Land Use Policy 78 (2018) 515–531

Contents lists available at ScienceDirect

Land Use Policy

journal homepage: www.elsevier.com/locate/landusepol

Disequilibrium in the real estate market: Evidence from Poland

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ARTICLE INFO

Classification code:
D5
D58
R13
R21
R31
G14*Keywords:*
Real estate market
Disequilibrium
Information cascade
Poland
Speculative price bubble

ABSTRACT

The article analyzes the situation on the Polish residential real estate market as a developing market with emphasis on market demand and market supply which were evaluated in two separate approaches. States of disequilibrium were analyzed on a local real estate market in the Polish Region of Lower Silesia based on the data supplied by the Promocja Center for Economic and Organizational Implementation (Sekocenbud) and the Register of Real Estate Prices and Values. The study aims to verify the hypothesis postulating the occurrence of an information cascade on the real estate market and its influence on the number of transactions. The above hypothesis was verified with the use correlation methods and the Granger causality test. The results point to: 1) long-term disequilibrium on the Polish real estate market, 2) the presence of synergistic systemic processes with time lags manifested in property prices, 3) the influence of an information cascade on the number of concluded transactions.

1. Introduction

The Polish real estate sector is a developing market (Łaszek et al., 2016) in the self-regulatory phase, which contributes to market disequilibrium and low market effectiveness. A shallow speculative price bubble was observed on the Polish residential real estate market (Łaszek et al., 2016) where prices peaked in 2008 (Brzezicka, 2016). This was followed a period of price stabilization, which lasted several years, and a rapid increase in the number of transactions in 2011-2012. The increase in real estate prices followed global trends (Case, Shiller 2003; Shiller, 2007; Coleman et al., 2008; Blanchard, 2009; Panagopoulos, Vlamis 2009; Agnello, Schuknecht 2011). The observed increase in housing prices is not a distinctive feature of the Polish real estate market, and it is a symptom of market disequilibrium. The number of real estate transactions (transaction volume) increased significantly on regional markets, and temporal shocks were observed (Brzezicka and Wiśniewski, 2016, pp. 176–178). Transaction volume increases in response to specific market operations, and it triggers information cascades (Brzezicka, 2014). Herd behaviors and information cascades lead to the loss of independence in decision-making and, consequently, decrease the informative value of the real estate market. These processes testify to incomplete development of market structures, market disequilibrium and low market efficiency (Augustyniak et al., 2012, 2014).

The aim of this study was to analyze general states of disequilibrium and to evaluate the equilibrium on the market of residential real estate. Housing prices were analyzed as indicators of market demand and supply. The following research hypotheses were formulated:

Hypothesis 1. The Polish real estate market has not achieved equilibrium which is a characteristic feature of developing markets. Every market strives towards equilibrium regardless of its stage of development and regardless of whether market participants act rationally, are market experts and are familiar with the discount rate concept or not. The analysis of market disequilibrium has been expanded to include the information cascade phenomenon. An information cascade is an integral element of the real estate market which is triggered by market disequilibrium. Other phenomena of the type include speculative price bubbles and demand shocks.

Hypothesis 2. Market disequilibrium is manifested by market shocks such as speculative price bubbles and information cascades.

Hypothesis 3. Market disequilibrium is an intrinsic feature of developing markets.

The first chapter discusses the situation on the Polish market of residential real estate and reviews the relevant literature. Research studies investigating the above phenomena are presented. The second chapter describes the analyzed database, the structure of the evaluated

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https://doi.org/10.1016/j.landusepol.2018.06.013
Received 28 August 2017; Received in revised form 11 June 2018; Accepted 11 June 2018

data, and the main correlations between the analyzed variables. The demand side was analyzed in reference to the market prices of apartments, and the supply side was evaluated in reference to the costs associated with the construction of an apartment building. States of disequilibrium on a local market and the presence of an information cascade were investigated in the third chapter. In the study, market demand was conventionally represented by the volume of concluded transactions. The information cascade was encoded with the use of zero-one variables. The following statistical methods were used: Pearson's correlation test, Granger causality test and, in one analytical step, non-linear estimation of real estate prices. The above methods were applied to evaluate the strength and direction of correlations between an information cascade and the volume of concluded transactions, and to describe the influence of an information cascade on transaction volume. The results were also interpreted and discussed in the third chapter to preserve the logic and the causal character of the evaluated phenomena. Brief conclusions were formulated in the last chapter of the article. Our findings expand the existing body of knowledge about real estate markets by presenting the relationship between disequilibrium on a developing market and an information cascade.

2. Market disequilibrium – literature review

The Polish real estate market is a young market that emerged in consequence of the political transformations of 1989-1990. It was formed during a short period of only several years (Łaszek, 2004, p. 117; Bełej, 2011, p. 59). After the transition period, private ownership and free market policies became the driving force behind Poland's economic growth (Balcerowicz, 1998, p. 39). Transformation processes affected all areas of Poland's economy, including the real estate market (Kucharska-Stasiak, 1999, p. 7; Kucharska-Stasiak, 2005, p. 3). The real estate market is shaped by formal regulations as well as legal acts, economic, social, political and historical processes (Kucharska-Stasiak et al., 2009, p. 10). In a centrally planned economy, the housing sector was an element of social policy, and the construction market was regarded as part of the government's employment policy. The entire housing sector was subjugated to the political doctrine and centrally controlled, and the prices of residential real estate were set centrally (Malpezzi, 1999, p. 1803). Housing resources were allocated rather than sold in accordance with free market principles (Pichler-Milanovich, 2001; Hegedüs et al., 1996), and construction projects were regarded as non-productive investments (Svejnar, 1991, p. 126; Łaszek, 2004, p. 118). Market transformations freed real estate prices, catered to the demand for housing and enabled buyers to acquire real estate based on their preferences and purchasing power. Decentralization in urban planning (Keivani et al., 2001, p. 2462) created institutional, financial and social instruments for purchasing real estate (Załęczna, 2010).

Poland's accession to the European Union was the next milestone on the road to a free real estate market (Kałkowski, 2007; Jakubowski, 2010). This event led to a rapid increase in real estate prices due to a demand shock financed by mortgage loans. In 2004–2011, the mortgage debt of Polish households increased ten-fold, and mortgage loans became the main source of financing for real estate purchases. In 2004–2010, housing supply increased by 6.6% and housing stock increased to 351.7 of new dwellings per 1000 residents (Kucharska-Stasiak et al., 2012, pp. 233–234). According to International Monetary Fund data for 2Q2017, Poland has one of the lowest house price-to-income ratios at 76 (2016 = 100) (IMF, 2018). At present, the main challenges faced by the Polish real estate market include robust housing demand and insufficient supply (Muczyński, 2008, 2016), a low house price-to-income ratio, and the absence of a cohesive and effective housing policy (Kucharska-Stasiak et al., 2012, p. 234).

The global recession induced a small speculative price bubble on the Polish residential real estate market (Łaszek et al., 2009a). The highest increase in housing prices was noted in 2006–2008, whereas the volume of transactions on the real estate market increased substantially in 2010–2011 when an information cascade also occurred (Brzezicka, 2014). However, Ciarlone (2012) investigated housing markets in several Central-Eastern European countries and found that speculation and an information cascade were responsible for only a fraction of the price increase.

Despite these problems, the Polish real estate market has recently entered a new phase of development, from a market of unfulfilled demand to a market where systemic, structural and social processes associated with globalization increased the consumers' demand for high-quality housing (Foryś, 2013). The opening of the Polish real estate market to foreign buyers and investors induced dynamic changes and led to market disequilibrium. The supply and demand imbalance became a characteristic and permanent feature of the Polish housing market (Kucharska-Stasiak et al., 2012, p. 24; Augustyniak et al., 2014).

The imbalance between supply and demand can be attributed to numerous factors, including economic interventionism, short-term supply rigidity, low elasticity of demand and low market transparency (Kucharska-Stasiak et al., 2012, p. 24). In the traditional approach, the price of a product is determined by the balance between supply and demand (Adams, Fuess 2010, p. 42; Curtis, Irvine 2015, p. 60). However, the real estate sector is a unique market (Renigier-Biłozor, 2013, p. 57; Bełej, Cellmer 2014, p. 6; Cellmer, Szczepankowska 2014, p. 2; Prunetti et al., 2014, p. 272; Kulesza, Bełej 2015) where the supply of resources is limited (Belniak, 2001, p. 42; Bryx, 2006, p. 45; Marks-Bielska, 2016, p. 25) due to the limited supply of land as a commodity (Hopfer, Cellmer 1997, p. 38) and the fixed and indivisible nature of real estate (Kucharska-Stasiak, 2006, p. 18). As a result, the characteristic features of real estate are not adequately reflected in the price of housing (Załęczna, 2010, p. 24).

The equilibrium price of real estate is determined by both fundamental (Black et al., 2006; Hott, Monnin 2008; Stevenson, 2008, p. 11) and non-fundamental factors (Case, Shiller 2003; Brzezicka, Wiśniewski 2014). The real estate market is in equilibrium when demand and supply are balanced. The availability of institutional support for housing investments is also a reliable measure of the status and effectiveness of the real estate market. According to the literature, the prices of residential real estate are correlated with selected macroeconomic indicators (Leung et al., 2006; Adams, Fuess 2010; Hepsen, Vatansever 2012; Leung, 2014). The demand side is represented by buyers, their purchasing power and the availability of mortgage-backed financial instruments. The supply side is represented by developers, and it receives support from the state.

These elements of a free market economy are rarely in equilibrium. Due to its unique characteristics, the real estate market is more often in disequilibrium. This problem began to attract researchers' attention in the 1970s and 1980s (Fair, 1972; Fair and Jaffee, 1972; Fair and Kelejian, 1972; Swan, 1973; Maclennan, 1977, 1982 (as cited in Sopranzetti, 2010); Quandt, 1980; Weinberg, Friedman and Mayo 1981). Disequilibrium models on the real estate market have been discussed by Meese and Wallace (1993); Abraman and Hendershott (1996); Riddel (2004); Ji (2005); Chow and Niu (2010); Levin and Pryce (2011); Mourouzi-Sivitanidou and Sivitanides (2011); Wang (2013); Xie and Shi (2013), Cheng et al. (2014), Jielu et al. (2014), Arrazola et al. (2015), Lu and Wang (2015), Bryane and Zhao (2016); Michael and Zhao (2016). Most studies focus on housing prices; however, several authors have also discussed disequilibrium in the prices of rental housing (Venti and Wise, 1984) and commercial real estate (Chau and Wong, 2016). At the macroeconomic level, the equilibrium on the global market is manifested by the balance between demand and supply. In this context, the discussion surrounding market equilibrium and disequilibrium addresses higher-order, primary and systemic phenomena.

Lower-order phenomena which are induced by a state of disequilibrium on the real estate market are also discussed in this paper.