by the owner of a dwelling. These include, for example, shares in the structure of a building, traffic areas, often in cellars and other utility rooms, and above all a share in a land property. The possession of such rights entails obligations but also permissions to, e.g. direct co-decision on real estate in accordance with the shares held. Therefore, the sense of ownership extends to the whole property and not only to the dwelling.

In the case of a cooperative right to a dwelling, there is a right to use the dwelling for its intended purpose and the joint ownership relates to all the property of a housing cooperative. So it is not assigned to a particular building, and such a loose relationship results in less care

for common property. It should not be forgotten that a potential buyer sets the price on the basis of ideas, opinions shaped by the media and, finally, his own feelings while viewing the property. Therefore, the mechanisms of the so-called first impression which is strongly connected with the visual sensations of the whole property and its surroundings, are immensely important. Expert knowledge appears at a later stage of evaluation of the subject matter of an agreement, also during valuation by a property appraiser (Trojanek, 2012).

Thus, the prevailing views on both rights, ignorance of ownership rights or impulse induced action mean that the market does not always differentiate a weaker right from a better one in terms of price. The above mentioned view that a weaker right to a dwelling is priced lower on the market than a stronger law will be verified in the study.

In the first part of the study the descriptive statistics of unit prices were analyzed in time. In the second part the analysis of cointegration was applied. Some examples of application of the analysis of cointegration concerning real estate market can be found in the literature. For example Lin and Lin have been analyzing the cointegration relationship between stock markets and real estate markets in Asia (Lin and Lin, 2011) and Baltagi and Li have been looking for cointegration relationship between the home purchase price and rental price based on nationally estimated indexes and also between area-specific home purchases and rental price indexes (Baltagi and Li, 2015).

The analysis is conducted both in the period of the real estate market boom (2006-2008), as well as in the period of economic downturn (2009-2015) and exit from it (2016-2017).

3 Data and research results

The presented study was conducted on the basis of source data from notarial deeds collected by the authors on all transactions concluded in 2006–2016 and in 10 months of 2017 on the local housing market in Szczecin.

However, one of Szczecin's housing estates was selected for the analysis for which a full set of agreements on the purchase and sale of secondary trade apartments was available, as well as those characterized by a stable stock of apartments in the analyzed period. Between 2006 and 2017, no new apartments were built there and no alterations to the buildings or their functions were made. Therefore the objects investigated (housing units) were in this respect a uniform sample. Additionally, the buildings were built in a similar industrialized technology, in the years 1960-1990. Due to the purpose of the study, information concerning the date of conclusion of the contract, type of the right to premises, usable area and transaction price were used which allowed to determine unit prices of usable area per m^2. In total, there were

1,077 transactions identified for the investigated area. Incomplete data for 2017 are related to at least a quarterly delay in recording notarial deeds in real estate cadastral units.

In the table below (Table 1) basic descriptive statistics were compiled concerning the number of concluded agreements on the sale of apartments in the investigated area and unit price[3]. Between 2006 and 2008, the number of transactions oscillated around one hundred per year, while the economic downturn in 2009 and 2010 was followed by a downward trend in the number of agreements concluded until 2015, followed by an improvement between 2016 and 2017.

Table 1. Descriptive parameters of the unit price in the years 2006–2017*.

Year	Number of transactions	Average	Median	Lower Quartile	Upper Quartile	Standard Deviation	Coefficient of Variation
2006	104	2 820	2 771	2 490	3 189	532	18.85
2007	103	4 476	4 561	4 125	4 953	813	18.16
2008	92	4 642	4 670	4 307	5 006	607	13.08
2009	125	4 934	5 039	4 402	5 514	705	14.28
2010	63	4 361	4 456	4 049	4 810	607	13.91
2011	103	4 203	4 286	3 850	4 560	756	17.99
2012	89	3 916	3 939	3 713	4 237	566	14.45
2013	74	3 810	3 873	3 402	4 129	627	16.45
2014	76	3 888	3 868	3 493	4 236	611	15.70
2015	73	3 987	4 097	3 508	4 442	837	20.99
2016	94	4 303	4 286	3 823	4 668	752	17.48
2017*	81	4 478	4 202	3 833	5 036	968	21.61

* – for 10 months

In the years 2007–2015 (except for 2014), average prices were lower than the median of unit prices, which indicates left-hand asymmetric distributions and advantage of transactions with higher prices. The strongest left-hand asymmetry occurred in 2009 and 2015. The difference in unit price in around 50% of the transactions (range of the lower and upper

[3] The nominal prices are used in the research because consumer price index is not appropriate for housing market and real estate price index is not published by the Central Statistical Office of Poland.

quartile) in the analyzed years was between PLN 524-935 per sqm with the exception of 2009 (PLN 1 112 per sqm) and 2017 (PLN 1 203 per sqm). The determined coefficients of variation indicate a differentiation of unit prices in the analyzed years. However, the highest coefficients of variation can be observed in the years 2015 and 2017, while in the remaining years the coefficient fluctuated between 13-19%.

In the years 2006-2014, the maximum unit prices did not exceed PLN 6 500 per sqm and were higher than PLN 1 000 per sqm in the whole investigated period. There is a clear leap in peak prices in 2009. The average unit prices in the surveyed years oscillated around PLN 4 000 per sqm (Fig. 2).

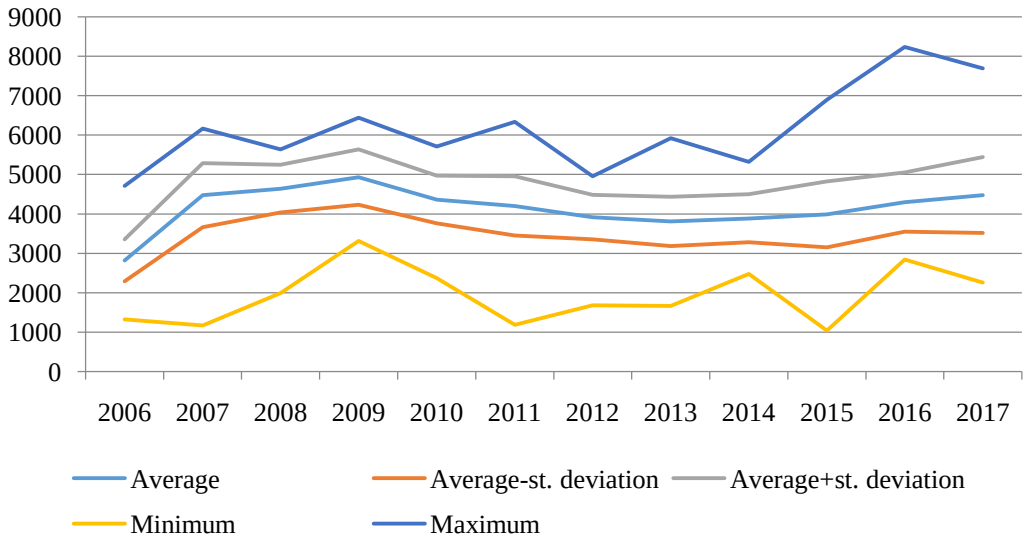

Fig. 1. Basic descriptive statistics of unit prices of apartments in 2006-2017.

In the second part of the paper the tests for cointegration have been run. The tests concern three quarterly average unit prices (see Fig. 3):

- average unit price of all transactions in given quarter (average unit price),
- average unit price of all transactions on property in given quarter (average unit price 1),
- average unit price of all transactions on co-operative title to premises in given quarter (average unit price 0).

Fig. 2. Quarterly average unit prices in 2006–2017.

In order to examine cointegration the Engle–Granger test was applied (Engle and Granger, 1987; Dolado et al., 2003; Osińska, 2007). In the first step each variable was tested for a unit root using Dickey-Fuller test. Then cointegration regressions were run for every two of three examined variables. In the final step Dickey-Fuller test was run for the residuals from the cointegration regressions. In Dickey–Fuller test the null hypothesis is: variable has unit root (a = 1; process is integrated of order one, I(1)).

Table 2 presents the results of Dickey-Fuller test for analysed variables.

Table 2. Dickey-Fuller test for variables (without constant).

Variable	Average unit price	Average unit price 1	Average unit price 0
Estimate of (a-1)	0.0052	0.0017	0.0050
Test statistic	0.4661	0.1106	0.3446
p value	0.8115	0.7128	0.7805
Autocorrelation of first order residuals	-0.2160	-0.3710	-0.4110

It turned out that the null hypothesis cannot be rejected for three kinds of average unit price – all p values are very high and variables are integrated of order one. Therefore the second step was performed. Table 3 presents results of cointegration regressions.

Table 3. Cointegration regressions.

Dependent Variable	Average unit price	Average unit price	Average unit price 1
Independent Variable	Average unit price 1	Average unit price 0	Average unit price 0
Parameter	1.0006	0.9923	0.9882
Standard error	0.0059	0.0091	0.0140
t statistic	168.8100	108.8100	70.3956
p value	0.0000	0.0000	0.0000
R^2	0.9984	0.9961	0.9908

On the base of results presented in Table 3 the residuals were calculated and Dickey-Fuller test was run on them. The results of this test are presented in Table 4.

Table 4. Dickey-Fuller test for residuals.

Dependent Variable	Average unit price	Average unit price	Average unit price 1
Independent Variable	Average unit price 1	Average unit price 0	Average unit price 0
Estimate of (a-1)	-1.0401	-1.1386	-1.0994
Test statistic	-6.9070	-7.5800	-7.2969
p value	0.0000	0.0000	0.0000
Autocorrelation of first order residuals	0.0120	0.0240	0.0270

It turned out that the null hypothesis should be rejected for three kinds of average unit price – all p values are very small and every pair of variables is cointegrated. These results means that every pair of variables is in stable relation in examined period – the values change in a similar way. So the long run relationship exists for every pair of variables. It also means that unit transaction prices on property and on co-operative title to premises on the examined housing market are characterized by regularities that are similar in analysed period.

Conclusions

The research conducted on a uniform, in the sense of technical values, stock of flats did not confirm the relation between the right to the sold flat and the price. The buyers on the analyzed market did not value the ownership right higher than the limited right, i.e. the cooperative right to premises.

In the case of similar other features, it would seem that the right to more freely dispose of the premises (ownership right) has a higher value in the examined market due to the higher quality of the premises, which is also a result of taking care of ownership not only of the premises but also of the common parts of a building (Harding et al., 2000). However, the analysis for quarterly data did not confirm this correlation. There is no difference in the price levels between the rights. For average quarterly prices, it cannot be said that the price of ownership is higher, as shown in Fig. 2. There is co-integration, i.e. the evolution of these prices is similar during the period considered. For the annual data, significant differences were only in two years and their marks were different. This implies that in reality, however, a right type has no effect on prices.

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