Journal of Business Economics and Management
ISSN 1611-1699 / eISSN 2029-4433
2019 Volume 20 Issue 6: 1189–1209
https://doi.org/10.3846/jbem.2019.11234

MEASURING AND ASSESSING THE IMPACT OF THE GLOBAL ECONOMIC CRISIS ON EUROPEAN REAL PROPERTY MARKET

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Received 20 September 2018; accepted 19 September 2019

Abstract. Economic development of countries, regions or entities operating on the market is possible when favourable economic conditions outweigh adverse conditions. Examining the development of European economy, it is possible to observe this regularity in the majority of periods, i.e. the bull market had a more intense and longer impact on the economy in comparison with the bear market, enabling constant economic development of Europe. Globalisation, a relative ease of financing investment activity, financial over-liquidity, negative interest rates: all of them result in the fact that previously verified and correctly operating mechanisms and market models have become unpredictable. During the latest crisis, the European real property market lost some part of its potential. The loss varied in individual EU member-countries. Some of them coped with the crisis quite successfully, others managed to do so on the average, still others have felt its effects until today. Making use of regressive techniques, the author undertook to measure and assess the impact of the global crisis on the property market. Consequently, the effects and intensity of its impact regarding the number of issued building permits, number of the employed in construction industry, value of construction production and prices of real property were measured.

Keywords: global economic crisis, real estate, housing market, macroeconomic factors, European countries, regression analysis.

JEL Classification: F62, R11, R31.

Introduction

As far as the economic, media or social life is concerned, such terms as crisis, destabilisation or instability of the market have become key notions, describing market phenomena and their status in current management. Every entity subject to a crisis situation reacts similarly, yet the impact of a crisis on the operation of entities varies. Remembering the global economic crisis which ensued in 2008, it is possible to notice that its impact on individual coun-

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tries was not identical. When looking at the European economy, it can be acknowledged that the impact of the crisis on some member states (e.g. Portugal, Spain and Greece) was severe, whereas others (including Germany and France) went through the crisis in a relatively mild way (Dias, Pinheiro, & Rua, 2018; Ozturk & Sozdemir, 2015; Trabelsi, 2012; Aller & Grant, 2018; Neal & Garcia-Iglasias, 2013; Gibson, Hall, & Tavlas, 2012; Storm & Naastepad, 2015; Albonico et al., 2019).

One of the markets dramatically affected by the economic crisis was the real property market which reacted violently to the crisis with drops in real property prices and a decreased supply and demand likewise. The downturn of prices could be observed via calculation of price indexes, whereas the decreased supply and demand manifested themselves in a in such real property market parameters as the number of issued permits for construction, the number of people employed in the building industry or the value of building production. It is considered that the number of issued building permits and the number of the employed are relevant leading indicators testifying to an approaching crisis, as well as ones able to assess, in a reliable way, the loss of potential in the economy affected by it (Strauss, 2013). On the other hand, the value of building production as an indicator assessing the probability of a crisis setting in and as one capable of measuring its impact on the economy has its justification, since the dynamics of changes in the value of building production is tightly correlated with the overall ineffectiveness of costs. Consequently, it is accepted that the higher the ineffectiveness of costs, the more the effects of the crisis are felt (Kapelko, Lensik, & Stefanou, 2014).

Despite the fact that presently the corpus of available literature on the impact of crises on economies and literature which analyzes parameters of real estate property in the time of crises is very extensive, to the best of our knowledge none of the studies has attempted to assess the impact of the latest crisis in the property market either in the European Union or in its individual member states.

Taking the above into account, the objective of the research presented in this article is an attempt at evaluating the reaction of individual European Union member states to the symptoms of the economic crisis. The research focused on parametrisation of real property market of 28 European countries. The analysis carried out for the subsequent years, i.e. the period between 2008 and 2016, aimed at showing the scale and the effects of the impact of the crisis on the market. Furthermore, in the conducted research, the simulation method was applied, enabling to determine the so-called year 100%, i.e. the period in which the examined real property market dimensions should theoretically revert to the values observed in 2008. The conducted research allows to estimate the post-crisis destabilisation of the real property market, its volatility in crisis periods and the durability of the crisis impact on the market. Additionally, the results of the conducted research allows to identify which European states were quick and effective enough to react to the crisis-related drops and which did worse regarding recovery of the lost potential, which had been brought on by the crisis. To be more precise, the research makes it possible to study the elasticity of the changes in the examined dimensions, that is in the number of building permits granted, the number of people employed in building construction production, the value of building production, or prices of items of real property. Additionally, it allows assessing the time necessary to regain the lost potential, as well as will emphasize the positive aspect of the crisis, that is a rise in work

productivity. Concluding the introductory part, it is necessary to note that the study shows solely the range of reactions of the examined countries to the crisis, without clarifying their causes, which definitely include the status of economy or finances of the examined states.

The article consists of four main parts. In the first one, an analysis of the literature dealing with the global economic crisis and its impact on the real estate market is presented. The second one describes the research assumptions and the methodology behind the conducted research and calculations. In the third part, there is a detailed presentation of the research and obtained results, while the final part of the article sums the research and provides conclusions resulting from it.

1. Global crisis, economy and real property market – analysis of literature

When do economic crises arise? There are a number of theories concerning what and to what extent causes an economic crisis. Although each case must be considered separately, it is possible to point to common theoretical planes of their causes, the co-occurrence of which can be a driving force of crisis phenomena. Among the determinants of a threat of a crisis there is, among others, a decrease in the capital possible to be invested in the economic system. Such a decline can take place when there are high interest rates which – through diminishing the investment capital – can lead to a drop in the demand and in prices. From the opposite point of view, both long-term deflation and an increase in the supply of money can have a detrimental impact on the economy. Moreover, deflation and high money supply can result in overestimation of investment potential, which leads to a high level of optimism and, in consequence, to crisis-generating behaviors. The risk of such behaviors increases if there is a lack of state supervision over banks or financial institutions (Adamczyk, 2012; Claessens, 2013; Sironi, 2018).

Moving on to a detailed analysis of the real estate market and its state in the time of the latest economic crisis, one can ask the question: Why was the imbalance on the property market so big and lasting that it brought on negative effects not only to this very market itself, but also to the global economy? Is it possible that the wish on the part of households to possess their own housing or, perchance, the wish on the part of estate developers to obtain profits from their business activity disturb the logic of acting of both households and investors? Can it be assessed unambiguously when crisis phenomena have reached alarming levels? If we have, as it seems, substantial premises to realize that the threat of a crisis on the property market is very high, why do we keep purchasing or building housing?

The analysis of literature on the subject presented here allows showing selected aspects related to the issue of an economic crisis, in particular one that affects real property markets. An indirect goal of the analysis is to provide the research background to the links between measurement and assessment of the impact of an economic crisis on property markets. The first part of the literature review there are presented, in the form of a polemic, what macroeconomic factors can evoke crisis phenomena: can they be interest rates that lead to a decrease in the investment capital, or – on the contrary – are they a long-term deflation as well as an increase in the money supply, or are they still other factors? Showing the impossibility of an unambiguous determination of crisis-generating factors is intended to prove that in individual countries of

the European Union the development of an economic crisis and its impact would vary. In the next part of the analysis of relevant literature, it is noted that preventative and repairing actions of central banks and institutions responsible for state intervention do not guarantee full protection against a crisis. Each of the examined countries possessing its own central bank which is independent in principle, is free to shape its internal macroprudential policy. This causes the level of resistance to its impacts to differ considerably in the examined states at the time of the crisis striking. Another of the mentioned problems is the quickness with which individual countries react to crisis phenomena, since it is the quickness to respond that influences the strength of the crisis impacting the real property market in a direct way.

It was as early as in 2003 that Case and Shiller (2003) noticed that despite the fact that the daily press and journals were full of speculations over a crisis on the real property market, nobody had reacted until the severe economic disaster struck. Therefore, let us ask the following question: Who can prevent the occurrence of economic crises? It is commonly believed that Central Banks. However, most recent studies show that there is no correlation between the macroprudential policy of central banks and the occurrence of crises on the market (Aikman, Bridges, Kashyap, & Siegert, 2019; Bordo, 2018; Detken & Smets, 2004; Brunnermeier & Schnabel, 2016; De Paoli & Paustian, 2017). Crises on the real property market and their connection with and influence on economic crises have also been described in the work of Sornette and Woodard (2010), in which the authors critically discuss the macro-prudential tools applied by Central Banks (among others, unlocking credits and increasing consumption) as a reaction to the financial crisis which has occurred. The book entitled *Crisis in the Eurozone* (Lapavitsas, 2012) also needs mentioning here, as it treats about the economic crisis and its consequences for the Eurozone states in a global way. Another of the causes behind the relatively high sensitivity to crisis situations is excessive indebtedness and faulty initial assumptions in the process of formation of the common currency of the Euro. These mistakes result in an increased possibility for the states belonging to the zone to be affected by economic crises (Lane, 2012). A proof of the above-quoted theses concerning harmful effects of excessive liquidity and its influence on the appearance of a crisis, and – in particular – a crisis on the property market, can be found in the works by Yuan and Fan (2003), Bernanke and Gertler (2001), as well as Kivedal (2013). It also needs observing that a crisis on the property market is a very complex phenomenon and the literature dealing with this problem area does not point unambiguously to factors causing it (Hunter, Kaufman, & Pormerleano, 2005). In studies devoted to this question, there are found contradicting suggestions as to what causes it and how to prevent it (Trichet, 2005; Roubini, 2006). Himmelberg, Meyer and Sinai (2005) conducted very interesting research and described the formation of a crisis on the property market. At the same time, they pointed to erroneous representations in the mechanism of its understanding. Another article argues that the property market is also subject to influences of economic cycles, calling them hot and cold seasons on the real property market (Ngai & Tenreyko, 2014). If the market remains in the phase of a good cycle and additionally is financed with a risky financial instrument, then the risk of a price bubble grows, which can imply a crisis. A deepened knowledge on structural causes behind the occurrence of financial crises and a critical assessment of new and risky financial instruments were presented in relevant research (Crotty, 2009).

Key conclusions which help to put the knowledge about crises on the property market in order can be found in the work of Crowe, Dell'Ariccia, Igan, and Rabanal (2013). The authors comprehensively describe how neglect of control on the real property market during crisis may have catastrophic effects for the entire economy. The authors also show the advantages and disadvantages of applied governmental programmes (macroprudential), which were aimed at limiting damage to the financial system and economy. The study provides an important conclusion, that booms on the real property market, the consequence of which are breakdowns of this market, are significantly financed from credit. In recent years the growing globalization and internationalization, supported to a great e*x*tent by development of financial instruments, which entails an increasingly easier financing, causes the risk of appearance of price bubbles on the property market to rise (Bardhan & Kroll, 2007; Topintzi, Hobbs, & Chin, 2009; Dallas & Sin, 2017; Asal, 2019), the bursting of which – in turn – causes a crisis to set in on this market and – in further perspective – in the whole economy. Another important research theme is e*x*amination of the influence and impact of an arising economic or financial crisis on macroeconomic parameters of individual domestic economies. In order to e*x*plain the level of reaction on the part of individual countries to the symptoms of a crisis and at least initially justify the size of its impact, it is possible, following the paper of Chaney, Sraer, and Themsar (2012), to ascertain that in the face of financial turbulences, companies (and also countries) use assets accumulated as security for financing new projects. Problems appear when such assets are not sufficient to amortise the effects of a crisis. Still other and – at the same time – complex research dealing with the influence of an economic crisis on economy, in particular – the origins of the credit crunch, the role of the international monetary system and impact of a financial crisis on residential and commercial property markets – can be found in the report by Adair, Berry, Haran, and McGreal (2009).

Continuing the analysis of the relevant literature, we can undertake to answer the question: Why were we so surprised by the outbreak of a global economic crisis, despite the appearing warning signals flowing from the market? We can state that the reason of it is recklessness, undervaluation of the risk and maybe even greed featuring both on the side of the demand and that of the supply of the market. Both sides of the property market assume that they will maneuver out of the problem somehow and that investing in real estate will bring relatively high profits.

Concluding the analysis of the literature, it also needs remarking that at the initial stage of the economic crisis, that is in the years 2009–2010, there appeared a few important publications dealing with the influence of the crisis on the economies of European countries. In 2009, supervised by the European Commission, a study describing general causes and consequences behind the European economic crisis (cf. Buti & Székely, 2009) was brought out, whereas in 2010, as part of a diagnosis of the impact of the crisis on the European market, the Central Bank made an assessment of the influence of the crisis on the countries of Central, Central-Eastern and South-Eastern Europe (cf. Sandor & Reiner, 2010).

Finishing the review of the literature on the subject, it needs underlining once again that the analysis aimed to directly show the current state of knowledge on the particularly comple*x* and sensitive question of an economic crisis, and – in particular – a crisis on the real property market. Moreover, it was also meant to indirectly indicate the comple*x*ity of

the phenomenon as regards assessment of its influence on the economy of the European Union as well as those of its member-states. The above-presented manner of analyzing the literature was accepted, remembering that the studies conducted in this article undertake to measure and assess the impact of the crisis on the property market, without explaining the causes which brought it on or mechanisms behind it.

2. Research assumptions and research methodology

Examination of reactions of European countries to crisis phenomena appearing since 2008 in the area of the real property market was conducted in five research steps. In the first one, which forms an introduction to the research, the problem, the necessity and the intended purpose of the research was identified. In the second step, four research areas were determined, directly showing the condition and the level of development of the real property market. In this step, an assumption was made that the research should cover such areas as:

- number of permits issued for the building of new housing;
- number of persons employed in the building industry;
- value of building production;
- prices of real properties.

It needs underlining here that the indicated variables make four fundamental factors impacting the state of the real property market and do not form an exhaustive set in the highly complex specifics of the examined market. However, the choice of the four investigated areas as the key ones was dictated by the assumption that they are a component of the so-called building process (according to the Main Statistical Office, as regards the category "Construction", the four components which are described and analysed hereby belong to the building construction process). Additionally, a general description of variables of the building construction process, as significantly impacting the parameters of the whole economy, and in particular – the real property market – can be found, among others in the works of Mach and Racka (2018), Geipele and Auzins (2015) and Mach (2016). On the other hand, we can find descriptions of making use of the factor in the form of issued building permits and its impact on the conditions of the real estate market in the works by Mach (2012), Go (2013), Somerville (2001) and Schoenmaker and Vlist (2015). Also, an analysis of prices and their indexes appears vital from the point of view of research into the real estate market (cf. the works by Case & Quigley, 1991; Netzell, 2012; Kokot, 2014; Crosby, Jackson, & Orr, 2016), value of the construction production (Stasiak-Betlejewska & Potkany, 2015; Ofori, 2007), as well as employment and its evident impact on the economy in the theory of economy (Keynes, 2003).

The research on the impact of the global economic crisis on the level of development of the real property market was conducted for 28 European countries, such as: Belgium, Bulgaria, the Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, the Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden and Great Britain. The beginning of the measurement period of the data described above was determined arbitrarily and aimed at showing the real property market reactions to the global economic crisis which

had its beginning in 2008. On the other hand, the upper time limit of the collected data (i.e. 2016) was determined by the availability of data in public European databases. The data collected in all the categories were expressed as change dynamics (%) calculated for the base year. On account of variation of the development tendency in the examined areas between 2008 and 2016, in order to obtain representative results, the research period was divided into two sub-periods, i.e. the period between 2008 and 2013 and between 2013 and 2016. Due to the fact that in the analysed period (2008–2016), there occurred changes in the direction of the development tendency in relation to the phenomena which are researched, it was necessary to make a division of the period into the two sub-periods. Such a division forced us to work on very short time periods and on their basis estimate the structural parameters of the trend function. Taking the above into account, while interpreting the obtained results, we should bear in mind the limitations connected with it. Additionally, in order to raise the reliability of the obtained results and their interpretative correctness for each assessed trend function, a determination index was established. This index enables us to objectively assess the quality of built linear decision models. In the fourth step, the proper research was carried out, consisting in estimation of parameters of the linear trend function for the entire EU and for 28 examined countries, in two previously defined sub-periods. The trend function parameters allow evaluating the impact of the crisis on the four examined dimensions and, therefore, directly on the development potential of the real property market and indirectly – the condition of individual countries. Upon completion of the research, also at the fourth research stage, synthetic conclusions from the research were prepared. The stage ending the research was recapitulation of the entire examined issue. During the performance of proper research computational engineering was used, consisting in application of analytical methods and estimation of parameters of linear trend functions (using the classical least square method) and the coefficient of determination was calculated.

Theoretical values of the examined dimensions were marked by variable Y, which may also be recorded in a matrix form (cf. Formula 1).

$$\hat{y}_i = \hat{\alpha} X \,. \tag{1}$$

On the other hand, estimation of structural parameters of the model via the classic method of least squares was made with the use of an estimator expressed in Formula 2.

$$\hat{\alpha} = \left(X^T X \right)^{-1} X^T y_i \,, \tag{2}$$

where: $\hat{\alpha}$ – least square estimator of unknown parameter vector α; y_i – column vector of the observation on the response variable with dimensions (*n x 1*); Index I denotes the examined dimension impacting the European real property market, where: $i = 1$ denotes the dimension of number of permits issued for the building of new apartments; $i = 2$ denotes the dimension of number of person employed in the building industry; $i = 3$ denotes the dimension of value of building production; $i = 4$ denotes the dimension of prices of real properties. X – observation matrix on independent variables with dimensions $[n \; x \; (k + 1)]$, where: k – realization of time variable t for the examined periods, i.e. the years 2008–2016.

In linear models, in the case of estimation of parameters of the model by means of the classic method of least squares, the R^2 value is located within the range [0;1]. The measure of R^2 is calculated according to Formula 3 which shows the part of variability of the response variable that is explained by the constructed model:

$$R^2 = 1 - \frac{\sum_{t=1}^{n}\left(y_t - \hat{y}_t\right)^2}{\sum_{t=1}^{n}\left(y_t - \overline{y}\right)^2} = \frac{\sum_{t=1}^{n}\left(\hat{y}_t - \overline{y}\right)^2}{\sum_{t=1}^{n}\left(y_t - \overline{y}\right)^2}, \tag{3}$$

where: y_t – value of variable Y in moment t or period; $\hat{y}_t$ – theoretical value of variable Y in moment t or period; $\overline{y}$ – average value of variable Y.

On account of the common application of the least squares method to estimate structural parameters of the model and the common application of the coefficient of determination to evaluate the degree of adjustment of the constructed models to the empirical data, in the article did not provide detailed calculation rules. Detailed principles of application and computational assumptions may be found in multiple papers on econometric modelling (cf. works of Aczel, 1989; Maddala, 1992; Hyndman & Athanasopoulos, 2018; Davidson & MacKinnon, 2004; Baltagi, 2011).

3. Research and analysis of obtained results

The introductory stage leading to the detailed research was calculation of the average change dynamics for the four above-listed research areas. Figure 1 presents the formation of the change dynamics obtained for the number of issued building permits, value of building production, number of persons employed in the building industry and apartment price indexes.

It has to be noted that the number of issued building permits is characterised by the greatest flexibility of changes. Among the examined factors influencing the real property market, it was the number of issued building permits that was characterised by the greatest decline. This decline reached 41.5% in 2009 in comparison to the previous year. It can be supposed that such a sharp drop in the number of issued building permits was (most probably) the result of pessimistic forecasts for the entire economy in that period, and in particular in the area of demand for real property and in that of their financing (cf. Figure 1, in particular with reference to the years 2008–2013). A strong reaction to the global economic crisis was also recorded with respect to building production. In 2009, drops amounting to 11.2% were recorded with respect to it. In the first year of the crisis, a decline in the employment in the building industry was also noted at the rate of 7.6% and a drop in the prices of housing amounting to 4.5%. The values of the obtained results which show shrinking of potentials in the examined dimensions can be explained with the regularity that in the time of a crisis companies are much more cautions to implement investment projects (cf. works by Błach & Wieczorek-Kosmala, 2012; D'Alpaos & Canesi, 2014).

In the analysis of determinants influencing the development status of the European real property market (relying on the data contained in Table 1), it may be noted that on average, the greatest flexibility of changes was recorded in the category of the number of issued building permits. During the period between 2008 and 2013, the European residential property

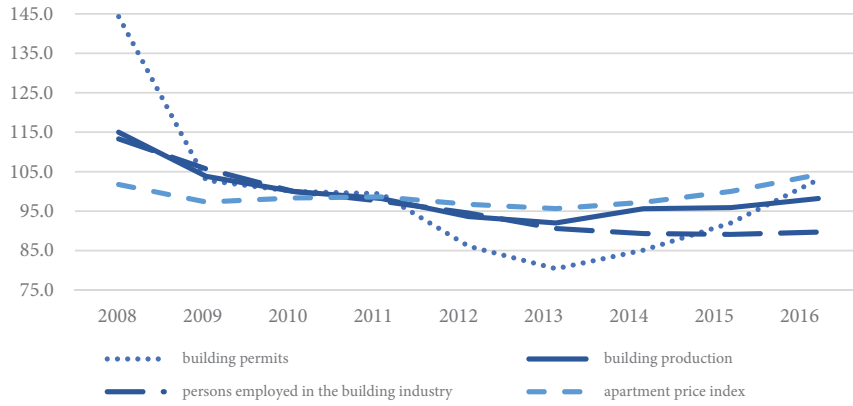

Figure 1. Formation of time series in the examined dimensions (average values for 28 European states) (source: author's own study)

market shrank on average by over 10% per year in this individual area; however, between 2013 and 2016, it recorded an average annual growth of 7.5%. The other studied dimensions, i.e the building production in the first examined period recorded a decline by 4.2% y/y, whereas employment in the building industry – a drop amounting to 4.3% y/y. In the second examined period (i.e. 2013–2016), the building industry grew on average at a rate of 1.9% y/y, whereas employment in the building industry kept dropping on average by 2.3% y/y. Higher annual growth in the building production in relation to employment in the building industry may testify to increased labour efficiency in the area of the real property market (more information on the rise in effectivity in times of a crisis can be found, among others, in the works by Groh (2014) and L. Tanning and T. Tanning (2013)). An interesting situation was recorded for the examined housing price indexes. In reaction to the crisis, European prices of housing at the initial stage of the crisis dropped only by 0.9% in order to increase their value at the second stage of the crisis by 2.9% on average annually.

The power of impact of a crisis on the real property market clearly influences the time of recovering from it. In this study, the linear trend function parameters included in Table 1 were used to estimate the period of time necessary for accomplishing, in the examined areas, the development potential similar in values to that in the year 2007.

Table 1. The regression functions estimated for two periods of analysis, i.e. for years 2008 and 2013 and 2013 and 2016, for the examined development factors (source: author's own study)

Examined development factor	Periods of analysis	
	2008–2013	2013–2016
Building permits	$y = -10.58x + 139.19$	$y = 7.47x + 71.45$
Building production	$y = -4.21x + 115.17$	$y = 1.89x + 90.7$
Persons employed in the building industry	$y = -4.27x + 115.23$	$y = -0.29x + 90.4$
Apartment price index	$y = -0.91x + 101.25$	$y = 2.86x + 92.13$

Table 2 contains a simulation of the accomplished development potential in the four examined areas. An assumption was adopted that the year 2007 was characterised by development potential reaching 100%. Analysing the number of issued building permits, it may be noted that the drop in their number lasted until 2013 (on average by 10.5%) in order to spike by 7.5% starting with 2014. Assuming that the annual average rate of changes is maintained on the level of 7.5%, it may be expected that, regarding the examined dimension, the European residential property market will have reached the potential from before the global crisis in 2024. Then, the building production will accomplish its potential from before the crisis in 2027 and the employment rate in the building industry, on account of the negative values of the slope parameters of the estimated trend functions, will not recover the values of the potential from 2007. An interesting situation takes place in the category of residential property prices. Between 2008 and 2013, a slight annual average drop in the real property prices was recorded, amounting only to 0.9%, whereas as of 2014, the prices started to grow significantly. The growth amounted to 2.9% on average per year and resulted in the fact that the European real property market recorded prices as before the crisis already in 2015.

Upon completing the overall analysis of the impact of the crisis on the European residential real property market, more detailed research was carried out. For every dimension, two functions of the trend were determined, whose parameters defined the level of reaction of individual countries to the crisis (trend functions were determined on the basis of Equations 1 and 2, whereas the determination coefficient – according to Formula 3).

Table 2. Simulation of the accomplished development potential in the examined areas (source: author's own study)

Year	Building permits	Building production	Persons employed in the building industry	Index of prices
2007	100	100	100	100
2008	89	96	96	99
2009–2013	…	…	…	…
2014	44	77	74	97
2015	51	79	74	100
2016	59	80	73	
2017–2021	…	…	…	
2022	104	92	72	
2023		94	71	
2024–2026		…	…	
2027		101	70	
2028			70	

Table 3 presents the estimated trend functions and the coefficients of determination for the number of issued building permits. The slope coefficient of estimated functions shows the rate by which, on the average, changes y/y should be expected in the area of the number

of issued building permits. Based on the estimated trend functions, it is possible to notice that between 2008 and 2013, the highest drop in the number of building permits was recorded in Ireland, Bulgaria, Spain and in Hungary. In these countries, the average decline in the number of issued building permits amounted to 63.66%, 48.13%, 44.31% and 39.29%, respectively. On the other hand, it should also be noted that in spite of the global economic crisis, there were countries in Europe, where the number of issued building permits grew. They were Germany, with the average growth in the number of issued building permits amounting to 10.36%, Sweden (an increase by 4.33%) and Austria (an increase by 4.00%). The positive slope coefficient in the estimated trend functions can also be observed in Finland, Great Britain, Luxembourg and in France. However, the low value of the determination coefficient for these countries does not allow drawing explicit conclusions pertaining to an increase/drop in the number of building permits issued. When examining the next period, i.e. the years 2013 and 2016, it may be noticed that in the majority of European countries, there was an annual increase in the number of issued building permits, the highest growth being recorded in Hungary, Malta, Estonia, Denmark and Sweden, where the following values were found: 43.45%, 34.67%, 20.14% and 34.28%, respectively. In four countries, namely Greece, Cyprus, Slovenia, Italy and Latvia, there was a drop in the number of issued building permits in both examined periods. The drop observed between 2013 and 2016 testifies to the fact that until 2016, these countries had not dealt with the effects of the global economic crisis. The continuous drop in the number of issued building permits for these countries can testify to cautiousness of developers and their fears of locating funds on the real property markets of such countries.

The second dimension determining the potential of the real property market examined in detail was building production (cf. Table 4). In the period between 2008 and 2013, all the European states recorded a drop in this category. In three countries, the average annual drop in the building production category exceeded 70% y/y. These countries include Ireland (a drop by 103.69% y/y), Latvia (by 73.36% y/y) and Lithuania (by 70.08% y/y). In Greece, Estonia and Spain, the decline in the examined category was also significant and reached 41.23% y/y, 38.45% y/y and 24.8% y/y, respectively. In the second research period, i.e. between 2013 and 2016, drops were still observed in as many as 12 countries (a negative value of the slope coefficient in the estimated trend functions). Only three out of all the European countries (Ireland, Latvia and Lithuania) recorded an increase in the building production exceeding 10% in the period between 2013 and 2016. However, this increase is incommensurately small in comparison with the drops observed in the previous period.

Yet another determinant describing the potential of the real estate market is employment in the building industry. On account of the crisis, the sharpest drop in the employment in this branch between 2008 and 2013 was recorded in Ireland, Spain, Bulgaria and Portugal. With respect to the above-mentioned countries, the decline in the employment y/y was higher than 10% and reached 19.99%, 16.59%, 13.69% and 11.54%, respectively. It has to be noted that such a significant drop resulted in a spike of the unemployment rate in individual states. It should also be acknowledged that in the case of six countries, a year-to-year increase in the employment rate in the period between 2008 and 2013 was recorded. The highest growth was recorded by Sweden (3.11% y/y), subsequently Poland (2.12% y/y) and Germany (2.07% y/y).

Table 3. Calculations pertaining to the issued building permits (source: author's own study)

Name of country	Research period 2008–2013		Research period 2013–2016	
	Equation of trend I	R^2	Equation of trend II	R^2
Ireland	$y = -63.66x + 359.66$	$R^2 = 0.82$	$y = 17.93x + 14.75$	$R^2 = 0.91$
Bulgaria	$y = -48.13x + 319.47$	$R^2 = 0.58$	$y = 14.84x + 86.7$	$R^2 = 0.90$
Spain	$y = -44.31x + 274.79$	$R^2 = 0.81$	$y = 4.68x + 27.95$	$R^2 = 0.89$
Hungary	$y = -39.29x + 250.33$	$R^2 = 0.88$	$y = 43.45x - 21.60$	$R^2 = 0.77$
Greece	$y = -29.49x + 183.59$	$R^2 = 0.98$	$y = -1.09x + 17.30$	$R^2 = 0.62$
Portugal	$y = -28.99x + 192.63$	$R^2 = 0.90$	$y = 5.46x + 21.40$	$R^2 = 0.72$
Cyprus	$y = -23.48x + 163.62$	$R^2 = 0.98$	$y = -0.78x + 26.10$	$R^2 = 0.07$
Croatia	$y = -22.72x + 186.71$	$R^2 = 0.89$	$y = 2.94x + 52$	$R^2 = 0.27$
Slovenia	$y = -21.01x + 174.82$	$R^2 = 0.87$	$y = -1.37x + 63$	$R^2 = 0.13$
Italy	$y = -21.00x + 171.29$	$R^2 = 0.96$	$y = -2.46x + 45.50$	$R^2 = 0.69$
Netherlands	$y = -19.49x + 161.10$	$R^2 = 0.99$	$y = 15.16x + 32.30$	$R^2 = 0.87$
Malta	$y = -17.90x + 161.27$	$R^2 = 0.96$	$y = 34.67x + 9.50$	$R^2 = 0.80$
Slovakia	$y = -17.02x + 168.99$	$R^2 = 0.70$	$y = 16.92x + 70.65$	$R^2 = 0.97$
Czech Rep.	$y = -15.40x + 161.93$	$R^2 = 0.91$	$y = 6.49x + 71.70$	$R^2 = 0.98$
Romania	$y = -10.32x + 141.63$	$R^2 = 0.80$	$y = 0.97x + 88.35$	$R^2 = 0.57$
Estonia	$y = -9.95x + 157.81$	$R^2 = 0.17$	$y = 40.94x + 77.80$	$R^2 = 0.96$
Poland	$y = -8.14x + 131.17$	$R^2 = 0.74$	$y = 15.10x + 63.20$	$R^2 = 0.99$
Latvia	$y = -6.69x + 152.85$	$R^2 = 0.11$	$y = -18.35x + 147.35$	$R^2 = 0.49$
Lithuania	$y = -4.61x + 138.57$	$R^2 = 0.05$	$y = 19.99x + 112.20$	$R^2 = 0.82$
Denmark	$y = -1.55x + 88.35$	$R^2 = 0.02$	$y = 30.14x + 42.65$	$R^2 = 0.96$
Belgium	$y = -1.28x + 99.69$	$R^2 = 0.15$	$y = -0.20x + 99.70$	$R^2 = 0.01$
France	$y = 0.42x + 94.81$	$R^2 = 0.01$	$y = 2.75x + 80.20$	$R^2 = 0.25$
Luxembourg	$y = 0.79x + 104.75$	$R^2 = 0.02$	$y = 4.79x + 113.60$	$R^2 = 0.05$
UK	$y = 1.50x + 91.57$	$R^2 = 0.09$	$y = 8.70x + 101.50$	$R^2 = 0.95$
Finland	$y = 2.04x + 82.70$	$R^2 = 0.10$	$y = 12.01x + 66.35$	$R^2 = 0.89$
Austria	$y = 4.01x + 93.15$	$R^2 = 0.59$	$y = 5.97x + 115.05$	$R^2 = 0.95$
Sweden	$y = 4.33x + 79.49$	$R^2 = 0.45$	$y = 34.28x + 72.40$	$R^2 = 0.99$
Germany	$y = 10.36x + 75.84$	$R^2 = 0.94$	$y = 13.03x + 123.20$	$R^2 = 0.90$

Table 4. Calculations pertaining to the building production (source: author's own study)

Name of country	Research period 2008– 2013		Research period 2013–2016	
	Equation of trend I	R^2	Equation of trend II	R^2
Ireland	$y = -103.69x + 489.95$	$R^2 = 0.92$	$y = 10.78x + 62.49$	$R^2 = 0.81$
Latvia	$y = -73.36x + 382.25$	$R^2 = 0.94$	$y = 11.55x + 108.24$	$R^2 = 0.72$
Lithuania	$y = -70.08x + 374.35$	$R^2 = 0.85$	$y = 12.45x + 104.91$	$R^2 = 0.83$
Greece	$y = -41.24x + 279.25$	$R^2 = 0.88$	$y = -2.55x + 47.79$	$R^2 = 0.23$
Estonia	$y = -38.45x + 244$	$R^2 = 0.95$	$y = 5.61x + 134.33$	$R^2 = 0.68$
Spain	$y = -24.8x + 197.25$	$R^2 = 0.99$	$y = 4.80x + 71.86$	$R^2 = 0.82$
Bulgaria	$y = -17.90x + 184.55$	$R^2 = 0.59$	$y = -1.51x + 93.12$	$R^2 = 0.26$
Portugal	$y = -14.50x + 158.40$	$R^2 = 0.99$	$y = -6.67x + 88.18$	$R^2 = 0.87$
Slovenia	$y = -13.82x + 159.90$	$R^2 = 0.67$	$y = -3.67x + 58.05$	$R^2 = 0.67$
Cyprus	$y = -11.77x + 150.50$	$R^2 = 0.84$	$y = -7.73x + 89.2$	$R^2 = 0.63$
Hungary	$y = -11.66x + 144.35$	$R^2 = 0.97$	$y = 2.14x + 82.63$	$R^2 = 0.54$
Romania	$y = -8.12x + 148.20$	$R^2 = 0.16$	$y = 4.48x + 93.85$	$R^2 = 0.67$
Denmark	$y = -7.91x + 132.40$	$R^2 = 0.89$	$y = 2.76x + 97.2$	$R^2 = 0.81$
Czech Rep.	$y = -7.02x + 128.95$	$R^2 = 0.98$	$y = -0.91x + 96.21$	$R^2 = 0.20$
Poland	$y = -4.65x + 119.20$	$R^2 = 0.34$	$y = -1.37x + 123.11$	$R^2 = 0.20$
UK	$y = -4.58x + 114.60$	$R^2 = 0.61$	$y = 3.34x + 92.02$	$R^2 = 0.68$
Slovakia	$y = -4.26x + 119.70$	$R^2 = 0.32$	$y = -3.40x + 95.47$	$R^2 = 0.71$
France	$y = -3.14x + 112.50$	$R^2 = 0.96$	$y = -2.29x + 99.82$	$R^2 = 0.94$
Croatia	$y = -3.06x + 122.55$	$R^2 = 0.08$	$y = -4.01x + 82.64$	$R^2 = 0.54$
Belgium	$y = -2.51x + 110.55$	$R^2 = 0.85$	$y = -1.29x + 105.13$	$R^2 = 0.94$
Sweden	$y = -1.88x + 103.80$	$R^2 = 0.22$	$y = 1.91x + 94.567$	$R^2 = 0.28$
Austria	$y = -1.60x + 106.95$	$R^2 = 0.92$	$y = -0.65x + 105.28$	$R^2 = 0.29$
Finland	$y = -0.43x + 96.45$	$R^2 = 0.01$	$y = 1.01x + 104.13$	$R^2 = 0.19$
Germany	$y = -0.18x + 99.55$	$R^2 = 0.17$	$y = 0.34x + 105.17$	$R^2 = 0.30$
Netherlands	no data available			
Luxembourg	no data available			
Malta	no data available			
Italy	no data available			

In the other period, i.e. between 2013 and 2016, the greatest growth in the employment was recorded in Ireland. With respect to the employment in the building industry, Ireland reacted very sensitively in the entire examined period; in the first years of the crisis, it recorded the sharpest decline in the employment rate, whereas in the period between 2013 and 2016, it showed the highest growth in this dimension. Poland, Latvia and Portugal recorded the most dramatic drops in the employment in the building industry between 2013 and 2016, amounting to 4.64%, 3.85% and 3.34% y/y, respectively (cf. Table 5).

Table 5. Calculations pertaining to the employment in the building industry (source: author's own study)

Name of country	Research period 2008–2013		Research period 2013–2016	
	Equation of trend I	R^2	Equation of trend II	R^2
Ireland	$y = -19.99x + 188.97$	$R^2 = 0.67$	$y = 13.52x + 74$	$R^2 = 0.99$
Spain	$y = -16.59x + 154.93$	$R^2 = 0.95$	$y = 1.26x + 60$	$R^2 = 0.49$
Bulgaria	$y = -13.69x + 151.63$	$R^2 = 0.91$	$y = -2.89x + 83.95$	$R^2 = 0.67$
Portugal	$y = -11.54x + 134.41$	$R^2 = 0.99$	$y = -3.34x + 670$	$R^2 = 0.95$
Slovenia	$y = -9.21x + 124.38$	$R^2 = 0.98$	$y = -0.11x + 69.15$	$R^2 = 0.29$
Latvia	$y = -8.83x + 160.76$	$R^2 = 0.24$	$y = -3.85x + 138.50$	$R^2 = 0.77$
Cyprus	$y = -8.54x + 122.20$	$R^2 = 0.92$	$y = -0.810x + 63.00$	$R^2 = 0.13$
Lithuania	$y = -8.49x + 144.56$	$R^2 = 0.57$	$y = 2.19x + 105.25$	$R^2 = 0.40$
Greece	$y = -8.27x + 122.53$	$R^2 = 0.91$	$y = -1.07x + 82.60$	$R^2 = 0.02$
Croatia	$y = -8.18x + 127.49$	$R^2 = 0.97$	$y = -1.33x + 81.70$	$R^2 = 0.52$
Malta	$y = -6.08x + 120.57$	$R^2 = 0.98$	$y = 3.89x + 79.85$	$R^2 = 0.86$
Romania	$y = -5.87x + 131.69$	$R^2 = 0.53$	$y = 3.25x + 98.60$	$R^2 = 0.74$
Estonia	$y = -5.59x + 135.09$	$R^2 = 0.38$	$y = 1.47x + 109.70$	$R^2 = 0.36$
Denmark	$y = -4.43x + 121.37$	$R^2 = 0.68$	$y = 3.33x + 95.65$	$R^2 = 0.99$
UK	$y = -3.93x + 116.69$	$R^2 = 0.83$	$y = 3.38x + 93.35$	$R^2 = 0.99$
Netherlands	$y = -3.72x + 111.08$	$R^2 = 0.94$	$y = -2.19x + 870$	$R^2 = 0.81$
Slovakia	$y = -2.79x + 106.45$	$R^2 = 0.88$	$y = -0.25x + 88.10$	$R^2 = 0.20$
Hungary	$y = -2.70x + 108.54$	$R^2 = 0.87$	$y = 2.00x + 90.25$	$R^2 = 0.95$
Czech Rep.	$y = -1.53x + 103.26$	$R^2 = 0.83$	$y = -0.37x + 92.40$	$R^2 = 0.22$
Luxembourg	$y = -1.50x + 103.93$	$R^2 = 0.95$	$y = 0.29x + 93.65$	$R^2 = 0.43$
France	$y = -1.37x + 104.84$	$R^2 = 0.97$	$y = -2.22x + 98.65$	$R^2 = 0.97$
Finland	$y = -0.71x + 105.30$	$R^2 = 0.24$	$y = 0.02x + 100.15$	$R^2 = 0.00$
Belgium	$y = 0.96x + 97.55$	$R^2 = 0.81$	$y = -0.18x + 101.75$	$R^2 = 0.05$
Austria	$y = 1.13x + 97.58$	$R^2 = 0.87$	$y = -1.02x + 104.60$	$R^2 = 0.87$
Germany	$y = 2.07x + 94.66$	$R^2 = 0.95$	$y = 1.33x + 105.10$	$R^2 = 0.99$
Poland	$y = 2.12x + 94.69$	$R^2 = 0.52$	$y = -4.64x + 104.90$	$R^2 = 0.91$
Sweden	$y = 3.11x + 94.60$	$R^2 = 0.88$	$y = 3.95x + 107.25$	$R^2 = 0.89$
Italy	no data available			

The fourth area subjected to analysis are housing price indexes. Taking into account the regression functions contained in Table 6 it may be observed that between 2008 and 2013, the greatest drop in the prices took place in Ireland (by 15.14% y/y), Spain (by 10.16% y/y), Bulgaria (9.29 y/y) and Romania (8.01% y/y). It should also be noted that in spite of the economic crisis ensuing in Europe between 2008 and 2013, there were countries where, at that time, the prices of real property continued to grow.

Table 6. Calculations pertaining to the index of apartment prices (source: author's own study)

Name of country	Research period 2008–2013		Research period 2013–2016	
	Equation of trend I	R^2	Equation of trend II	R^2
Ireland	$y = -15.14x + 156.48$	$R^2 = 0.92$	$y = 10.17x + 68.12$	$R^2 = 0.99$
Spain	$y = -10.16x + 159.66$	$R^2 = 0.96$	$y = 2.86x + 92.20$	$R^2 = 0.89$
Bulgaria	$y = -9.29x + 143.45$	$R^2 = 0.77$	$y = 3.60x + 91.06$	$R^2 = 0.89$
Romania	$y = -8.01x + 134.51$	$R^2 = 0.90$	$y = 2.29x + 94.90$	$R^2 = 0.62$
Latvia	$y = -6.28x + 120.69$	$R^2 = 0.26$	$y = 2.91x + 95.12$	$R^2 = 0.63$
Lithuania	$y = -5.54x + 115.22$	$R^2 = 0.38$	$y = 4.78x + 86.19$	$R^2 = 0.99$
Cyprus	$y = -4.64x + 130.06$	$R^2 = 0.95$	$y = -1.05x + 103.89$	$R^2 = 0.82$
Netherlands	$y = -4.32x + 123.52$	$R^2 = 0.95$	$y = 3.19x + 91.43$	$R^2 = 0.91$
Slovakia	$y = -3.87x + 112.68$	$R^2 = 0.72$	$y = 4.44x + 87.70$	$R^2 = 0.93$
Slovenia	$y = -3.64x + 129.77$	$R^2 = 0.76$	$y = -0.81x + 104.19$	$R^2 = 0.11$
Croatia	$y = -3.55x + 125.23$	$R^2 = 0.90$	$y = -1.42x + 105.68$	$R^2 = 0.77$
Portugal	$y = -3.21x + 113.16$	$R^2 = 0.86$	$y = 4.51x + 88.05$	$R^2 = 0.96$
Hungary	$y = -3.19x + 103.39$	$R^2 = 0.98$	$y = 9.71x + 72.40$	$R^2 = 0.95$
Italy	$y = -3.01x + 121.22$	$R^2 = 0.77$	$y = -2.70x + 109.07$	$R^2 = 0.91$
Poland	$y = -2.79x + 109.69$	$R^2 = 0.87$	$y = 1.45x + 95.86$	$R^2 = 0.99$
Denmark	$y = -1.61x + 96.48$	$R^2 = 0.40$	$y = 5.03x + 84.50$	$R^2 = 0.99$
Czech Rep.	$y = -1.24x + 100.34$	$R^2 = 0.80$	$y = 4.37x + 88.40$	$R^2 = 0.94$
Estonia	$y = -0.65x + 76.73$	$R^2 = 0.01$	$y = 7.38x + 76.71$	$R^2 = 0.96$
Malta	$y = -0.11x + 91.99$	$R^2 = 0.01$	$y = 4.53x + 86.70$	$R^2 = 0.97$
UK	$y = 2E{-}14x + 85.71$	$R^2 = 0.01$	$y = 6.45x + 81.07$	$R^2 = 0.99$
Iceland	$y = 1.06x + 74.59$	$R^2 = 0.15$	$y = 8.13x + 76.52$	$R^2 = 0.99$
France	$y = 1.22x + 97.54$	$R^2 = 0.35$	$y = -0.78x + 103.36$	$R^2 = 0.60$
Germany	$y = 2.14x + 78.92$	$R^2 = 0.94$	$y = 4.47x + 87.35$	$R^2 = 0.98$
Belgium	$y = 2.18x + 86.17$	$R^2 = 0.94$	$y = 1.29x + 96.76$	$R^2 = 0.76$
Sweden	$y = 2.81x + 63.80$	$R^2 = 0.96$	$y = 9.51x + 70.70$	$R^2 = 0.99$
Finland	$y = 2.92x + 84.07$	$R^2 = 0.96$	$y = 0.08x + 100.05$	$R^2 = 0.12$
Luxembourg	$y = 2.99x + 71.82$	$R^2 = 0.94$	$y = 5.04x + 85.33$	$R^2 = 0.99$
Austria	$y = 5.19x + 71.55$	$R^2 = 0.99$	$y = 5.40x + 85.50$	$R^2 = 0.95$

According to Table 6, it may be concluded that countries where a representative increase in prices of housing were observed included: Austria, Luxembourg, Finland, Sweden, Belgium and Germany. In the second examined period, i.e. between 2013 and 2016, a significant part of the examined countries recorded an increase in prices of real property. Further drops in the prices were found only in five countries. In Cyprus, the drop amounted to 1.05% y/y, in Slovenia to 0.81% y/y, in Italy to 2.70% y/y, in Croatia to 1.42% y/y and in France to 0.78% y/y.

Conclusions

The conducted research allowed to evaluate the manner in which the examined parameters of the European real property market reacted to the economic crisis of 2007/2008. This evaluation allows determining the strength of reaction of the examined factors, as well as its durability. The strength of this reaction is implied by the size of the estimated slope parameters of the trend function, whereas the durability of changes may be assessed by examining the sign of slope coefficients in the two examined periods, i.e. between 2008 and 2013 and between 2013 and 2016.

The conclusions drawn with reference to the whole of Europe, which sum up the conducted empirical research, can be presented in three main categories, the first of which is the elasticity of changes in the examined factors in consequence of the crisis that ensued. Of the four investigated factors, the number of issued building permits was characterized by the highest elasticity of changes, in particular in the first years of the crisis. This elasticity manifested itself in a considerable decrease in the number of issued building permits, especially in the first years of the crisis. Their mean drop for the EU in 2009 y/y amounted to as much as 41.4%. The high elasticity as regards the issued building permits can be explained with the fact that in the whole construction process it is placed in the sphere of planning, that is one of relatively small capital intensity. On the other hand, prices of housing property turned out the most resistant to the crisis. This resistance was characterized by relatively low decreases in the years 2008–2013. The second research result obtained for the EU as a whole is assessment of time indispensable to revert to the initial (before-the-crisis) potentials in the four examined areas. On the basis of the assessments made we can also conclude that the value of building construction production will have reached the potential from before the crisis as the latest (not until 2027), whereas the potential of the number of issued building permits will have reached its levels from before the crisis in 2020. The next studied aspect can lead to the conclusion that the economic crisis contributed to a rise in work effectiveness. Simplifying the reality of managing the real property market, that is assuming the passive impacting of factors of changes on examination of the value, we can conclude on the basis of the conducted calculations that the number of the employed in the construction industry will be systematically growing smaller. This premise testifies, among others, to a rise in work productivity.

The empirical research that was conducted allowed arriving at detailed conclusions concerning the four investigated areas (i.e. the number of issued building permits, the value of construction production, employment in building construction industry as well as formation of prices).

Regarding the dimension of the number of issued building permits, the conducted empirical research revealed that in the dimension under analysis the crisis was most severely felt by: Ireland, Bulgaria, Spain and Hungary. It needs noting, too, that despite the global economic crisis, there were countries in Europe, where the number of issued permits grew. They were the following: Germany, Sweden and Austria. In other five states, namely Greece, Cyprus, Slovenia, Italy and Latvia, in the two examined periods, there followed a drop in the number of issued building permits. These countries could not cope with the effects of the global economic crisis.

As regards the sphere of building production, taking into account the results of the empirical studies, it was noticed that in the years 2008–2013 all the European states witnessed a drop in the analyzed category. For three states (i.e. Ireland, Latvia, Lithuania) the mean annual decrease in the category of building production amounted to over 70% y/y. On the other hand, in the other research period, that is between 2013 and 2016, decreases were observed to continue in as many as 12 countries. Only three of all the European countries (Ireland, Latvia and Lithuania) recorded increases in the building production in the period 2013–2016. Still, that rise was disproportionately small in relation to those observed in the previous period.

Taking into account the sphere of employment in the building construction industry, on the basis of the research conducted, it is possible to note that due to the crisis, in the years 2008–2013, the sharpest drop in the employment in the branch under study was found to occur in Ireland, Spain, Bulgaria and Portugal. In the case of 6 states, a rise in the employment figures was recorded. This concerned the following states: Sweden, Poland, Germany, Austria and Belgium. In the second period following the crisis, i.e. in the years 2013–2016, the highest growth in the employment occurred in Ireland. NB. When it comes to the dimension of employment throughout the examined period, Ireland reacted most sensitively, since in the first years of the crisis, it experienced the sharpest drop in the number of the employed in the building construction industry, while in the years 2013–2016, it recorded the highest growth. In the same period, Poland, Latvia and Portugal, on the other hand, recorded the biggest decreases in the number of the employed in the building construction industry.

Summing up the detailed conclusions which result from the conducted empirical research with reference to individual countries in connection with prices of real property, we can state that in the years 2008–2013, the biggest decrease in the prices occurred in Ireland (by 15.14% y/y), Spain (by 10.16% y/y), Bulgaria (by 9.26 y/y) and Romania (by 8.01% y/y). In five countries (Cyprus, Slovenia, Italy, Croatia and France) further drops in the prices of housing were recorded in the years 2013–2016.

Furthermore, it should be mentioned that the studies allowed assessing the impact of the economic crisis on the real property market in the European Union as a whole and in its individual 28 member states. They showed how particular countries managed to cope with the economic crisis within the area of housing market. Additionally, the overall study conducted for the whole Europe permits to determine the period within which the four examined areas can regain their developmental potentials comparable with those held in the time before the crisis.

Eventually, it is necessary to emphasize once again that the conducted research shows the power and the reaction durability of selected aspects of the real property market with-

out directly clarifying their causes, i.e. whether these were, e.g. weak areas in real property financing (more on financing real property is to be found in the works of, among others, Tiwari and White (2014), Zhang and Wu (2014), Kucharska-Stasiak (2016)), fragile condition of economy of individual countries (more on parametrization of economy in the works of, among others Gurtner (2010), Marinov (2015)) or mistrust of investors of economies of selected countries (more on mistrust towards investors and investors' mistrust to be found in the works of Kawamura (2004), Economou, Gavriilidis, Gregoriou, and Kallinterakis, 2017) and potentially some other factors.

Last, it should be reminded once again that the conducted research has certain assumed limitations, that is the assessment and the measurement of the potential of the European real property market were executed exclusively with reference to four selected aspects, including the number of permits issued for construction of new housing, the number of people employed in the building industry, the value of building production and prices of real property. Taking into account the above limitations (narrowing the scope of research), the author is fully aware of the existing necessity of conducting further research on other aspects of the real property market, particularly those that can exert an influence on the market in question, e.g. ones pertaining to economics and economy (among others, value and cost of money, possible forms of financing or legal conditions).

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