

# Housing affordability in Romania. Towards quantifying the trends

Author:

Costin CIORA\*

*Abstract: In recent years, the impact of negative price movement of housing has led to difficulties both to sellers and potential buyer. This intense volatility has affected not only the financial sector but also the way in which housing affordability can be understood and measured. With variation in prices, together with variation in income, assessing housing affordability for different periods could be difficult, because of the changing economic environment. The aim of this paper is to answer the question of housing affordability measurement by applying it to the Romanian real estate market. The development of cities creates the premises for new apartments that should be affordable. Also, old apartments should be considered more affordable. Our research provides an in-depth analysis on measuring apartment affordability in Bucharest, by taking into consideration different age intervals relevant for the study.*

*Keywords: housing affordability; home ownership; housing market; real estate analysis*

*JEL Classification: O18, R21, R31*

## Introduction

The movement of housing market is highly impacted by the social conditions of a country. By directing the decision from renting an apartment to buying one, a potential buyer faces two main problems: home ownership and housing affordability. Purchasing a house can be seen both an investment decision and consumption decision. (Shiller, 2007). The home ownership rate is the share of

---

\* Costin CIORA, Lecturer, Department of Financial Analysis and Valuation, The Bucharest University of Economic Studies, [costin.ciora@cig.ase.ro](mailto:costin.ciora@cig.ase.ro)

owner-occupied apartments of all homes. Home ownership has a high impact both through the importance of the decision to buy versus to rent and through the social and psychological factors that follow this decision. In terms of development opportunities, there is a rising trend towards allowing career mobility (Munteanu, Grosu, 2011). This could also have an impact on housing affordability. Moreover, the recent financial crisis started through the widespread negative effects of real estate markets (Zaman, Georgescu, 2009) could raise more questions. Does home ownership have a great impact on increasing housing demand? Is home ownership associated with other macroeconomic indicators? A series of academic and professional studies have searched for the answer. In European countries, over 70% of the population aged 50 or over are homeowners (Angelini, Brugiavini, & Weber, 2013). A higher home ownership is associated with negative effects like: lower labor mobility, longer commutes, and fewer new firms and establishments (Blanchflower & Oswald, 2013). In this study, which targeted the U.S. market, the findings shows that doubling home-ownership is associated with doubling joblessness. Furthermore, another study on Finland (Laamanen, 2013) showed that even if home-owners are less likely to experience unemployment, there are externalities that limit the positive effects, such as: consumption reduction and increasing local job competition, if the house purchase was made through debt. Of course, assessing the importance of social and psychological factors is important when understanding the effects of home ownership. Also, the taxation related to home ownership could be a positive externality, because of tax incentives. (Hendershott & White, 2000).

Housing affordability is closely linked with home ownership. After the decision to buy a house has been taken, the most important issues in housing affordability are the financing and supply in housing market. As between 2000 and 2050 the world's urban population will grow by almost 80%, mainly in developing countries (Demographia, 2015), the question of housing affordability measurement has greater impact. But, for working families, the dilemma still remains: affordable housing and commuting choices are limited and available jobs are often too far from affordable residential area. (Jewkes & Delgadillo, 2010).

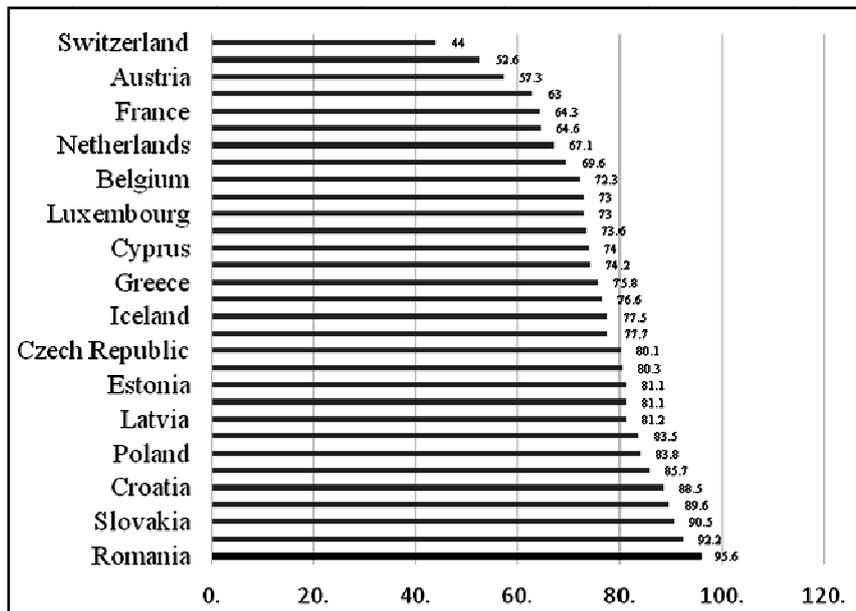
As regards to measuring housing affordability, studies suggest that there are three concepts of affordability: purchase affordability, repayment affordability and income affordability. (Gan & Hill, 2009) The authors suggest that purchased affordability relates to the potential of borrowing enough for buying a house. Repayment affordability measures the burden imposed for repaying a mortgages for a credit. Income affordability measures the ratio of house price to income. The latter is also a measure used by the World Bank as a housing affordability

multiplier. Both purchase affordability and income affordability will be analysed in this paper. There is significant evidence of differences in these measures. An increased competition in the credit offer will improve housing affordability, but through more deregulation, a potential housing boom could be seen. (Gan & Hill, 2009). Also, besides the increase in population and households, employment is also an important driver of housing affordability. (Brueggeman & Fisher, 2005)

## 1. Home ownership in the European Union. A view on Romania

In Romania, the high degree of home ownership is a matter of social status, but also it has been developed through limited legislation that could protect a renter, through a public policy that encouraged buying a house/apartment, or through financing programs like “First house” in which the state provides a guarantee for the buyer. In 2013, the home ownership rate in Switzerland amounted to 44 percent. (“Statista,” 2015), while Romania had a 95.6% rate, as shown in Figure 1. The level of Romania’s home ownership is the highest in the European Union, which leads to further questions regarding the evolution of the real estate market.

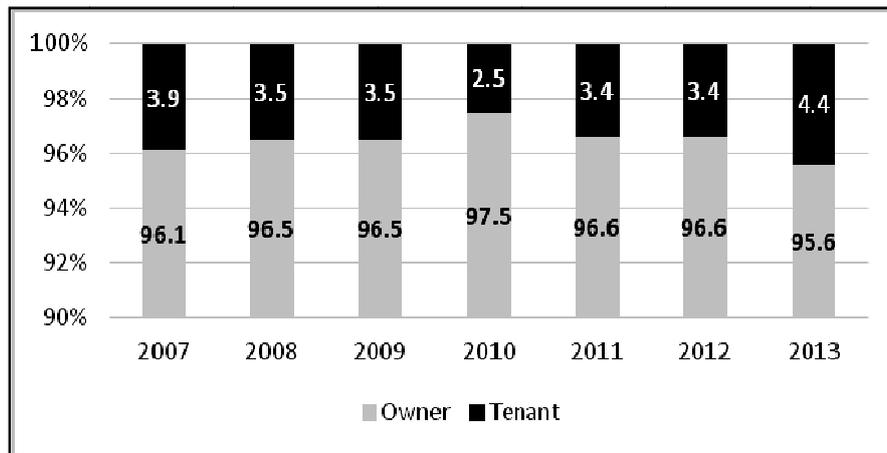
Figure 1: Home ownership in Europe



Source: Statista, 2015.

Related to housing statistics, Eurostat offers many useful information to test the applicability of measuring housing affordability. According to Eurostat, in 2012, 11.2% of the European Union's population lived in households that spent 40% or more of their equalized disposable income on housing (see Table 1). The proportion of the population whose housing costs exceeded 40% of their equalized disposable income was highest for tenants with market price rents (26.2%) and lowest for persons in owner-occupied apartments without a loan or mortgage (6.8 %). (Eurostat, 2015b). The differences are significant between member states, with Romania having a value of 16.5%, *i.e.* 16.5% of the population spent more than 40% of their equalized disposable income on housing. Figure 2 shows distribution of population by tenure status in EU countries. Romania is also the first, related to the lowest level of household by rents.

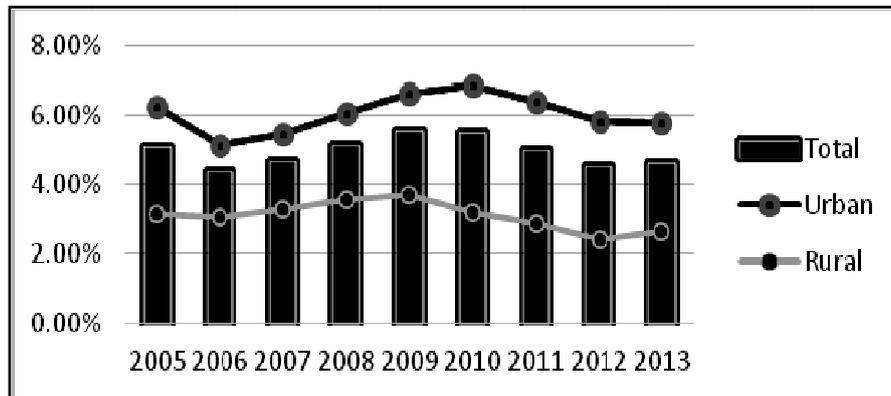
*Figure 2. Evolution of the distribution of population by tenure status in Romania*



Source: Eurostat, 2015a.

Underpinning, there is also clear evidence related to the importance of housing affordability as loan-related expenses have increased in weight during the financial crisis, at the total, urban and rural levels. (National Institute of Statistics, 2015). The weight of loan expenses in total expenses of a household decreased, at the urban level, from 6.39% in 2011 to 5.81% in 2013 as shown in Figure 3.

*Figure 3. Weight of loan-related expenses in total expenses of a household, per total, urban and rural levels*



Source: National Institute of Statistics, 2015.

## 2. Measuring Housing Affordability for Romania

Most common approach to housing affordability is considering a percentage of income that a household is spending on housing costs. (Pittini, 2012). The Price to Income is a ratio of the median price of an apartment and the median household income as a housing affordability multiplier. (World Bank, 2015)

### 2.1. Housing Affordability through qualifying income

In order to measure housing affordability for Bucharest, we used the NAR's methodology. ("National Association of Realtors® Housing Affordability Index," 2015). The index developed by NAR, calculated monthly and quarterly housing affordability indexes for U.S. market. The index is a ratio of average income of a household to qualifying income necessary for a loan for a median price apartment. The average income per household was obtained from the National Institute of Statistics.

The calculation of the qualifying income implied establishing a monthly payment for a loan which was calculated by using the median price for a two-bedroom apartment and the average effective interest rate.

$$\text{Monthly payment} = \text{MEDPRICE} * 0.8 * (\text{IR}/12) / (1 - (1 + \text{IR}/12)^{-360}) \quad \text{Equation (1)}$$

Where:

MEDPRICE = median price of existing single-family home sale

IR = Interest Rate

Qualifying income = Monthly payment \* 12 \* 1/Max loan rate      Equation (2)

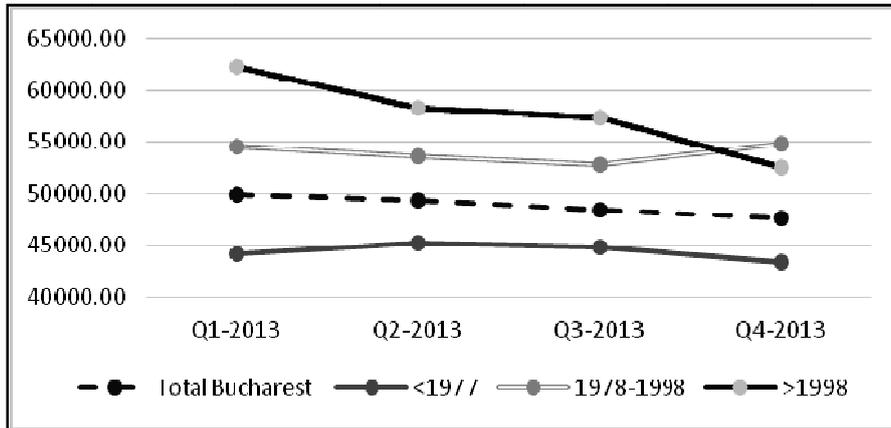
Housing Affordability Index = Median Income/Qualifying income \* 100      Equation (3)

Source: ("NATIONAL ASSOCIATION OF REALTORS © Housing Affordability Index," 2015)

Our calculation took into consideration the median price of a two-bedroom apartment, weighted per different areas, located in Bucharest, effective interest rates, based on which we calculated the monthly payment and the minimum income needed for a loan.

The median price of a two-bedroom apartment, was calculated using the data provided by Flex MLS database and comprised 4200 transactions in 2013, totaling 223.5 million euro (Anghel, Ciora, & Udrea, 2015). Initial databases comprised more transaction, which were eliminated after applying the box plot method. The transactions were divided by areas and type of apartments, thus the median price was a weighted value depending on the number of transactions. Previous work, implied naming the index ARM Housing Affordability Index (Anghel *et al.*, 2015). Our hypothesis took into consideration an 80% amount to cover the loan (a 20% up-front-payment) and a maximum payment for a monthly credit rate below 25% of the average income per household. We selected two-bedroom apartments as the basis for the computation of the housing affordability index. Due to availability of the data, we analyzed 2013, per quarterly periods, by splitting the apartments by age intervals (before 1977, between 1977 and 1998 and after 1998). The evolution of median price for a two-bedroom apartment can be seen in Figure 4. As the figure suggest, the last quarter of 2013 shows a decreasing median price for apartments built after 1998, while apartments built between 1978-1998 had a higher median price, as a sign of increasing transaction and demand for these types of apartment.

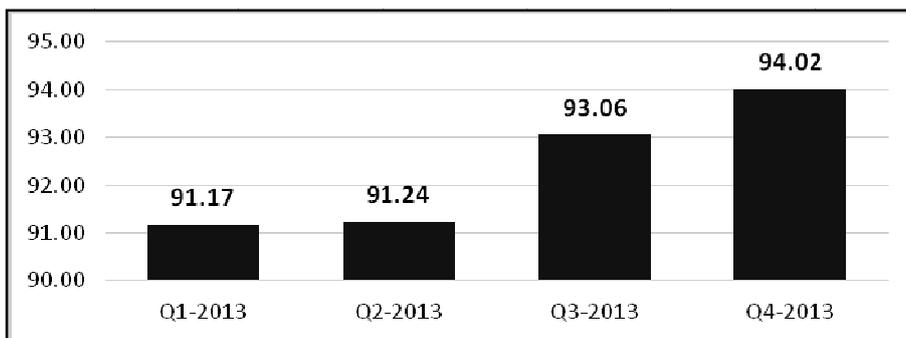
*Figure 4: Median price for a two-bedroom apartment by period of construction*



Source: Anghel *et al.*, 2015; author's own calculations.

An index of 91.17 in quarter 4 of 2013 means that a medium income household has 91.17% income needed for a loan that covers 80% of the median price of a two-bedroom apartment in Bucharest. The index suggests an increase of affordability during all four quarters in 2013. (Figure 5).

*Figure 5: Buyers – ARM Housing Affordability Index*

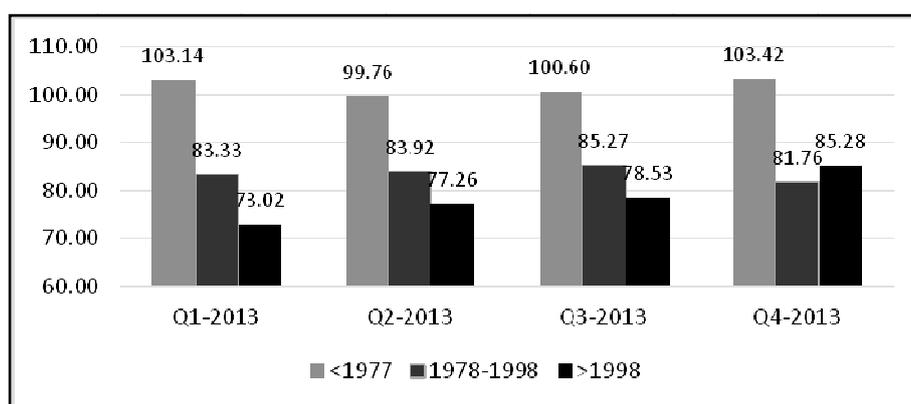


Source: Anghel *et al.*, 2015.

The analysis on intervals of construction (before 1977, between 1978 and 1998, after 1998) shows a higher value of affordability for apartments built before 1977,

as the median price for this properties is 20% lower than the price for apartments built before 1978 and 1998.

*Figure 6: Buyers – housing affordability by interval of construction for Bucharest*



Source: Own calculations of the author.

**Table 1: Housing affordability buyers and first buyers by period of construction**

<b>Buyers</b>	<b>Q1-2013</b>	<b>Q2-2013</b>	<b>Q3-2013</b>	<b>Q4-2013</b>
Total Bucharest	91.17	91.24	93.06	94.02
<1977	103.14	99.76	100.60	103.42
1978-1998	83.33	83.92	85.27	81.76
>1998	73.02	77.26	78.53	85.28
<b>First-time buyers</b>	<b>Q1-2013</b>	<b>Q2-2013</b>	<b>Q3-2013</b>	<b>Q4-2013</b>
Total Bucharest	122.03	122.13	124.57	125.85
<1977	138.06	133.53	134.66	138.44
1978-1998	111.54	112.33	114.15	109.44
>1998	97.74	103.42	105.11	114.15

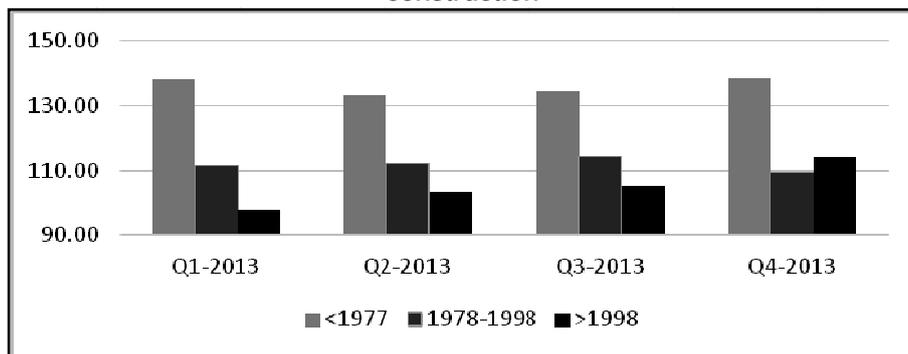
Source: Own calculations of the author.

For first-time buyers, the housing affordability index (starting point ARM Housing Affordability Index), was based on the following hypothesis:

- up-front payment: 10%
- maximum payment for a monthly credit rate below 40% of the average income per household
- property value: 85% of the median price calculated using Flexmls platform
- annual income per household for first-time buyers: 80% of the income provided by the National Institute of Statistics.

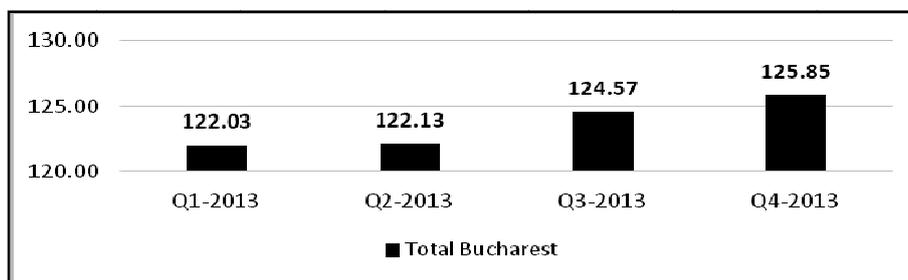
Results presented in Figure 7 suggest an increase in housing affordability for constructions before 1977 and after 1998, and a decrease in the last quarter for apartments built between 1978 and 1998. Overall, the housing affordability for Bucharest has increased (as shown in Figure 8).

*Figure 7: First-time buyers – housing affordability by interval of construction*



Source: Own calculations of the author.

*Figure 8: First-time buyers – Bucharest ARM Housing affordability Index*



Source: Own calculations of the author.

A value of 122.03 in Q1 2013 means that a household of first-time buyers with income 15% below the average for Bucharest needs 122.03% income for a loan that covers 90% of the discounted price (-15%) of an apartment with two bedrooms in Bucharest.

## 2.2. Housing Affordability by the price to income ratio

Another measure for housing affordability is the price to income ratio. We used the same hypothesis as in the previous model, related to median price and median income for buyers and first-time buyers. A lower value is desired as it could show us a higher median income compared with the median price.

Price to income ratio = Median price/ Median income Equation (4)

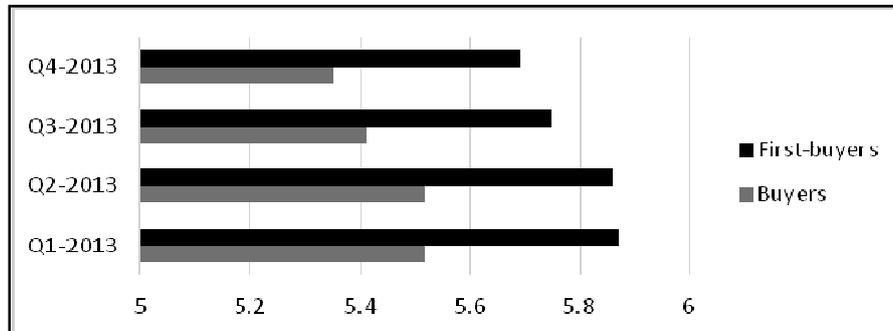
**Table 2: Housing affordability using price-income ratio  
Bucharest buyers and first buyers by period of construction**

Buyers	Q1-2013	Q2-2013	Q3-2013	Q4-2013
<b>Total Bucharest</b>	5.52	5.52	5.41	5.35
<b>&lt;1977</b>	4.88	5.04	5.00	4.87
<b>1978-1998</b>	6.04	6.00	5.90	6.16
<b>&gt;1998</b>	6.89	6.51	6.41	5.90
First-buyers	Q1-2013	Q2-2013	Q3-2013	Q4-2013
<b>Total Bucharest</b>	5.87	5.86	5.75	5.69
<b>&lt;1977</b>	5.18	5.36	5.32	5.17
<b>1978-1998</b>	6.42	6.37	6.27	6.54
<b>&gt;1998</b>	7.32	6.92	6.81	6.27

Source: Own calculations of the author based on primary statistical data of the National Institute of Statistics and Flexmls database.

Analyzing the results, for buyers and first-buyers there is a decrease at total level for Bucharest, as a result of lower median price and higher income. The results are different when the analysis focuses on the year of construction, as the housing affordability through this ratio is influenced by positive or negative variations for apartments built before 1977, between 1978 and 1998 or after 1998. Apartments in buildings created after 1998 are more affordable, as a value of 5.90 in Q4 2013 means that an average household has 5.9 times the annual income to afford a median priced two-bedroom apartment.

*Figure 9: Price to income ratio for buyers and first-time buyers*



Source: Own calculations of the author based on primary statistical data of the National Institute of Statistics and Flexmls database.

## 5. Conclusions

Measuring housing affordability is relevant for buyers, sellers, financial institutions and the state as it can show trends in real estate market, and could be the starting point for policy makers.

As our research has focused on two main measures for housing affordability, there is another significant area that needs clarification: repayment affordability.

As we considered some hypothesis for our research, based on the National Association of Realtors methodology, we are also aware of the research limitation related to the median price which could be different by type of apartment, number of members of a household variable from one period to another or the maximum payment for a monthly credit rate.

Housing affordability can be measured under satisfactory conditions, both influenced by decreasing median prices and increasing income. We found that the size of the indicators have increased during the four quarters of 2013. Of course, going further by year of construction, we found an interesting fact about old and new apartment's affordability that could improve the current research of the housing market and decision-making on price setting and financing is concerned.

## Acknowledgement

This work was financially supported through the project "Routes of academic excellence in doctoral and post-doctoral research – READ" co-financed through the European Social Fund, by Sectoral Operational Programme Human Resources Development 2007-2013, contract no POSDRU/159/1.5/S/137926.

## References

- Angelini, V., Brugiavini, A., & Weber, G. (2013). "The dynamics of homeownership among the 50+ in Europe". *Journal of Population Economics*, 27(3), 797–823.
- Anghel, I., Ciora, C., & Udrea, S. (2015). "AEEF MLS Market Report Q1 2013 – Q4 2014" (pp. 1–15). Bucharest.
- Blanchflower, D. G., & Oswald, A. J. (2013). "Does High Home-Ownership Impair the Labor Market?" NBER Working papers series no. 19079
- Brueggeman, W. B., & Fisher, J. D. (2005). *Real Estate Finance and Investments*, McGraw-Hill
- Demographia. (2015). 11th Annual Demographia International Housing Affordability Survey : 2015. Retrieved from <http://www.demographia.com/dhi.pdf>
- Eurostat. (2015a). "Distribution of population by tenure status, type of household and income group." Retrieved March 04, 2015, from [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc\\_lvho02&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvho02&lang=en)
- Eurostat. (2015b). "Housing statistics." Retrieved March 04, 2015, from [http://ec.europa.eu/eurostat/statistics-explained/index.php/Housing\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Housing_statistics)
- Gan, Q., & Hill, R. J. (2009). "Measuring housing affordability: Looking beyond the median." *Journal of Housing Economics*, 18(2), 115–125.
- Hendershott, P. H., & White, M. (2000). "The Rise and Fall of Housing's Favored Investment Status." *Journal of Housing Research*, 11(2), 257–275.
- Jewkes, M. D., & Delgadillo, L. M. (2010). "Weaknesses of Housing Affordability Indices Used by Practitioners", *Journal of Financial Counseling and Planning*, 21(1), 43–52.
- Laamanen, J. (2013). "Home ownership and the labour market: Evidence from rental housing market deregulation." Retrieved from <http://tampub.uta.fi/handle/10024/68116>
- Munteanu, S.M. & Grosu, M.A. (2011). "A Practical Perspective on Human Capital Post Merger Integration in Central and Eastern Europe", *Review of International Comparative Management*, 12(3), 586-601
- National Association of Realtors ® Housing Affordability Index. (2015), 2015.
- National Institute of Statistics. (2015). "Weight of Housing, water, electricity and fuel on type of expenses and main social categories, as average," Retrieved from <http://statistici.INSSE.ro/>
- Pittini, A. (2012). "Housing affordability in the EU. Current situation and recent trends" (pp. 1–12). Retrieved from [www.housingeurope.eu/file/41/download](http://www.housingeurope.eu/file/41/download)
- Shiller, R. J. (2007). "Understanding recent trends in house prices and home ownership." National Bureau of Economic Research.
- Statista. (2015). Retrieved March 04, 2015, from <http://www.statista.com/statistics/246355/home-ownership-rate-in-europe/>
- World Bank. (2015). Retrieved March 11, 2015, from <http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1169578899171/rd-hs7.htm>
- Zaman, G. & Georgescu, G. (2009). "The impact of global crisis on Romania's economic development", *Annales Universitatis Apulensis Series Oeconomica*, 11(2)