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MACRO DYNAMICS OF THE REAL ESTATE MARKET VALUE: TEMPORAL EFFECTS

ABSTRACT

The aim of this research is to establish a methodological background for understating the real estate macro dynamics and the role played by architecture in explaining the real estate market value fluctuations. Although various models of the housing market fluctuations have been developed, the fundamental question of what drives the real estate market value is still peculiarly neglected. Housing market value fluctuations can be largely explained by macroeconomic fundamentals, housing market indicators as well as the social, political and cultural situation. After assessing these fundamentals of the real estate market value, other factors may be added such as short-term dynamics and irrational factors, contributing to an instantaneous unpredictability of the real estate market. Nowadays there is a belief in society that housing is an investment opportunity. An assumption can be made about the speculative and irrational nature of the housing market, having impact on the real estate market value. Comparing the housing market to the stock market, the housing market has much higher cost of carry and complicated administration to it; and therefore, the real estate market is highly inefficient. Because of the irrational nature of human behavior, similarly to stock prices, the housing market is driven by expectations. The originality of this research lies in the fact that irrationality of human behavior suggests looking at other sciences, with architecture being a tool to bring those irrationalities into the real estate market. Given that behavioral economics accounts for a significant part of irrationality of market behavior, the hypothesis can be ventured that architecture, as a human interaction in the process, can have its own causal role in fixing real estate market value.

Keywords: real estate, market value, price, volatility, housing, architecture

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1. INTRODUCTION

The volatility of the real estate market value is discussed in this study. The aim of this research is to establish a methodological background for understating the nature of the real estate macro dynamics and the position of architecture in the real estate market value fluctuations. A broader definition of architecture is used which includes the design of the totality of residential environment ranging from the macro level of town planning, urban design and landscape architecture to the micro level of individual detached houses. Architecture and housing have different meanings in this study: housing refers to physical objects of architecture (together with their attributes like streets, bridges, sidewalks, landscape structures, as well as small scale architecture *et cetera*) while architecture is used to express the design of those objects.

The micro determinants of housing market value are usually observed at a fixed time or during some short-term period, trying to introduce the factors that determine market value. Adding temporal effects for longer periods of time introduces even more complications. Although various models of the housing market fluctuations have been developed, the fundamental question of what drives the real estate market fluctuations is still peculiarly neglected. Housing can be considered in parallel with corporate stock, commodities or other speculative assets these days. Actually, housing market is larger than the value of entire stock market in most countries, especially in the Baltic States. In Baltic states the amount of outstanding housing loans to households was EUR 19.0 billion in 2018 (Hypostat, 2019) and the market capitalization of listed companies was EUR 6.7 billion (Nasdaq baltic, 2020). This suggests that the housing market constitutes a large amount of our assets, which serves not only the purpose of shelter these days.

2. LITERATURE REVIEW

2.1. THE UNIQUENESS OF THE HOUSING MARKET

All consumer goods and services can have substitutes while competing for a place in the consumer's budget. However, some commodities are more related to each other and can be grouped according to their closeness. What counts as commodities in the housing market are various forms of shelter substitutes. Still, these units constitute a strongly separated cluster as compared to, say, transport or electronics. The concept of a housing market becomes meaningful because housing constitutes a commodity distinct from other consumer goods (Blank and Winnick, 1953). It is an item that answers to one of our basic needs and cannot be simply dismissed in the family budget.

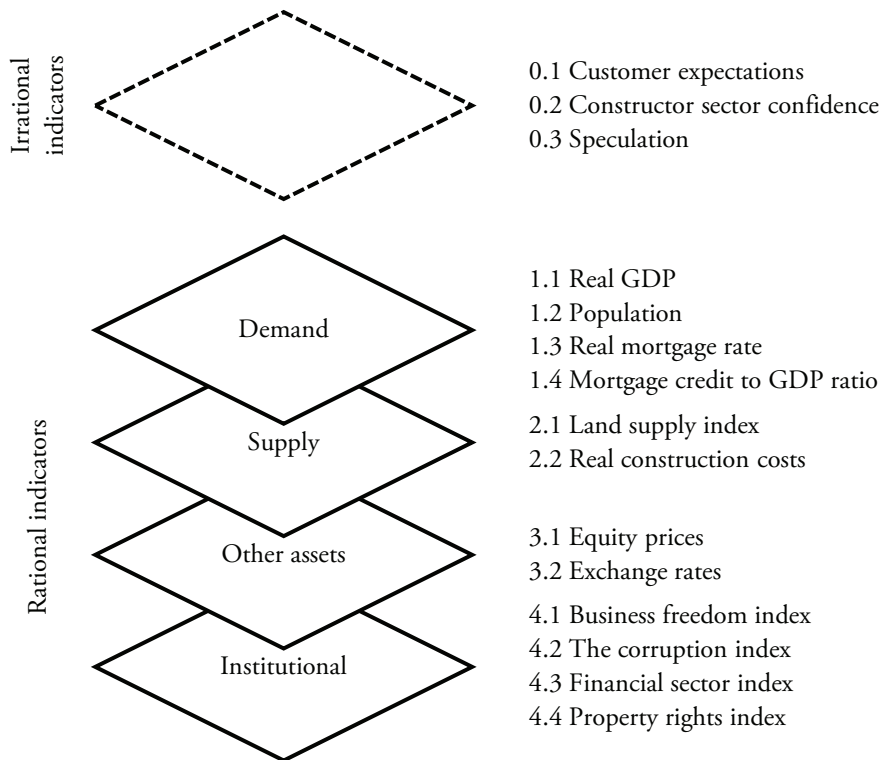
The housing market is also a local market. A person would seek for a house within some distance from his work, school, or other relevant locations, therefore houses that are more distant are not even close substitutes. Furthermore, there are various submarkets in the housing market. Those could be identified by size, quality, tenure type, structure type, neighborhood, location and others. In addition to this, the housing market is personal and sensitive. The fact that economic actors buy a house one, two or three times during their lifetime makes those decisions risky because gains and losses cannot be smoothed out by frequent trading. Therefore, policymakers should monitor housing market value because in most societies buying a house is major financial risk households are facing (Cocco, 2004; Yao and Zhang, 2005).

Housing is an investment and consumption at the same time. The decision to purchase rather than rent is an investment opportunity but also personal preference of lifestyle (Shiller, 2007). Another important aspect of the housing market is that transaction costs are high. Together with small number of transactions, this results in slow response and operations (see later about inefficiency of the real estate markets) and makes the housing market long-term focused.

2.2. FUNDAMENTALS OF THE HOUSING MARKET VALUE

Macroeconomic variables. There are studies that are trying to find links between major macroeconomic variables and the real estate market value or its volatility. A study by Glindro et al. (2011) assumes that in each period, in each area (a country or a city), there is a fundamental value of housing that is largely determined by economic conditions and institutional arrangements: $P_{it}^* = f(X_{it})$, where P_{it}^* is the log of the real fundamental value of house prices in country i at time t , $f(\cdot)$ is a function and X_{it} is a vector of macroeconomic and institutional variables that determine house price fundamentals. Glindro et al. (2011) suggests four blocks of explanatory variables based on theoretic reasoning or previous empirical work (part of figure 1). The first block of explanatory variables are demand-side factors, including real GDP,

Fig. 1. Determinants of the real estate market fluctuations



Source: authors' illustration.

population, the real mortgage rate and the mortgage credit to GDP ratio. It is assumed that higher income, higher population and higher financial capacity tend to encourage greater demand for new housing. The second block of variables are supply-side factors, including the land supply index and the real construction cost. Higher flexibility of land supply tends to drive housing market value down while the relationship between real construction costs and housing market value is expected to be positive. The third block of variables are prices of other types of assets, including equity prices and exchange rates. Housing market value is positively correlated with equity prices (Sutton, 2002; Borio and McGuire, 2004). A real effective exchange rate appreciation is expected to have positive effect on the real estate market value, particularly on the markets where there is substantial demand from non-residents for investment purposes. The fourth block of variables are institutional factors, including the business freedom index, the corruption index, the financial sector index and the property rights index. The institutional factor measures the impact of business, regulatory and financial conditions.

Agnello and Schuknecht (2009) also use a set of variables reflecting economic fundamentals (growth in per-capita real GDP, level of short-term interest rates, growth rate of real credit to the private sector and growth rate of global-liquidity variable), also adding demographic and institutional variables, in order to explain business cycles in the real estate market. Jadvicius (2016) examines macro-determinants of the Lithuanian housing market values documenting a relationship between housing price growth and building activity, interest rates, inflation and employment. Capozza et al. (2002) are looking for a model that treats the real estate market value as a function of city size, growth rate of population, growth rate of real income and real construction costs.

Social, cultural and political background. In addition to major macroeconomic background, social, cultural and political factors play an important role here. Drachal (2014) studies the relations between the property prices and local labor markets in Poland. Polish regions (voivodeships) are characterized by highly differential unemployment rates, average wages, property prices. High unemployment is seen as an indicator of unstable future earnings. It was conclusively demonstrated that new available housing space, unemployment rate, construction costs and wages are significant in regression models. However, results differ across voivodeships because of the above-stated discrepancies. Implications for future research suggest to test for the time needed to find a job, the time spent on traveling to work, access to medical centers, training centers, schools and universities, number of theaters, cinemas, community centers, and other factors connected with the standard of living and the changes therein in the selected cities. This is the case of Polish social, cultural and political environment while other countries might have different scenarios.

Grum and Govekar (2016) studies whether selected macroeconomic variables (the unemployment rate, the current account of the country stock index, GDP and industrial production) have influence on the real estate market value in different cultural environments (Slovenia, Greece, France, Poland and Norway). The results show a distinction between Slovenia, in which the relationship between real estate market value and stock index was found to be statistically significant, and other countries in which that relationship was not found to be statistically significant. The correlation between real estate market value and unemployment was found in the other countries instead. Further research is needed to understand this distinction between different social, cultural and political environments.

Egert and Mihaljek (2007) address the question whether the conventional fundamental determinants of house prices, such as GDP per capita, real interest rates, housing credit and

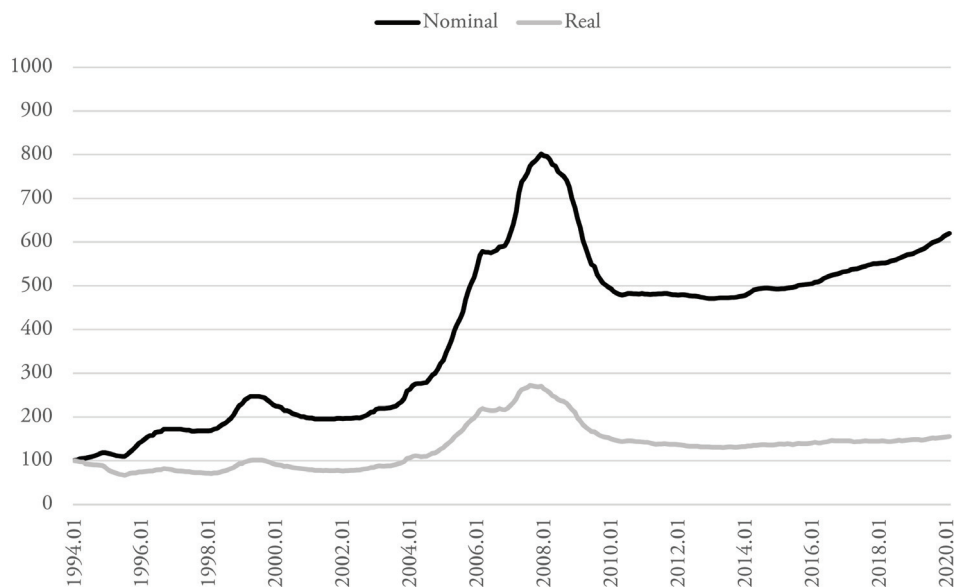
demographic factors, have driven observed house prices in the period from around 1990 to 2005 in central and eastern European (CEE) countries and 19 developed OECD countries. Research results suggest that GDP per capita, real interest rate, ratio of housing credit to GDP, population, labor force, unemployment and equity prices are statistically significant in the way economic logic suggests. In addition to this, transition-specific factors on house price dynamics in CEE were assessed. These include slow development of housing markets and weak housing finance institutions before 2000, limited supply of new homes, lower measures of housing quality (average size of dwellings, floor space per occupant, access to piped water and fixed baths). Again, these factors were peculiar to social, cultural and political background of CEE countries.

The mix of macroeconomic variables, social, political and cultural situation automatically bring about the unpredictability of the real estate market. However, after assessing these fundamentals of the real estate market value, other factors may be added such as short-term dynamics and irrational factors. Research by Tupenaite et al. (2017) reveals that housing market value fluctuations in Lithuania within the period of 2005-2015 can be largely explained by economic fundamentals and housing market indicators (empirical study was carried out using the Analytic Hierarchy Process (AHP) method). However, here determinants of housing market fluctuations are divided into irrational and rational indicators (part of figure 1). Rational indicators ($q = 0.8019$) consist of economic indicators (including GDP, inflation, earnings per capita, unemployment rate, interest rates and housing mortgages, all together contributing to $q = 0.4939$ of decision criteria) and market indicators (including new housing supply, building permissions, construction price index, housing transactions and housing affordability, all together contributing to $q = 0.3080$ of decision criteria). Irrational indicators ($q = 0.1981$) consist of customer expectations, construction sector confidence and speculation (Tupenaite et al., 2017). Results suggest that 80 percent of determinants are of rational character and they stem from the belief in the efficiency of the housing market, leaving 20 percent to the irrationality of behavioral economics. This study reveals what drives the real estate market value from human perspective without resorting to econometric models. Therefore, the irrational nature of human behavior may be underestimated, as following chapters suggests. We will see that expectations might built up, thus forming bubbles including professional and expert level.

3. RESEARCH AND DISCUSSION: VOLATILITY OF THE HOUSING MARKET VALUE

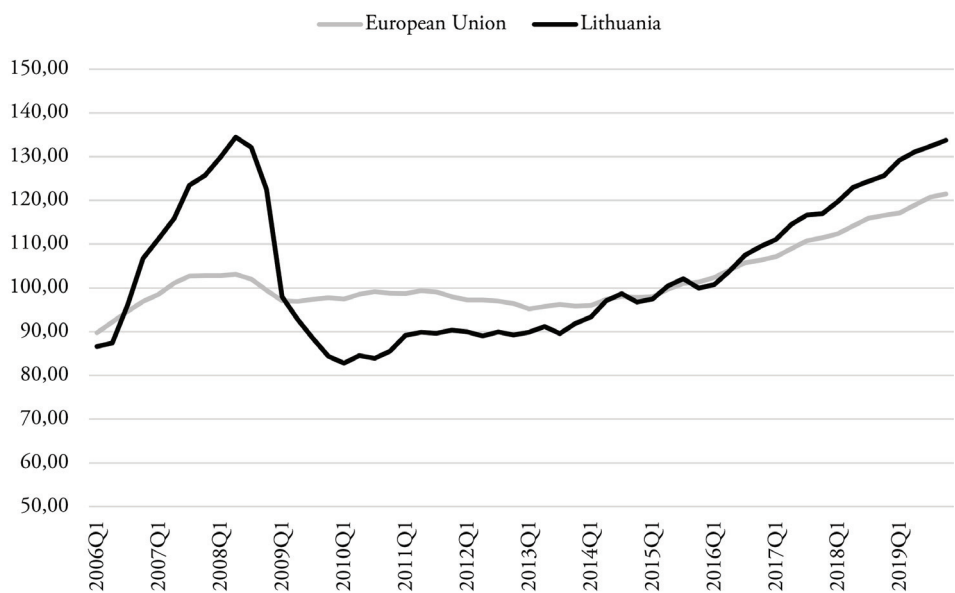
Speculative assets. Nowadays there is a belief in society that housing is an investment opportunity. However, the housing market in most cases was not supposed to be speculative until few decades ago. The conventional belief was that housing market value was driven by construction costs (Grebler et al., 1956). Shiller (2007) agrees with this idea comparing a house with furniture both of which are supposed to be consumed but not held as assets to make money (while talking about 1950s and several later decades). This belief changed rapidly once we entered the new millennium. In the United States real home market value increased by 86 percent between 1996 and 2006 according to S&P/Case-Shiller National Home Price Index (Shiller, 2007). This dramatic increase in price would be hard to explain in terms of the fundamentals of the real estate market (see earlier about fundamentals of the real estate market)

Fig. 2. Ober-Haus Lithuanian apartment price index (OBHI) (1994 = 100) (Ober-Haus, 2020)



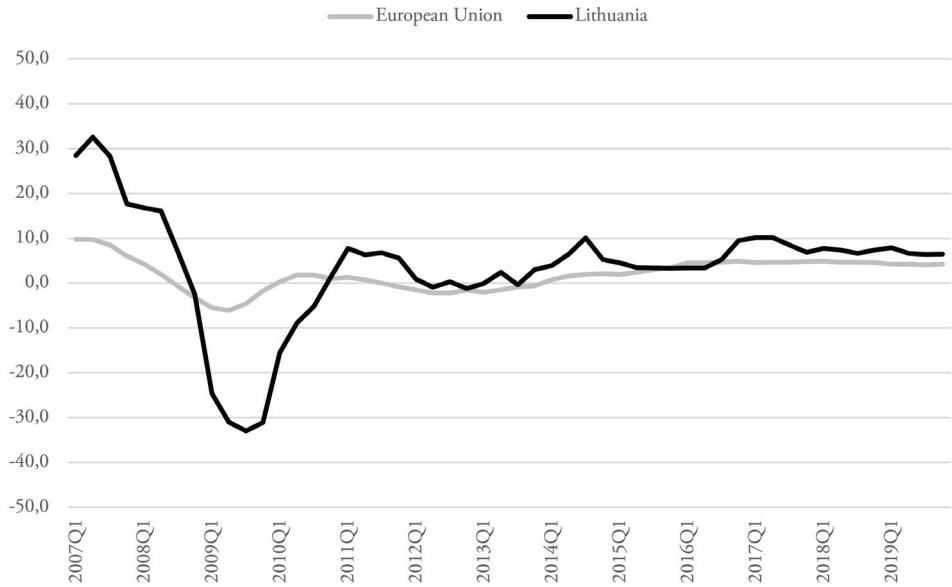
Source: authors' illustration.

Fig. 3. Eurostat house price index (2015 = 100) (Eurostat, 2020)



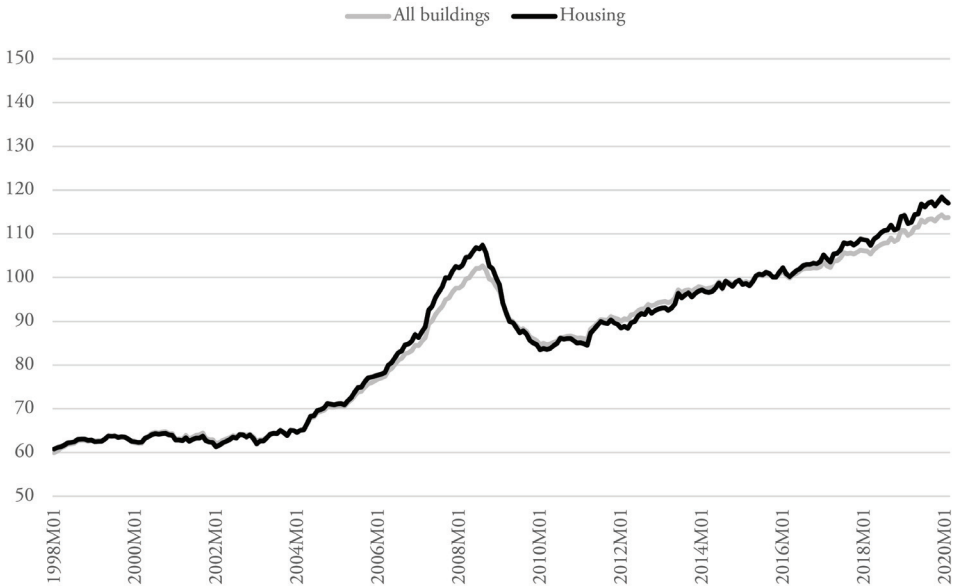
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Fig. 4. Eurostat house price annual rate of change (Eurostat, 2020)



Source: authors' illustration.

Fig. 5. Lithuania construction input price index (2015 = 100) (Official Statistics Portal, 2020)



Source: authors' illustration.

and macroeconomic variables. Shiller (2007) highlights that in the same period the real rent increased only by 4 percent, therefore being extremely stable, with real construction costs also showing relatively little change, which corresponds with the real rent but not with the real estate market value. Also, housing versus consumption ratio was stable, fluctuating around 15 percent. Residential investment as a percent of GDP was volatile but does not show any long-term trend. Thus, the conclusion is made by Shiller (2007) that some other important factors have impact on the real estate market value. An assumption can be made about the irrational nature of the housing market.

There is a lack of Lithuanian housing market value statistics. According to Eurostat house price index (Eurostat, 2020), the available data starts from no earlier than 2006. In Lithuania we were able to track a huge increase in housing market value until 2008, also, growing significantly for the last 5 years, although aggregate European Union line shows the same trend but with a lesser slope and smaller volatility (figure 3 and figure 4). The trend holding until 2008 is even more dramatic if we look at Ober-Haus Lithuanian apartment price index (Ober-Haus, 2020), which is the longest running house price statistics in Lithuania starting in 1994 (figure 2). However, social, cultural and political background played an important role before and shortly after entering European Union in 2004. If we consider construction costs, they are tracking housing market value, however it is not clear whether construction costs or housing market value are causally related (figure 5).

The inefficiency of the real estate market. According to the efficient-market hypothesis, attributed to Fama (1970), a market in which a market value always fully reflects available information is called efficient. This rational nature of market value is based on forecasts of earnings, assessments of risk factors for corporations or payouts of dividends for stock market. Although various research was done to prove that the efficient-market hypothesis cannot account for reality, this can constitute a point of departure for pointing to market inefficiencies. Comparing the housing market to the stock market, the housing market has much higher cost of trading to it. It is difficult for professional traders to enter and exit the market or do short sales. Also, housing as an asset is characterized by a high cost of carry, low rental income and complicated administration. Furthermore, there are possible local factors that might affect the demand (Shiller, 2014). Therefore, the real estate market is highly inefficient. To understand the factors of speculative markets, including the real estate market inefficiency, Shiller (2014), once again, suggests studying other sciences outside of economics.

Irrational nature of the real estate market. A hard to explain increase in housing market value, described earlier, can be called a bubble. A definition of bubble is offered by Shiller (2005): “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 increase and bringing in a larger and larger class of investors, who, despite doubts about the real value of the investment, are drawn to it partly through envy of others’ successes and partly through a gambler’s excitement”. The epidemic nature, emotions as well as information media are core constituents in this definition. A speculative bubble is seen as social epidemic, a result of principles of social psychology and media exposure. Sociology suggest theories about collective consciousness (Durkheim, 1933), collective memory (Halbwachs, 1992) shared mindsets and beliefs. Shiller (2014) argues that these ideas may not be especially rational or efficient but, amplified by the media, they give rise to some inefficient market behavior. The important component is collectivity, therefore, “the market is

micro efficient but macro inefficient” (Shiller, 2014). Therefore, similarly to stocks, aggregate real estate value variations are driven by bubbles.

Idea that markets are substantially driven by cognitive biases is not new. For example, human tendency towards overconfidence causes investors to trade too much (Odean, 1999). Investors may be overly distracted by news stories (Barber and Odean, 2008) or overreact to cash dividends (Shefrin and Statman, 1984). Psychology and other social sciences got incorporated into economics when behavioral economics attracted public attention in 1990s. Focusing on the irrationality of market fluctuations, with attention paid to human economic behavior, has resulted in some peculiar observations. Benos and Jochec (2013) showed that in the United States stocks with the words “America(n)” or “USA” in their names earn return of 6% a year during wartime. Saunders (1993) found that the weather in New York affects stock prices. These examples demonstrate the irrational nature of human behavior. Similarly to stock prices, the housing market is driven by expectations. The expectation of growth based on past results drove housing market value to their maximum in 2008. The steady recent growth strengthens expectations about future of the real estate market value. Although, considering the very long term, this is not always the case. Those expectations might be frustrated easily with some hints of market drop and the real estate market is going back to its fundamentals.

From sociology to architecture. The discourse of today’s architecture is highly appealing to human expectations of standards of living or desires. There are some trends in society and the field of architecture that results in an increase of market value of some type of the real estate. Leinberger (2007) has shown that there is an increasing demand for “walkable urban centers”, and proved that there is an increase in market value of properties in such urban centers. This increase reflects human expectations and desires for a city with lots of attractions within walking distance. Buitelaar and Schilder (2017) has shown that there is a price premium of neo-traditional style architecture in housing, although it is not completely clear whether that increase partly stems from a shortage of such properties in the short term, or from their type of quality for that matter. Considering the factors affecting stock prices, it may be the case that the real estate market value is affected by architectural style, though.

Furthermore, the real estate market bubbles are location-specific because some type of environment encourages the formation of bubbles that may bring economic benefit to some extent. Looking at the types of value the construction sector generates (Carmona, 2019), districts, cities or regions can form some kind of “islands” of shared mindsets or beliefs with high expectations of speculative value. Does this formation of bubbles tend to be correlated with ‘good’ architecture? Would it be possible that these expectations are driven by desires that are created by architects? If we look at bubbles spatially, architecture is one of factors to look for, logically speaking, because it defines the arrangement of the real estate objects in space. If we take the idea that we need to look for explanation of bubble formation in other sciences seriously, architecture is also an option to look for, because it is an influential generator of image, desire, and hence of value – very much like luxury or sports car, or other consumer desires, to name just a few. Furthermore, the irrational nature of human behavior raises hypotheses that the real estate market might be affected by color or other bizarre factors.

4. CONCLUSIONS

Efficient markets theory has similar concept as the real estate fundamentals; however, looking at fluctuations of the real estate market value, we need to find additional factors determining it. The mix of irrational nature of human behavior and the efficient-market hypothesis automatically bring about the unpredictability of speculative asset markets, with housing clearly becoming one of them these days. However, unique characteristics of the housing market, make it highly inefficient. Housing is an investment and a consumer good at the same time. Counting as an investment, it becomes a speculative asset, while being a commodity to be consumed, it is designed to be simply occupied instead of serving as a speculative asset.

Since economic actors are driven by human needs and desires as well as by making profit, in the short-term, housing market is very different from the stock market because of a small number of transactions, making the former even more inefficient. Expectations of distant future are even more amplified. Although long-term expectations, driven by common consciousness of that time might be suggested as an approximation, they could be far from economic fundamentals in the short term. The irrationality of human behavior suggests looking to other sciences, with architecture being a tool serving to illuminate those irrationalities occurring on the real estate market. Lots of questions remain unanswered; for example, whether architecture, coupled with the real estate, is driven by major macroeconomic variables, or architecture is a source of value, therefore driving the real estate market. Given that behavioral economics accounts for a significant part of irrationality of market behavior, the hypothesis can be ventured that architecture, as a human interaction in the process, can have its own causal role in fixing the real estate market value.

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