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Scientific Journal Warsaw University of Life Sciences – SGGW
**Problems of World Agriculture volume 19 (XXXIV), number 2, 2019: 77–88**
DOI: 10.22630/PRS.2019.19.2.25

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# The Real Estate and Credit Bubble in Spain; Implications for Poland

**Abstract.** The aim of this article is to establish whether the symptoms of an emerging housing bubble can be observed on the Polish market. The concept of this study is based on a comparison between economic, financial and demographic conditions at the time of the mortgage crisis in Spain and the current situation on the housing market and on the market of housing loans granted to households in Poland. An analysis of two economic indicators, (i) housing loans to households-to-GDP expressed in growth rates and (ii) rates of house price growth, does not indicate that a speculative bubble occurs in Poland now. This, however, does not mean that the conclusions drawn from the Spanish crisis cannot and should not have a bearing on the Polish market, especially in terms of potential consequences the crisis may have for the banking sector.

**Keywords:** mortgage crisis, banking sector, commercial banks, financial stability, Spain, Poland

**JEL Classification:** G01, E44, G21, G15, F44.

## Introduction

Poland's accession to the EU structures and Spain's entrance to the euro zone raised high hopes but also caused fears for the functioning of the economy in both countries. Between 1995 and 2007, Spain demonstrated a positive dynamic of economic growth on a relatively high level. Reduction of interest rates in the eurozone helped to diminish the cost of loans. This was immediately reflected in greater mortgage loan supply, dynamic growth of the construction sector's share in Spain's national income, and thereby – in a decrease of household and corporate debt. Demand for new houses and apartments so created was bound to make their prices increase. According to A. Eleteo (2011), as many as 2/3 of the houses constructed in Europe in 1999-2007 were built in Spain. A typical mechanism of the developing mortgage crisis could not be stopped by the Spanish central bank, which was not authorized to apply on its own any monetary policy instruments different from those binding in the euro zone. The inevitable economic collapse limited internal demand and led to a collapse of the construction market, at the same time causing a considerable increase in non-performing loans. Poland is one of the EU member states carefully considering the date of their entry into the euro zone. The discussion concerns the balance of potential costs and benefits associated with the launch of the common European currency.

The aim of this article is to assess whether the symptoms of the housing bubble can be observed on the Polish market and to find out whether the conclusions drawn from the effects of the Spanish crisis can be applied on the Polish market, especially in terms of potential consequences of the crisis for the banking sector in Poland.

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## Literature review

The real estate market is a phenomenon reliant on economic fluctuations (Półtorak, 2013). Like other shortcomings of these types of market mechanisms, including delayed supply reaction to market stimuli, they foster a sharp rise in prices, which is of a speculative character. Moreover, while demand conditions in general, and speculation in particular, contribute to the boom and bust cycles in housing and real estate markets, the impact of speculation is dominated by the effect of the price elasticity of supply. In fact, the large impacts of speculation are only observed when supply is inelastic.

According to the view which is most frequently presented in current science literature, crises are not random exogenous phenomena but rather are a consequence of periods of strong credit growth and asset-price bubbles (Kindleberger & Aliber, 2005; Schularick & Taylor, 2012; Gourinchas & Obstfeld, 2012). The mechanism responsible for the emergence of a housing crises is similar to other such phenomena. There appear to be typical phases of the crisis, which in consequence lead to serious problems of the banking sector and entire economy.

Multi-dimensional causes and effects of the recent crises – the first one caused by subprime credits, and the other connected with indebtedness of the eurozone countries – turned our attention to the relevance of Hyman Minsky's financial fragility hypothesis in understanding the current financial crisis. His analysis was based on the idea of endogenous instability. Minsky argued that a key mechanism that pushes an economy towards a crisis is the accumulation of debt by the non-government sector. Minsky (1982) identified three types of borrowers that contribute to the accumulation of insolvent debt: hedge borrowers, speculative borrowers, and Ponzi borrowers[2].

Hedge financing units are those which can fulfil all of their contractual payment obligations by their cash flows: the greater the weight of equity financing in the liability structure, the greater the likelihood that the unit is a hedge financing unit. Speculative finance units are units that can meet their payment commitments on "income account" on their liabilities, even as they cannot repay the principle out of income cash flows. Such units need to "roll over" their liabilities: (e.g. issue new debt to meet commitments on maturing debt). Governments with floating debts, corporations with floating issues of commercial paper, and banks are typically hedge units.

For Ponzi units, the cash flows from operations are not sufficient to fulfil either the repayment of principle or the interest due on outstanding debts by their cash flows from operations. Such units can sell assets or borrow. Borrowing to pay interest or selling assets to pay interest (and even dividends) on common stock lowers the equity of a unit, even as it increases liabilities and the prior commitment of future incomes. A unit that Ponzi finances lowers the margin of safety that it offers to the holders of its debts. The degree of the economy's stability depends on the mix of hedge, speculative and Ponzi positions (Minsky, 1992). According to Minsky, sustained periods of economic stability would produce increasing financial fragility. He argued that in a period of economic growth and tranquillity, economic agents (households, firms and banks) are more prone to take risk, and banks are more willing to finance borrowers, reducing their propensity to liquidity and increasing leverage. Minsky argued that during the evolution of a boom, the financial sector uses innovation as a tool to increase leverage and risk. The larger the position taken by the agents

[2] Minsky borrowed the name of a famous fraudster, Charles Ponzi, who ran a "pyramid" scheme.

in risky assets during tranquil periods, the greater the probable effects of financial crashes on the economy. The results are excess borrowing, over-investment and concentration of risk. When the bubble pops, i.e., when the asset prices stop increasing, the speculative borrower can no longer refinance (roll over) the principal even if he is able to cover interest payments. As with a line of dominoes, collapse of the speculative borrowers can then bring down even hedge borrowers, who are unable to find loans despite the apparent soundness of the underlying investments. When the bank stops lending, the Ponzi unit collapses. Uncertainty and pessimism rise, investment collapses, and, through the multiplier, income and consumption also fall. It is a way to recession. A major danger of Ponzi finance is that the bursting of bubbles leads to defaults and weakness of lending institutions (Shefrin, 2016, p. 113). Silipo (2011) emphasizes that the hypothesis of Minsky offers a better explanation of the current crisis. He also adds that, specifically, the main determinants of the crisis have been an increasing appetite for risk and financial innovations. Financial innovations make the financial system more fragile, and more exposed to adverse effects.

Test results, obtained in EWS (Early Warning System) model estimation (Bunda & Ca'Zorzi, 2010; Crespo Cuaresma, 2010; Gerdesmeier *et al.*; 2011, Ponomarenko, 2013) of the price bubbles on household markets, include the following among the key determinants of their occurrence: historical changes in real estate prices, real income dynamics per one dweller and the growth rate of the number of people at the age at which they typically set up their households. Additionally, the studies show the influence of changes on the availability of mortgage loans, measured by the interest rates value, money supply growth rate and the private sector debt to GDP ratio.

In the aftermath of the global crisis, a significant body of literature has also emphasised the influence of behavioural factors on the causes and effects of current crises. Shiller (2005) has pointed at "animal spirits" as a factor that drives not only stock markets but also the real estate markets. He defines a speculative bubble as a situation in which news of price increases spurs investor enthusiasm, which spreads by psychological contagion from person to person, in the process amplifying stories that might justify the price increases and bringing in a larger and larger class of investors, who, despite doubts about the real value of an investment, are drawn to it partly through envy of others' successes and partly through a gambler's excitement. Akerlof and Shiller (2009) described the pervasive effects of "animal spirits" – confidence, fairness, corruption, bad faith, money illusion – and show that changes related to all of these factors are the ultimate reason for the boom that preceded the world economic crisis, for the crisis and recession in which we have been immersed, and for the apparent beginnings of recovery.

Barberis *et al.* (2018) present a new model of bubbles based on extrapolation. In the model, many investors form their demand for a risky asset by weighing two signals - an average of the asset's past price changes and the asset's degree of overvaluation - and "waver" over time in the relative weight they put on them. They explain that the bubble evolves in three stages. In the first stage, the cash-flow news pushes up the price of the risky asset; extrapolators sharply increase their demand for the asset, buying from fundamental traders. In the second stage, the asset becomes sufficiently overvalued that the fundamental traders exit the market, leaving the asset in the hands of the exuberant extrapolators who trade with each other because of wavering. Once the good cash-flow news subsides, prices stop rising as rapidly, extrapolator enthusiasm abates, and the bubble

begins its collapse. In the third stage, prices fall far enough that fundamental traders re-enter the market, buying from extrapolators.

Abildgren *et al.* (2018) have demonstrated that over-optimism is a key driver of house prices in general and in particular around housing price bubbles. Their results indicate that house price developments are partly driven by sentiments decoupled from underlying economic fundamentals. Malpezzi and Wachter (2005) point out yet another aspect. They stress that "speculation" in land or real estate markets is a prime mover of real estate cycles. Moreover, while demand conditions in general, and speculation in particular, contribute to boom and bust cycles in housing and real estate markets, the impact of speculation is dominated by the effect of the price elasticity of supply. In fact, the large impacts of speculation are only observed when supply is inelastic.

Jordá *et al.* (2016) also emphasize the role of yet another element. Financial stability risks have been increasingly linked to real estate lending booms. The share of mortgage loans in banks' total lending portfolios has roughly doubled over the course of the past century - from about 30% in 1900 to about 60% today. To a large extent the core business model of banks in advanced economies today resembles that of real estate funds: banks are borrowing (short) from the public and capital markets to invest (long) into assets linked to real estate. Looking more deeply at the composition of bank credit, it becomes clear that the rapid growth of mortgage lending to households has been the driving force behind this remarkable change in the composition of banks' balance sheets. They also find that household mortgage debt has risen faster than asset values in many countries, resulting in record-high leverage ratios that potentially increase the fragility of household balance sheets and the financial system itself. They demonstrate that the shifts in the composition of banks' balance sheets have important consequences for our understanding of the source of financial instability.

The case of the real estate and credit bubble in Spain helped us realize that causes of the contemporary crises are multi-faceted, and their determinants should be sought not only in the economic and financial sphere but also in the political, economic, demographic, psychological spheres, etc. The research into the complex character of this crisis helped us notice also other causes which had an impact on the turbulent situation on the Spanish housing market. Akin *et al.* (2014) found robust evidence that lending conditions and standards were softer in the boom than in the bust. For example, household income and labour contract/status matter more (statistically and economically speaking) for LTV (loan to value) and loan pricing in the bust than in the boom. Muñoz and Cueto (2017) also highlighted the problem of corruption. In their opinion, insufficient controls and even connivance by the public authorities, based on vested interests, favoured not only the development of the bubble by means of reclassification of land and conceding licenses but also the appearance of some very negative effects on the territory and on the very health of the financial system.

## Methodology

A comparative analysis of Spain and Poland was carried out in order to find out whether any symptoms of the housing bubble can be observed on the Polish market. The concept of this study was to compare economic, financial and demographic conditions at the time of the mortgage crisis in Spain and the current situation on the housing market and on the market of housing loans granted to households in Poland.

The Polish banking sector was the largest among the banking sectors of the ten countries joining the EU (EU 10). However, it is worth remembering that the total assets of banks in the new member countries amounted to merely 3% of the bank assets of the Union after expansion. The assets of Polish credit institutions are almost ten times smaller than the assets of their Spanish counterparts. At the end of December 2017 there were 35 commercial banks, 28 divisions of credit institutions and 553 cooperative banks operating in Poland (KNF, 2018). The Spanish banking sector was composed, as of January 2018, of twelve banking groups (14 groups last year), representing more than 90% of the industry. These groups include 59 private banks, two savings banks and 63 cooperative banks (EBF, 2018).

In order to determine the period in which the price bubble occurred on the housing market in Spain, earlier studies devoted to this issue were used. Czerniak and Witkowski (2016) used three methods to determine this period: deviation from the trend defined on the basis of time series of real house price indices cleared of cyclical and one-off fluctuations by means of the Hodrick-Prescott filter, mean flexible dynamics of real house prices and the peaks and troughs method which consists in estimating time series of the housing market cycles as a difference between the natural logarithm of the real house prices index and the natural logarithm of the trend obtained using the first method. The period of the price bubble in Spain identified by Czerniak and Witkowski occurred between 2000q3 and 2007q3. Ferrari *et al.* (2015) present a formal statistical evaluation of potential early warning indicators for real estate-related banking crises. According to them, the period of price bubble occurred in Spain from 2000q1 to 2007q3, while the very crisis took place from 2009q2 to 2013q2. Dereger and Kholodilin (2013) construct country-specific chronologies of housing price bubbles. In their opinion, the period of speculative bubble on the housing market in Spain was between 2003q1 and 2007q1. On the basis of these studies, it was assumed that the period of analysis of the housing bubble in Spain should be placed between 2000q1 and 2007 q3.

In order to find out whether any symptoms of the price bubble can be observed on the Polish market, methodology proposed by Rousová and van den Noord (2011) was applied. Their analysis focuses on two economic indicators (i) housing loans to households-to-GDP expressed in growth rates and (ii) house price growth rates. They select local peaks and troughs using a rolling window of a given number of quarters. This is well-known Bry and Boschan (1971) cycle-dating procedure, as described by Harding (2003). In the first step, the local peaks and troughs in two economic indicators are identified as local maxima and minima in the series. More formally, a turning point corresponding to a local maximum

$$= 1\big(y_t > Max(y_{t-1}, \dots, y_{t-k}, y_{t+1}, \dots, y_{t+k})\big)$$

and turning point corresponding to a local minimum

$$= 1\big(y_t < Min(y_{t-1}, \dots, y_{t-k}, y_{t+1}, \dots, y_{t+k})\big),$$

where $y_t$ is the economic indicator in time $t$ and 1 denotes an indicator function, $k=6$ as used by Rousová and van den Noord. In the second step, it is necessary to impose thresholds on minimum growth changes prior and after the turning points with respect to the price level of neighbouring turning points that allows to call some of the local peaks and troughs. If a local peak or trough fails to satisfy the threshold rule, it is ignored. A combination of thresholds of 15 and 7.5% for upturns and downturns was adopted in the analysis.

Moreover, a comparative analysis of potential price bubble determinants was carried out, referring both to initiators, i.e. factors causing the phenomenon, and catalyzers, i.e. factors fostering their growth (Appendix – Table A1).

## Results and discussion

The analysis of two economic indicators (i) housing loans to households-to-GDP expressed in growth rates and (ii) house price growth rates, in accordance with the adopted methodology ($k$ = 6), does not indicate that we have a speculative bubble in Poland currently (Figure 1-2).

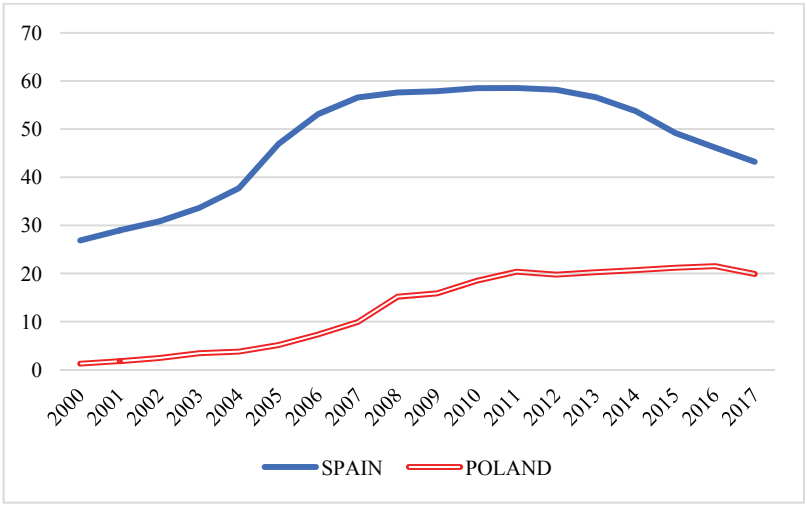


Fig. 1. Housing loans to households-to-GDP in Poland and Spain in 2000-2017 (%)
Source: Own study.

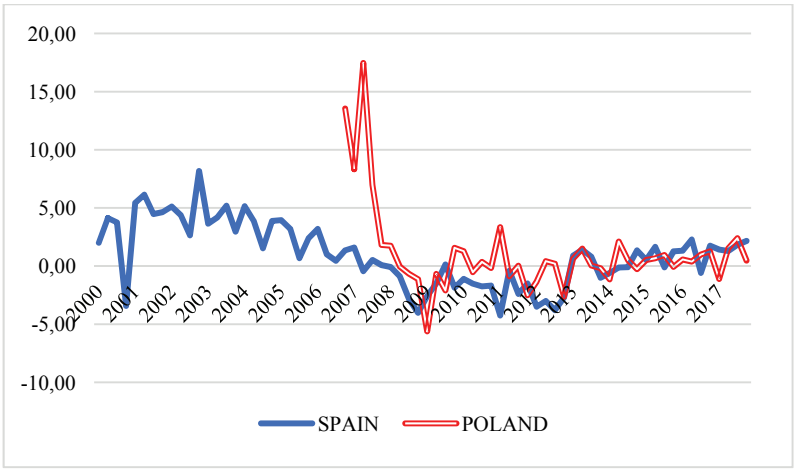


Fig. 2. House price growth rates in Poland and Spain in 2000-2017 (percentage change)[a)]

[a)] Data for Poland available from 2006q4. Data refer only to 17 voivodeship cities.
Source: Own study.

These rates highlight a stable situation of the housing market in Poland. Average transaction prices of one square meter on the local markets in Spain and in Poland and their

quarterly increase are much lower than in the period of price bubble. Although the number of apartments under construction and those which were handed over to their dwellers in Poland is steadily growing (according to the data published by GUS /Polish Central Statistical Office), the number of apartments handed over to their dwellers in Poland in 2017 totalled 178.258, and was by 9.14% higher than last year. There was also a considerable growth in the number of apartments whose construction started in 2017, i.e. 205.990 apartments, which is by 18.4% more than in 2016; moreover, there were building permits issued or construction projects submitted for 250.218 apartments, which is a 3.3 % increase. We should bear in mind that the current years are specific in this context. High demand for apartments resulted from higher household available income, consistently low interest rates, the government programme offering a scheme to help young couples purchase apartments called Apartments for Young Couples (MdM), and an announcement that this programme will not be continued after 2018.

Quite an important factor determining sales of new apartments in Poland was investment in buy-to-let properties. Consistently low interest rates maintained by the National Bank of Poland contributed to reducing the interest rates on bank deposits and mortgage loans. This made the buy-to-let property option more attractive than the other alternative forms of investment (Table 1).

Table 1. Comparison of rental profitability with selected alternative forms of investment and mortgage loans in Poland

| Specification | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rent to HH deposits | 2.0 | 2.2 | 3.0 | 2.3 | 0.7 | 1.6 | 2.4 | 1.7 | 3.5 | 4.1 | 4.7 | 5.1 |
| Rent to HH mortgage loan | 2.2 | 1.1 | 0.9 | 1.1 | 0.1 | -0.1 | 0.3 | -0.6 | 0.9 | 1.3 | 2.4 | 2.2 |
| Rent to 10Y bonds | 0.8 | -0.4 | 0.5 | 0.0 | -0.1 | 0.2 | 0.4 | 1.0 | 2.7 | 3.2 | 3.9 | 3.7 |

Source: National Bank of Poland.

Although the financial risk factors on the real estate market are directly connected with economic features of the property and conditions of trading operations, the period of return on investment, costs of transaction, depreciation of the building, are an important difference in the liquidity of this type of assets as compared with standard and relatively secure deposits and securities. Many people tended to choose this form of investment, thus contributing to growth of house prices and their lower availability. Deloitte (2017) estimates that the proportion of households living in a rent dwelling in Poland totalled 15.3% in 2016 while in Spain only 9.0%. We have to note, however that now Poland ranks among the lowest in Europe in terms of the number of dwellings per 1,000 citizens (Figure 3).

Eliminating disparities occurring between Poland and the EU average, additionally taking into account the necessity to replace the lower quality housing resources, at the current level of newly built apartments and invariable demographic trends, should take between 10 and 20 years.

Meanwhile Poland's demographic problems, i.e. negative birth rate reported over the recent years, quickly ageing society, decreasing mobility of population (aged: 18-44), negative trends in growth rate of urban population (except for the year 2010, since 2001

Poland has recorded a continuous decrease while in Spain a decrease was reported only in 2013) – are all important factors inhibiting the emergence of the housing bubble. Although in 2016-2017 Poland had a positive external migration balance (mainly due to a large inflow of foreigners from the Ukraine and other countries of the former Commonwealth of Independent States), the scale of this phenomenon was significantly smaller than in Spain in 2002-2008, when net migration balance totalled 3,911.8 thousand people.

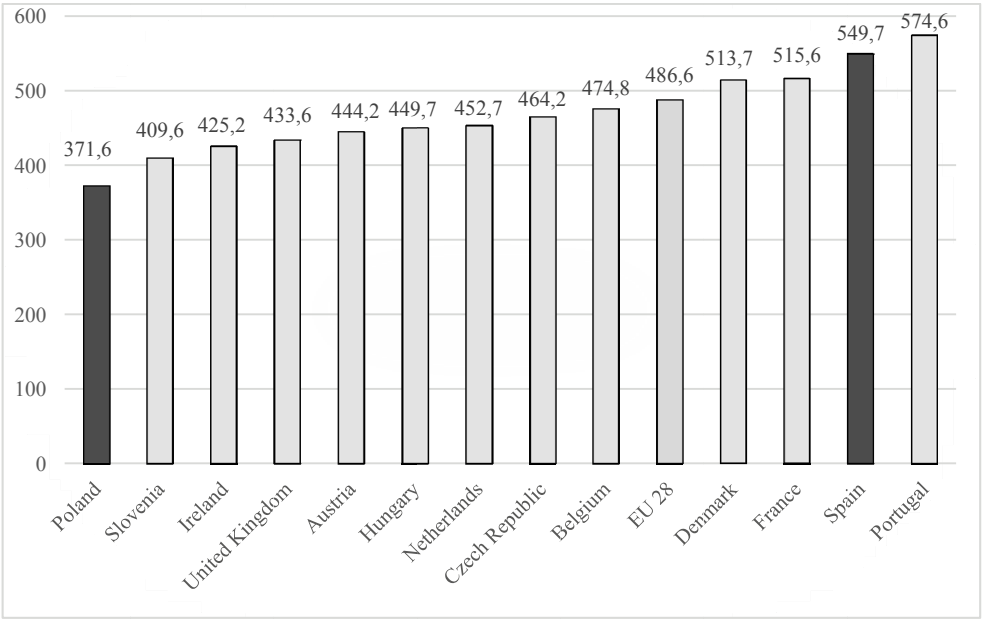


Fig. 3. Number of dwellings per 1,000 citizens in selected EU countries (number of dwellings per 1,000 citizens)
Source: Deloitte, *Property Index. Overview of European Residential Markets*, July 2017, p. 14.

Among other inhibitors of the housing bubble are trends typical for the real estate market. Increasing difficulty in acquiring attractive investment estates, increase of the prices of land and construction materials, lengthy administrative procedures, difficulty finding qualified staff and builders as well as their pay demands and the proposed liquidation of escrow accounts will result in higher prices and inevitable concentration of the construction and real estate development sectors.

## Conclusions

Although the assessment of the situation on the housing and mortgage market does not indicate that Poland currently faces the problem of a speculative bubble, it does not change the fact that the conclusions arising from the effects of the Spanish crisis may and should have a bearing on the Polish market, especially in terms of potential consequences the crisis may have for the banking sector. Crediting the real estate market is an important component of financial input into the contemporary market economies, and at the same time it is the basis for operation of the business models in Poland.

According to the Report on the situation of banks (*Raportu o sytuacji banków*) published by the Polish Financial Supervision Authority (KNF), at the close of 2017 housing loans totalled 94.5 billion euro and accounted for over 58% of all the loans granted to households. In 2017 a decrease in the number of bad loans was recorded and a slight fall in their share in the portfolio (from 2.9% at the end of 2016 to 2.8% at the end of 2017). Further decrease in the number of foreign currency loans (from 41.4% at the end of 2016 to 34.3% at the end of 2017) is also a positive trend as well as a fall in original currency debt (debt arising from CHF loans decreased from 32.6 billion CHF at the end of 2016 to 30.0 billion CHF at the end of 2017). The portfolio of Swiss franc loans is a consequence of the policy adopted by commercial banks in 2003-2009, i.e. when it was focused on granting mortgage loans in Swiss francs. A significant cost of foreign capital acquisition made the CHF-denominated loans very popular. They let the borrowers not only obtain a more favourable interest rate but also helped them meet credit rating requirements (which was the case especially when banks underestimated the currency risk in their algorithms). Strengthening of the CHF exchange rate in result of an unexpected decision made by the Swiss National Bank which, on 15 January 2015, abandoned its policy of the fixed exchange rate of the Swiss franc against the euro pegged at 1.2, and at the same time decided to decrease interest rates from the level of -0.25% to -0.75% – totally changed the perception of foreign currency mortgage loans in Poland. Poles eventually realized what the threats resulting from currency risk were – both for the banks themselves and for their clients. However, it should be noted that not all the commercial banks operating in Poland had the same share of CHF loans in their credit portfolio. Some of the banks much earlier applied conservative rules and granted foreign currency loans only to those clients who earned their income in foreign currencies and met the credit rating requirements.

Another positive trend observed in Poland, as compared with the housing crisis in Spain, is a regular decrease of LtV (loan to value) ratio in the Polish banking sector. *Recommendation S concerning good practice related to mortgage-secured credit exposures*, published by the Polish Financial Supervision Authority (KNF), will have a decisive influence on the banks, stimulating them to tighten up on credit policies. By virtue of recommendation 15.7: "In the case of credit exposures secured on residential property, the LTV ratio at the time of extending the loan should not exceed the level of: a) 80%, or b) 90% – if part of the exposure exceeding 80% LtV is adequately insured, or if the borrower submitted an additional security by blocking the amounts deposited on the account or by pledging of PLN-denominated Treasury debt securities or those of the National Bank of Poland (NBP)". It has to be noted, however, that according to the NBP data, the share of cash buyers in housing transactions in the seven largest cities in Poland in 2017q4 was as high as 74%. Thus, housing loans were used to finance only one fourth of all residential transactions.

As far as the Polish banking sector is concerned, some threats which had an influence on the ultimate effects of the mortgage crisis in Spain should be noticed. A change of situation on the housing loan market will occur if interest rates or CHF exchange rate rise. In Spain this scenario brought about a significant increase in non-performing housing loans, despite the fact that the share of non-performing housing loans in Spain before the crisis was much lower than is currently the case in Poland (Figure 4).

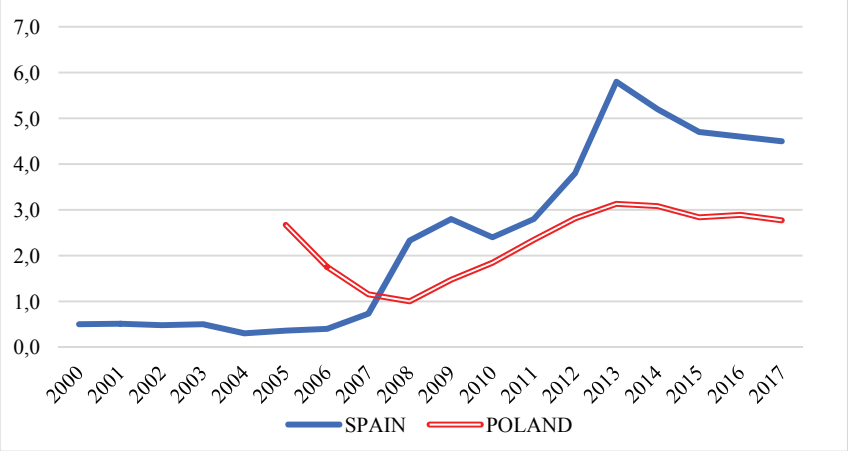


Fig. 4. Share of non-performing housing loans in the housing credit portfolios of banking sectors in Poland and Spain

Source: original research based on *Reports on the situation of banks* by the Polish Financial Supervision and Commission for Banking Supervision, and *Financial Stability Report* by the Banco de España.

Another threat was also posed by a significant concentration of sale of housing loans in Poland. Six banks, i.e. PKO BP SA, Pekao SA, BZ WBK SA, mBank SA, ING Bank Śląski SA and Millennium SA control over 90% of the market. Continuous pressure on sales often led to a conflict of interests combined with the fall of professional ethics. Remuneration paid to board members and staff members responsible for sales of banking products and services in correlation with current financial results gives rise to practices which result from moral hazard and becomes an uncontrolled impulse to accept a higher level of risk incurred by the entire bank. It should be noticed that specialized mortgage banks which were set up, do not have an important role in Poland.

Another problem of the Polish banking sector is a structural mismatch in balance sheets of the banks which finance long-term housing loans by means of short-term liabilities, i.e. deposits. In Poland, covered bonds and long-term bank bonds have a marginal role in financing credit activity as compared with developed markets. That is why, among the products offered by the Polish banks there are no housing loans with fixed interest rate guaranteed throughout the entire duration of the mortgage agreement or its considerable part. The blame is mostly on the part of the banks which have not developed effective solutions to provide their clients with complex and understandable information about the risk related to variable interest rates combined with long-term housing loans (especially in the context of continuing low interest rates).

Another issue which could have an impact on the condition of the banking sector was the question of state intervention in the real estate property market. Government policy may both stimulate its development, e.g. by means of tax preferences or financing housing loans, and limit the market e.g. by protecting farming land and forests, introducing restrictions on foreigners who wish to purchase real property, etc. Although the effects of the new programme "Apartment Plus" recently announced in Poland, which is supposed to ensure greater supply of low cost apartments for rent, should be seen on the markets only in

a few years' time, it may essentially affect the market of real property rental, and thus the profitability of investment in this kind of activity.

Due to the importance of the banking sector in the whole economy, it seems reasonable for the supervision authorities to reflect – when taking necessary decisions – on the potential effects of further regulatory policy related to housing loans, in the context of the Spanish experience and on the influence of this market segment on the stability of the entire Polish banking sector.

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For citation:

Korzeb M. (2019). The Real Estate and Credit Bubble in Spain; Implications for Poland. *Problems of World Agriculture*, 19(2), 77–88; DOI: 10.22630/PRS.2019.19.2.25