

# Fundamental Economic Factors That Affect Housing Prices: Comparative Analysis between Kosovo and Slovenia

VISAR HOXHA

*College ESLG, Kosovo*

*visar.hoxha@eukos.org*

ALENKA TEMELJOTOV SALAJ

*European Faculty of Law, Slovenia*

*alenka.temeljotov-salaj@evro-pf.si*

The purpose of this study is to provide strategic implications for real estate appraisers and real estate managers to know the economic determinants of housing price dynamics in Kosovo. The fundamental economic determinants of housing prices, adopted from previous studies, are Gross Domestic Product growth, demographics, real interest rates, and construction costs. The research methodology used is quantitative factor analysis. The main question addressed is, whether the conventional fundamental determinants of housing prices, such as Gross Domestic Product per capita, real interest rates, demographic factors, and construction costs have driven the observed housing prices in Kosovo. By sampling the determinants of housing prices in Kosovo, the study shows their effects on housing price dynamics. The study shows that housing prices in Kosovo are significantly determined by the underlying conventional fundamentals. This is the first research that tries to determine whether the fundamental economic factors influence the housing prices in Kosovo.

*Key words:* housing prices, economic characteristics, Kosovo, Slovenia

## Introduction

The present research attempts to provide both a theoretical analysis of the fundamental economic factors affecting housing price dynamics in Kosovo comparable to Slovenia and practical strategic implications for real estate managers to know the economic determinants of housing price dynamics in Kosovo. The present research is important for residential real estate developers and managers in Kosovo to understand how to avail of positive economic cycles and also learn from the practices in Slovenia. The present research also

tries to identify those fundamental economic factors that are common for the countries that go through the same transition stages. The present research addresses the effect of fundamental economic factors on both new and existing housing.

Although housing prices in Kosovo are far below western European levels, they have been catching up rapidly in some years even in the double-digit range. The run-up in housing prices has coincided with Gross Domestic Product growth caused mainly by private consumption and remittances from Kosovo Diaspora.

The determinants of housing prices in Kosovo have not yet been systematically researched. The present paper is the first one that tries to do so. The goal of the present paper is to assess quantitatively whether the conventional fundamental determinants of housing prices both existing and new, such as disposable income, interest rates, demographic factors, and construction costs have had an effect in the observed housing price dynamics. The model of the present research is based upon standard variables used in the empirical literature (Girouard et al. 2006; Poterba 1984), and also takes into account the growing demand for *secondary home* housing in Kosovo by Kosovar Diaspora in Kosovo. The present research finds that GDP, interest rates, and demographic factors are important determinants of housing prices in Kosovo. On the other hand, the present research also finds that Gross Domestic Product, interest rates, demographics, and construction costs are important determinants of housing prices in Slovenia.

The dynamics of the changes in housing prices are modeled as a function of changes in housing demand and supply (HM Treasury 2003). On the demand side the expected change in housing prices is dependent upon household income, the real rate on housing loans, demographic and labor market factors, the expected rate of return on housing and other demand factors such as location, age and state of housing. Hence the present study concludes the following: Demand for housing prices is a function of household income, interest rates, labor market, expected rate of return on housing and other demand factors, which in turn influences the expected housing prices.

On the supply side the supply of housing is positively dependent upon the profitability of the construction business, which on the other hand depends positively on housing prices and negatively on the real costs of construction, which includes the price of land, salaries of construction workers, and material costs. Hence the present study concludes the following: Supply for housing is a function of construction costs, which includes the price of land,

salaries of construction workers, and other material costs, which in turn influences the expected housing prices.

Based on the above theoretical framework, the basic research question that the present study attempts to answer is: *Which sets of economic factors affect the housing prices in Kosovo and Slovenia?*

## Work Methods

### GROSS DOMESTIC PRODUCT AND HOUSE PRICES

In general, the relationship between the gross domestic product and housing price dynamics exists and is reflected through the household disposable income (Ayuso, Perez and Saurina 2004). Also Égert and Mihaljek (2007) established the strong relationship between the gross domestic product and housing prices in the countries of Central and Eastern Europe. Davis and Heathcote (2005) found that, in the us, the residential investment lead the cycle (or Gross Domestic Product), whereas the non-residential investment lagged the cycle (Davis and Heathcote 2005).

According to Keynesian theory (McCarthy and Peach 2004), the average propensity to consume decreases with income. If this is transferred to the housing market then people will increase the consumption of houses the more income they have, whereas an increase in income would lead to higher demand and therefore higher prices. This argument is further augmented by McCarthy and Peach (2004) who suggest that housing prices are highly correlated with income leading us to the fundamental factor influencing the housing prices and by that also the housing market (McCarthy and Peach 2004). Income as a demand variable is measured by Gross Domestic Product per capita.

On the other hand, according to the neoclassical theory of housing demand the decision to buy a house occurs in parallel with the decision to consume other goods. This theory suggests that the consumers optimize their utility in light of the income and price constraints they face.

According to the housing gradient consumption theory, the structure of choices of the consumers is defined by housing prices and consumer's income. The theory suggests that consumers of housing choose a set of goods in order to maximize their utility and enjoyment, which is subject to budgetary limitations of the individual.

Qingquan and Guohua (2011) found out that the individual/household cannot spend more than their total income/wealth. According to this, the following hypothesis is made:

H1 *The gross domestic product plays positive role in housing prices.*

In terms of the link between the real interest rate on housing loans and housing prices Sutton (2002) argues that there is strong link between the real interest rate and housing prices (Sutton 2002). Other scholars argue that when the structural changes in the economy of Spain happened because of entry of Spain into Eurozone, the real interest rate on housing loans fell, which was reflected in the increase of housing prices (Ayuso, Perez, and Saurina 2004). On the other hand the decrease of real interest rates in housing loans was reflected during the period when countries were near to join European Monetary Union, which was further reflected in the increase of housing prices (Égert and Mihaljek 2007). The theory, which explains the effect of interest rates on housing prices, is the user cost theory. The user cost theory provides for outlay that must be incurred to gain access to the services provided by housing via home-ownership rather than via renting in the private market (Browne, Conefrey and Kennedy 2013). The user cost is further measured for a representative household. Further, the calculated user cost of capital is 'compared with the annual market cost of rent of an exactly equivalent bundle of services that comes with housing' (Browne, Conefrey and Kennedy 2013, 6). The theory of user cost of capital of Jorgenson (1963) was used by Poterba (1984) who was one of the first to apply the user cost theory to the housing market. Different researchers see a different role of the user cost of capital in housing prices. Whereas some authors argue that the user cost theory plays only a limited role in explaining the housing prices mostly in the form of encapsulating the after-tax cost of home ownership (Capozza et al. 2002), other researchers point out to the essential role of the user cost theory in understanding the housing prices (OECD 2005). Thus, the following hypothesis is made:

H2 *The real interest rates on housing loans play a role in housing prices.*

According to Égert and Mihaljek demographic and labour market factors may have also played a role in housing (Égert and Mihaljek 2007). Also Ayuso, Perez, and Saurina (2004) argue that demographic variables are included in the equations of housing prices (Ayuso, Perez, and Saurina, 2004). According to Égert and Mihaljek (2007) demographic and labor market factors are included in the equation through unemployment rate, the share of the working-age population in total population, and the share of the labor force in total population (Égert and Mihaljek 2007). McKenzie, Betts, and

Jensen argue that housing prices are elastic towards wages (McKenzie, Betts, and Jensen 2010). Girouard et al. argue that demographic developments, through their effect on the real disposable incomes can also raise housing demand, thereby increasing housing price levels. Girouard et al. (2006) further establish that the net migration of population, decline of average size of the family, and increase of the share of population of groups of individuals who are in their household formation age boost the demand and thereby increase price levels. The relationship between employment and housing prices has been present in literature through the life cycle theory, which focuses on how the evolution of employment induces demand for housing through householder formation, relocation of workers, and demand for higher quality housing (De La Paz 2003). In this regard, Muellbauer and Murphy stress the existence of self-reinforcing feedbacks that induce variations in income among population, which further have effects on housing prices (Muellbauer and Murphy 1997). The life cycle theory studies the relationship between housing prices and employment with respect to the potential expansion of employment, which further generates demand for new housing (De La Paz 2003). According to Popescu, regions with larger proportions of skilled labor grow faster and are economically stronger (Popescu 2013, 139), which in turn results in greater demand for housing.

According to this, the following hypothesis is made:

H3 *Demographic and labor market factors play a role in housing prices.*

The supply side is reflected in housing prices through construction costs, which influences housing prices through prices of land, real wages of construction workers, and material costs. In this regard, Égert and Mihaljek examine the relationship between the real wages as a proxy for housing quality and housing prices and argues that the real wages as a component of construction costs have an impact on real estate prices through improvements in housing quality, which according to empirical evidence has an influence over the housing prices, especially in those countries where the initial housing quality was lower (Égert and Mihaljek 2007). Another theory which is applicable to the hypothesis that construction costs play a role in the housing prices is the Tobin's Q Investment Theory, according to which the construction cost is supposed to be one of the fundamental factors affecting housing prices. A scarce supply of land for construction can therefore explain relative price increases

in housing relative to construction costs (Miles 1992) and (Summers 1981). According to this, the following hypothesis is made:

H4 *The construction costs play a role in housing prices.*

However, the study notes certain limitations, which arise in terms what other additional factors should be included in the theoretical framework. The following issues need to be verified with caution before any attempt to generalize the findings takes place:

- The findings rely on respondents' self-reported cross-sectional data, rather than longitudinal data.
- The data have been collected only from two countries, which can further limit the generalisability of the findings in other research contexts.
- In an attempt to achieve representativeness of the sample, the data collected by various categories of population especially elderly and uneducated may have limitations as to the generalisability of the findings because the lack of knowledge of these respondents about macroeconomics;
- The data collected from the particular strata in Kosovo composed of municipal and public sector officials may have certain limitations. This is because those municipal officials in those municipalities ruled by the ruling coalition at the central level gave leading answers to questions about the relationship between the public spending and Gross Domestic Product growth and housing prices.

In this regard, the present paper also paves the way for the following research directions:

- The study explores only one developing/transitional country perspective that of Kosovo, hence any research conducted in similar country context to that of Kosovo such as Albania, Macedonia Serbia, Montenegro or any other cross country comparative study can be very useful in validating the findings.
- In addition to cross-sectional data, any future research the longitudinal data should be taken into account to strengthen the validity of these findings.
- Also, behavioral factors that influence the housing prices could be included in any research framework.

### Research Methodology

The study uses the quantitative analysis at the Kosovo and Slovenian level and then in the second part of the research we focus on

TABLE 1 The Structure of Respondents in Kosovo

| Category      |                            | Number | Percentage |
|---------------|----------------------------|--------|------------|
| Gender        | Male                       | 480    | 50.5       |
|               | Female                     | 470    | 49.5       |
| Age           | From 18 to 35              | 428    | 45.0       |
|               | From 35 to 55              | 332    | 35.0       |
|               | From 55 to 65              | 190    | 20.0       |
| Education     | Less than secondary school | 180    | 19.1       |
|               | Secondary school           | 374    | 40.2       |
|               | University education       | 342    | 36.2       |
|               | Master's degree or more    | 54     | 4.5        |
| Social status | Single                     | 380    | 49.5       |
|               | Married or in relationship | 470    | 50.5       |

the analysis of the survey results. As Bastič argues, the key to effective research is the systematic research process in order not to underweight or overweight any important step during the research process, which may lead us to wrong conclusions (Bastič 2006).

### Participants

The study uses the stratified probability sampling to select the sample population. Takashori and Teddlie argue that probability sampling techniques are used mainly in quantitative research and involve selecting a relatively large number of units from a population, or from specific subgroups (strata) of a population, in a random manner where the probability of inclusion for every member of the population is determinable (Tashakkori and Teddlie 2003).

Following the pilot study, the sample selection took place according to probability stratified sampling method with proportional allocation of units to specific strata reflecting the various groups of population in Kosovo and Slovenia. In total, 950 respondents took part in the Kosovar survey, whereas 275 Slovenian participants took part in the Slovenian part of the survey, which was completed in January 2013. The structure of respondents based on gender, age, education, marital status, employment, and monthly household consumption of respondents has been shown in the following tables. These specific strata were selected because they are more related to the hypotheses laid down in this research.

The structures of respondents in Kosovo and Slovenia have been presented in tables 1 and 2. In this regard, the present study faced various difficulties in reaching out to Slovenian respondents via e-

TABLE 2 The Structure of Respondents in Slovenia

| Category      |                            | Number | Percentage |
|---------------|----------------------------|--------|------------|
| Gender        | Male                       | 140    | 50.9       |
|               | Female                     | 135    | 49.1       |
| Age           | From 18 to 35              | 100    | 36.3       |
|               | From 35 to 55              | 130    | 47.3       |
|               | From 55 to 65              | 45     | 16.4       |
| Education     | Less than secondary school | 80     | 29.1       |
|               | Secondary school           | 160    | 58.2       |
|               | University education       | 31     | 11.3       |
|               | Master's degree or more    | 4      | 1.4        |
| Social status | Single                     | 73     | 26.5       |
|               | Married or in relationship | 202    | 73.5       |

TABLE 3 Disposable Income of Kosovo and Slovenian Respondents

| Kosovo       | Number | Percent | Slovenia      | Number | Percent |
|--------------|--------|---------|---------------|--------|---------|
| <3,600       | 665    | 70.0    | <17,000       | 192    | 69.8    |
| 3,600–6,000  | 143    | 15.0    | 17,000–25,000 | 42     | 15.2    |
| 6,001–10,000 | 95     | 10.0    | 25,000–36,000 | 25     | 9.0     |
| >10,000      | 47     | 5.0     | >36,000       | 16     | 6.0     |

mail and LinkedIn. The study also used Survey Monkey questionnaire that was sent to Slovenian respondents via e-mail, LinkedIn, or Facebook. In addition, the study also faced difficulties in persuading Slovenian respondents to answer the questionnaire through Internet such as e-mail, LinkedIn, and Facebook. Unlike Slovenian respondents, Kosovo respondents were more flexible in answering via Internet. Also, around 44.6% of questionnaires were distributed to Kosovo sample population in person with hard copy questionnaires. Students of College European School of Law and Governance also participated in the distribution of questionnaires to Kosovo respondents in person. Around 45% of Kosovo respondents belong to 18–35 years age group, which resembles the percentage of this age group in the total population of Kosovo. Around 40.2% of Kosovo respondents have completed their secondary school and only 36.2% have university education of at least bachelor's degree. On the other hand 58.2% of Slovenian respondents have completed secondary education and only 11.3% have the University degree.

Table 3 shows that Kosovo respondents were also selected according to various ranges of disposable income, which resembles Kosovo statistics of last census taken in 2011. Around 70.0% of Kosovo re-

spondents belong to the annual disposable income range of below 3,600 euro. The present paper notes that only 5.0% of respondents belong to the annual disposable income of greater than 10,000 Euros. This does not imply that the 70.0% of respondents are not educated and thus have a lower salary. Table 3 also shows various ranges of disposable income of Slovenian respondents, which resembles the statistics of Republic of Slovenia taken by the Slovenian Statistical Agency. Around 69.8% of Slovenian respondents belong to the annual disposable income range of below 17,000 euro, whereas 6.0% of respondents belong to the annual disposable income of greater than 36,000 Euros.

### Measures and Constructs

The variables of this study were measured using a five-point Likert scale (1 – strongly disagree, 5 – strongly agree). Each category of variables was modified to the situation of the study based on the measuring categories, the reliability of which has been confirmed in preceding theses (Cronin and Taylor 1992). Gross domestic product was measured by four questions, including consumption, investment, government purchases, and net exports. Real estate interest rate was measured by three questions, including the percentage of decline of mortgage loan rates, percentage of increase of consumer price index, and percentage of decline of loan rates for import of construction machinery. Demographic factors and labor market was measured by three questions, including unemployment rate movements, the share of the working-age population in total population, and the share of the labor force in total population. Construction costs were measured by three questions, including the prices of land, real wages of construction workers, and material costs. Finally, housing prices were measured by two questions, including willingness of the seller to sell the housing real estate at a given price and willingness of the buyer to buy the housing real estate at a given price.

For the purpose of verifying the validity of the study model, the present paper uses the structural equation model to analyze the reliability of the measures. First, the confirmative factor analysis was used to assess the model and second the structural model was verified, which contains the measurement and theoretical variables. The program Statistical Package for the Social Sciences (SPSS) Windows 19.0 was used to verify the study model and the findings have been presented in table 4.

As a result of the analysis for Kosovo, Cronbach's  $\alpha$  on the factors in Kosovo turned out to be .740 at the minimum and maximum of

TABLE 4 Exploratory Factor and Reliability Analysis for Kosovo and Slovenia

| Factors                | Initial item no. | Oblique rotation | Reliability analysis | Cronbach's $\alpha$ |          |
|------------------------|------------------|------------------|----------------------|---------------------|----------|
|                        |                  |                  |                      | Kosovo              | Slovenia |
| Gross domestic product | 4                | 4                | 4                    | 0.810               | 0.820    |
| Real interest rate     | 3                | 3                | 3                    | 0.789               | 0.795    |
| Demographics           | 3                | 3                | 3                    | 0.797               | 0.815    |
| Construction costs     | 3                | 3                | 3                    | 0.740               | 0.710    |
| Housing prices         | 2                | 2                | 2                    | 0.876               | 0.840    |

0.876 which indicates a solid reliability. As a result of the analysis for Slovenia, Cronbach's  $\alpha$  on the factors in Slovenia turned out to be 0.710 at the minimum and maximum of 0.840 which indicates a solid reliability.

The present paper used the exploratory factor analysis to examine the validity of the measurement variables. During the performance of principal component analysis, the varimax rotation method, one of orthogonal rotations maintained the independency among other factors. During the analysis, the study could not exclude any of the constructs. The factor loadings for each concept by which we measured the constructs through LISREL (Linear Structural Relations) 8.5 all turned to be above 0.69 (Nunnally 1978) for both cases Kosovo and Slovenia, which confirms the validity. By using the orthogonal rotation, the present study is able to achieve the discriminate validity for each factor.

### Data Analysis

The data extracted were analyzed to test the construct measures and to test the hypotheses that were set forth in the research study model. The factor analysis is used as a statistical technique. The adopted construct measures require measurement of scale reliability and validity. Relevant descriptive statistics of the sample is also reported. Measurement model in the Structural Equation Modeling (SEM) technique is used for the confirmatory factor analysis using SPSS Windows and Linear Structural Relations software LISREL 8.3 was also used to test the hypotheses of the research model.

The measurement model fit was tested individually for all construct measures proposed in the study model for Kosovo and Slovenia separately. In this process 3 items were excluded from the individual models in order to achieve a better fit of data for both data sets (Kosovo and Slovenia). The overall measurement model was tested with 15 items, however, the results of the test indicated the poor fit to the data. Later, the overall measurement model was tested

TABLE 5 Summary of Overall Measurement Model for Kosovo and Slovenia

| Fit stat.    | Kosovo             |                  | Slovenia           |                  |
|--------------|--------------------|------------------|--------------------|------------------|
|              | Initial (15 items) | Final (12 items) | Initial (15 items) | Final (12 items) |
| $\chi^2(df)$ | 671.406 (379.66)   | 326.406 (223.90) | 625.12 (337.28)    | 319.504 (208.10) |
| CMIN         | 1.768              | 1.457            | 1.853              | 1.535            |
| IFI          | 0.868              | 0.934            | 0.898              | 0.942            |
| TLI          | 0.848              | 0.925            | 0.848              | 0.915            |
| CFI          | 0.867              | 0.933            | 0.897              | 0.941            |
| RMSEA        | 0.058              | 0.043            | 0.051              | 0.042            |

TABLE 6 Correlation Matrix in Structural Equation Modeling (SEM) Technique for Kosovo

| Category               | 1      | 2      | 3      | 4      | 5     |
|------------------------|--------|--------|--------|--------|-------|
| Gross domestic product | 0.600  |        |        |        |       |
| Real interest rates    | 0.483* | 0.610  |        |        |       |
| Demographics           | 0.426* | 0.300* | 0.630  |        |       |
| Construction costs     | 0.547* | 0.299* | 0.412* | 0.620  |       |
| Housing prices         | 0.526* | 0.422* | 0.591* | 0.593* | 0.650 |

NOTES Adapted from Hoxha and Temeljotov-Salaj (2014). \*Significant at 0.001.

for Kosovo with the remaining 12 items and the results of the test are shown on table 5.

The fit statistics shown in table 5 is a strong rationale behind the decision to delete 3 items from three construct measures for Kosovo and Slovenia. By deleting 3 items from three construct measures, we were able to reduce the  $\chi^2$  by 345 from 671.406 to 326.406 or  $df$  by 155.76 from 379.66 to 223.90 in Kosovo and  $\chi^2$  by 305.61 from 625.12 to 319.504 or  $df$  by 129.18 from 337.28 to 208.10 in Slovenia and improve other fit indices in the overall measurement model as shown in table 5. The retained 12 items exhibit satisfactory level of congruity between data and measurement model in both cases. We also perform the correlation matrix conducted in Structural Equation Modeling technique, which assists us in reporting the convergent and discriminant validity of the construct measure by comparing composite reliability scores and correlations between factors. We perform this analysis separately for Kosovo and Slovenia. Tables 6 and 7 present correlation matrices conducted in Structural Equation Modeling (SEM) technique for Kosovo and Slovenian data set.

While examining the correlation matrices of Kosovo and Slovenia reported in tables 6 and 7, the results show that housing prices as a dependent variable is significantly correlated with all independent variables proposed in the study model. Further, all independent vari-

TABLE 7 Correlation Matrix in Structural Equation Modeling (SEM) Technique for Slovenia

| Category               | 1      | 2      | 3      | 4      | 5     |
|------------------------|--------|--------|--------|--------|-------|
| Gross domestic product | 0.630  |        |        |        |       |
| Real interest rates    | 0.413* | 0.610  |        |        |       |
| Demographics           | 0.446* | 0.392* | 0.630  |        |       |
| Construction costs     | 0.517* | 0.329* | 0.432* | 0.600  |       |
| Real estate prices     | 0.546* | 0.442* | 0.551* | 0.593* | 0.740 |

NOTES Adapted from Hoxha and Temeljotov-Salaj (2014). \*Significant at 0.001.

TABLE 8 Structure Equation Model Results for Kosovo and Slovenia

| (1) | (2)    | (3)           | Path coeff. $\beta$ |       | t-value |       | P-value |       | Results |    |
|-----|--------|---------------|---------------------|-------|---------|-------|---------|-------|---------|----|
|     |        |               | K                   | S     | K       | S     | K       | S     | K       | S  |
| H1  | GDP→HP | $\gamma_{11}$ | 0.421               | 0.401 | 3.401   | 3.385 | 0.017   | 0.015 | SU      | SU |
| H2  | RIR→HP | $\gamma_{12}$ | 0.102               | 0.103 | 4.574   | 4.272 | 0.001   | 0.013 | SU      | SU |
| H3  | DEM→HP | $\gamma_{13}$ | 0.082               | 0.073 | 4.433   | 4.233 | 0.001   | 0.012 | SU      | SU |
| H4  | CON→HP | $\gamma_{14}$ | 0.023               | 0.135 | 0.632   | 3.631 | 0.452   | 0.010 | NS      | SU |

NOTES Column headings are as follows: (1) hypothesis, (2) path, (3) path name;  $\kappa$  - Kosovo, s - Slovenia; su - supported, ns - not supported.

ables are also significantly correlated between each other with low to moderate coefficient scores. As Campbell and Fiske argue the low to moderate level of correlations between independent variables is normally expected in order to explain the discriminant validity of construct measures (Campbell and Fiske 1959).

### Hypothesis Testing

The study performs the Structural Equation Modeling (SEM) for Kosovo and Slovenia to test the hypotheses. Outputs of SEM analysis have been presented in table 8.

The reported Structural Equation Modeling results that have been presented in table 8 are evaluated on estimated path coefficient  $\beta$  value with critical ratio, which is equivalent to  $t$ -value and  $p$ -value. The standard decision rule, which is  $t \geq 1.96$  and  $p \leq 0.05$ , applies to the decision about the significance of path coefficient between dependent variable and independent variable (Byrne 2001). Nevertheless, some other researchers report that the standard rule for decision-making regarding the significance of path coefficient between dependent and independent variables is  $p \leq 0.10$  as a marginal level of significance (Kwon and Suh 2004).

The standardized estimated path coefficient for the relationship between Gross Domestic Product and Housing Prices is  $\beta = 0.421$

and  $t$ -value ( $t = 3.401$ ) and  $p$ -value of 0.017 for hypothesis 1 for Kosovo, whereas values obtained for Slovenia are  $\beta = 0.401$  and  $t$ -value ( $t = 3.385$ ) and  $p$ -value of 0.015. This finding strongly supports the hypothesized relationship between gross domestic product and housing prices in both respective countries Kosovo and Slovenia.

The standardized estimated path coefficient for the relationship between Real Interest Rates and Housing Prices in Kosovo is  $\beta = 0.102$  and  $t$ -value ( $t = 4.570$ ) and  $p$ -value of 0.001, whereas values obtained for Slovenia are  $\beta = 0.103$  and  $t$ -value ( $t = 4.270$ ) and  $p$ -value of 0.013. This finding strongly supports the hypothesized relationship between real interest rates and housing prices in both Kosovo and Slovenia.

The standardized estimated path coefficient for the relationship between Demographics and Housing Prices in Kosovo is  $\beta = 0.082$  and  $t$ -value ( $t = 4.430$ ) and  $p$ -value of 0.001, whereas values obtained for Slovenia are  $\beta = 0.073$  and  $t$ -value ( $t = 4.230$ ) and  $p$ -value of 0.012. This finding strongly supports the hypothesized relationship between demographics and housing prices in both Kosovo and Slovenia.

The standardized estimated path coefficient for the relationship between Construction Costs and Housing Prices is  $\beta = 0.023$  and  $t$ -value ( $t = 0.630$ ) and  $p$ -value of 0.452, whereas values obtained for Slovenia are  $\beta = 0.135$  and  $t$ -value ( $t = 3.630$ ) and  $p$ -value of 0.010. This finding strongly rejects the hypothesized relationship between construction costs and housing prices in Kosovo and supports it in Slovenia.

## Discussion

The finding of hypothesis 1 'gross domestic product plays positive role in housing prices' from table 8 strongly supports the hypothesized relationship between gross domestic product and real estate prices in both respective countries Kosovo and Slovenia. Also the bivariate correlation between gross domestic product and housing prices in Kosovo is presented in table 6 at coefficient 0.52, whereas for Slovenia it has been presented in table 7 at coefficient 0.546 showing that gross domestic product is one of the independent variables that is highly correlated with the housing prices in both Kosovo and Slovenia.

With regards to the interpretation of Kosovo results, in their study of the countries of Central and Eastern Europe Egert and Mihaljek argue that consumption affects the real estate demand and real estate prices (Egert and Mihaljek 2007). On the other hand results

of the study made by Donatos in Greece who applied the ordinary least squares estimation for the period 1958–89 indicate that the consumption that is driven by household income is positively correlated with the real estate prices in Greece (Donatos 1995). Hendershott also argues that the consumption of citizens driven by per capita income contributes to the real estate demand and real estate prices (Hendershott 1991). The results of the study made by Kaufmann and Mühleisen show that consumption's effect on real estate prices is not statistically significant (Kaufmann and Mühleisen 2003).

With regards to Slovenian results, one interpretation of this result can be linked with the study performed by Pšunder, Pšunder, and Golob who also used the factor analysis to verify their hypothesis that reduced economic growth has an influence on the falling real estate prices. This study shows around 61.3% of respondents were completely convinced that the reduction in economic growth affects the drop in real estate transactions and housing prices (Pšunder, Pšunder and Golob 2013).

The results of correlation analysis conducted by the mentioned authors verify the hypothesis that the reduced economic growth impacts the housing prices (Pšunder, Pšunder and Golob 2013). The reduction in economic growth affecting the decline of housing prices can also be verified by Golob, Bastič, and Pšunder (2012).

In another earlier study by Pšunder, it was established that household income and consumption have an impact on real estate growth and real estate prices in Slovenia (Pšunder 2009). In his survey, Jože Bradeško pointed out the correlation between the growth of housing property values and real Gross Domestic Product as well as the population's earnings (Bradeško 2003). This does not imply that changes to the Gross Domestic Product affect the housing prices' trend directly and in advance, but it means that GDP is one of the most influential factors affecting housing prices (Pšunder 2009). In this regard, it was found that the low purchasing power in Slovenia affected the demand for housing, which consequently had an impact on housing prices (Sendi 2013).

On the other hand, another study trying to verify the correlation between declining economic growth and declining housing prices in Slovenia was conducted by Golob, Bastič, and Pšunder (2012). Based on the results of correlation analysis of data from across Slovenia, they established that the correlation coefficient between decline of economic growth and percentage of change in housing prices amounts to 0.048, which is a minor correlation. The significance level that the authors established in their descriptive statistical analysis

was 0.05 ( $p = 0.558$ ), which means that the data do not corroborate a correlation between these two variables.

The finding of hypothesis 2 'the real interest rates on housing loans play a role in housing prices' from table 8 strongly supports the hypothesized relationship between real interest rates and housing prices in both Kosovo and Slovenia. Also the bivariate correlation between real interest rates and housing prices in Kosovo is presented in table 6 at coefficient 0.422, whereas for Slovenia it has been presented in table 7 at coefficient at coefficient 0.442 showing that real interest rates are highly correlated with real estate prices in both Kosovo and Slovenia.

Sa, Towbin, and Wieladek (2011) also used vector autoregression analysis for 18 OECD (Organization for Economic Development and Cooperation) countries. The study model includes variables such as economic output, consumption, residential investment, interest rates, and Gross Domestic Product (Sa, Towbin and Wieladek 2011). Similarly to Jarocinski and Smets (2008), the response of housing prices to 0.25% expansionary shocks is initially negative and rises further to a statistically significant 0.3% effect after 10 quarters (Sa, Towbin and Wieladek 2011). The response of housing prices is similar to long-term interest rate declines by approximately 0.1%. In this regard, Jarocinski and Smets used Bayesian vector autoregression analysis for the United States housing market. In their study model they included variables such as economic output, consumption, Gross Domestic Product, housing investment, housing prices and short term interest rates. The peak of housing prices at 0.5% is accompanied by declines of long-term interest rates of around 0.1% (Jarocinski and Smets 2008). Other authors such as Goodhart and Hofmann also use the vector autoregression to examine the connection between housing prices and macroeconomic fundamental factors. They perform the study in 17 industrialized countries and in their study model include variables such as Gross Domestic Product growth, short-term nominal interest rates, housing prices, and growth of credit supply. The results of this study reveal Granger-causal relationships between many variables, especially between interest rates and housing prices. Same authors found that 0.25% orthogonalized interest rate expansion can lead to a statistically significant 0.8% increase in housing prices (Goodhart and Hoffman 2008).

With specific regard to the correlation between increased inflation and housing prices in Slovenia, Pšunder argues the opposite. He states that higher inflation implies higher funding costs and this results in lower demand for real estate, which further puts pressure on

prices to decline (Pšunder 2009). Further, the outputs of the Structural Equation Modeling (SEM) analysis reported in this section of the dissertation and the establishment of hypothesized relationship between real interest rates and housing prices corresponds to the results of the study performed by Golob, Bastič, and Pšunder (2012). In their study they conducted the correlation analysis, the results of which indicate that the correlation coefficient between variables 5 (the lower the interest rates, the higher the real estate transactions) and 6 (the lower the interest rates, the higher the real estate prices) amounts to 0.427 (partial correlation), and is equal to zero at significance level 0.05, which means that the data fully corroborate a correlation between these two variables.

The effect of inflation on housing prices in Slovenia was also studied by the same authors who produced mixed results. In this study around 69% of the total surveyed men and 72% of the total surveyed women believe that purchasing a real estate property does offer protection against inflation. The study also established that 63.16% of participants aged 20–30 are of the same opinion, as are 64.58% of participants aged 31–40, 78.05% participants aged 41–50, 81.82% participants aged 51–60, as well as 100% of participants aged 61 and over. Despite of the mixed responses of respondents, no correlation was established between rising inflation and real estate prices (Golob, Bastič, and Pšunder 2012).

The finding of hypothesis 3 'demographic and labor market factors play a role in housing prices' strongly supports the hypothesized relationship between demographics and housing prices in both Kosovo and Slovenia. Also the bivariate correlation between demographics and housing prices in Kosovo is presented in table 6 at coefficient 0.551, whereas for Slovenia it has been presented in table 7 at coefficient at coefficient 0.551 showing that real interest rates are highly correlated with housing prices in both Kosovo and Slovenia. One interpretation of this result is that the decline of unemployment rate is a direct cause of increase of housing prices as proven by the establishment of the hypothesized relationship between demography and housing prices. This can be explained with the economic theory, according to which the demographic variable is a demand variable, which is included in the expression for return on houses. The economic theory suggests that the increase in population increases the demand for houses and makes an upward pressure on prices. This is also argued by Mankiw in his study who found that the decline of unemployment rate has a strong influence in housing prices both in the short-run and medium-term (Mankiw and Weil 1989). In this re-

gard, Donatos examined the effect of decline of unemployment and increase of share of labor force as a percentage of total population in housing prices for the period 1958–89 in Greece. By applying ordinary least squares estimation he found that both decline of unemployment and increase of share of labor force in total population were positively correlated with the increased housing prices (Donatos 1995).

The hypothesized relationship that we are able to establish through Structural Equation Modeling (SEM) analysis between demographics and housing prices in Slovenia is further corroborated by Pšunder (2009). In his study he established that demographic and social indicators are the key factors that have an impact on housing prices in Slovenia (Golob, Bastič, and Pšunder 2012, 359).

Our verified hypothesized relationship between unemployment rate and real estate prices is also corroborated by the study of Grum and Salaj. According to Grum and Salaj, the national unemployment rate is another factor that affected the housing prices in Slovenia (Grum and Salaj 2010). Grum and Salaj further argue that the government of Slovenia intervened in the housing prices not only through 'demand and supply side but also through some of legislative acts' (Grum and Salaj 2010, 109). On the other hand, Égert and Mihaljek found solid positive correlation between unemployment and housing prices in Slovenia at coefficient 0.226. The highest correlation result between demographic factors and real estate prices in Slovenia was achieved between population and real estate prices at coefficient 17.01.

With regards to the relationship between the share of labor force as a percentage of total population and housing prices in Slovenia, the correlation is negative at coefficient (-1.166) (Égert and Mihaljek 2007, 15). The findings of the study of Vermeulen and Van Ommeren show that the bivariate regression of housing prices and unemployment in Slovenia is -0.931 with standard error of 0.930 and  $R^2$  of 0.915 indicating solid correlation between unemployment and housing prices in Slovenia (Vermeulen and Van Ommeren 2006).

The finding of hypothesis 4 'construction costs play a role in housing prices' strongly rejects the hypothesized relationship between construction costs and housing prices in Kosovo. Also the bivariate correlation between construction costs and housing prices in Kosovo is at coefficient 0.591 as presented in table 6 showing high correlation between construction costs and housing prices in Kosovo. The finding of hypothesis 4 strongly supports the hypothesized relationship between construction costs and housing prices in Slovenia aug-

mented by the bivariate correlation between construction costs and housing prices in Slovenia presented in table 7 at coefficient 0.593.

The link that we establish between construction costs and housing prices through our Structural Equation Modeling (SEM) results is also argued by Golob, Bastič, and Pšunder (2012). These authors argue that one of the factors influencing the value and quicker sales of housing properties is the construction quality, which entails higher construction labor wages and higher material costs. On the other hand, Cirman (2007) argued that the construction costs affected housing prices in Slovenia from the demand side through housing affordability. According to Cirman (2007) 'the housing affordability is related to the burden of costs placed on the household income' (Grum and Salaj 2010, 113), which further affect the housing demand.

In terms of relationship between construction labor wages and housing prices, Egert and Mihaljek's results indicate that the correlation between construction labor wages and housing prices is low with the coefficient of 0.006 (Égert and Mihaljek 2007). Nevertheless in terms of Central and Eastern Europe as a whole, Égert and Mihaljek found stronger correlation between construction labor wages and housing prices with coefficient at 0.031. According to the same authors, in Central and Eastern Europe as a whole, to the extent that real wages, as an important component of construction costs, adequately reflect improvements in housing quality, these results support the view that better housing quality had a stronger impact on house prices in those countries where housing quality was initially lower (Égert and Mihaljek 2007, 17).

Golob, Bastič, and Pšunder (2012, 364) in their study found the correlation coefficient between the housing quality and location and housing prices, which can be linked with our finding that the construction costs such as price of land, labor wages, and material costs influence housing prices. The correlation between good location and housing prices includes higher prices of land, whereas housing quality includes higher material costs and labor wages.

### Managerial Implications

The managerial implications largely emerged from quantitative findings in terms of what factors are significant in influencing housing prices in Kosovo and Slovenia. In terms of quantitative findings, the SEM output approves the direct influence of GDP, real interest rates, and demographics on real housing in Kosovo and negates the direct influence of construction costs on housing prices in Kosovo, al-

though housing prices and construction costs are moderately correlated. The SEM output approves the influence of all four variables (GDP, real interest rates, demographics, and construction costs) on housing prices in Slovenia.

The adoption of first hypothesis was not much of a surprise, considering the tendency of countries in transition to support GDP growth by heavy public spending in infrastructure, which results in the higher private consumption and increase of housing prices. Second hypotheses was surprisingly adopted, although there have been cases of decrease of housing prices in the periods when the mortgage loan rates in Kosovo decreased.

On the other hand, it came as no surprise to the authors that the decrease of unemployment rate artificially supported by the heavy public spending and public works in Kosovo was found to have a significant positive effect on housing prices.

What surprises the authors is the rejection of the fourth hypothesis in the context of Kosovo although the evidence provided through structured interviews with several real estate agencies in Kosovo argue that the housing prices in Kosovo grew in line with the increases of prices of land, labor wages, and material costs.

The first verified hypothesis which establishes the hypothesized relationship between gross domestic product and housing prices can serve as a good foundation for the real estate developers and managers to know when to forecast housing price cycles and influence policy makers in Kosovo and Slovenia to intervene in the local residential markets. The real estate managers should influence the policy makers in Kosovo to use the principles of Keynesian economic theory to intervene through public infrastructure projects especially in building investments in order to boost the local housing prices, relaxation of urban permit requirements, and active housing policy programs.

The second established hypothesized link between interest rates and real estate prices has implications for real estate managers and financial managers in Kosovo and Slovenia as how housing prices can respond to monetary policy shocks and inflationary pressures. The second hypothesis has also implications for financial managers in Kosovo to understand how they can intervene in the real estate cycles through interest rate reductions. Since Kosovo does not have the monetary policy, the interest rates in Kosovo are regulated by the market and are still high. The arguments that the banks use to defend their position of maintaining high mortgage rates is the poor contract enforcement system in Kosovo. Thus, the real estate man-

agers can influence the Kosovo government through faster adoption of the Law on Private Enforcement, which will give this power to private contract enforcement agencies to speed up the backlog of contract enforcement cases before court-based enforcement agencies. Another implication for real estate managers would be to lobby with the Kosovo policy makers to follow the path of Slovenia in imposing interest rate restrictions and ceilings which in the Slovenian legislation are present in Article 119 of Code of Obligations ('Obligacijski zakonik' 2007), Article 214 of Penal Code ('Kazenski zakonik' 2008), and Article 17 of the Consumer Credit Act ('Zakon o potrošniških kreditih' 2004) that provides for the interest rate ceilings.

The third hypothesized relationship between demographics and housing prices reflected through influence of employment and increase of labor force as a percentage of total population on housing prices has practical implications for real estate managers in Kosovo and Slovenia. The real estate managers should understand how to use the local residential market theory and focus their development on those areas where increased economic activity is expected to lead to. This hypothesis should serve as a conceptual framework for real estate managers to know how to forecast the population migrations and understand that it is not only the population migration that matters but also the employment and education opportunities that can lead to a more highly specialized labor, which increases the salary level. With increase in salary level the income of population also increases, which induces greater demand for housing that consequently increases the housing prices (De La Paz 2003, 111). On the other hand the implication of this hypothesis for the real estate managers is to influence the real estate markets through active employment policies, educational policies, and legislative measures.

As Mojca Štritof Brus (2009) argues 'the legislation is a nation's primary point of influence over the real estate market' (Grum and Salaj 2010, 113). In this regard, the Kosovo real estate managers should learn from the practices of Slovenia and influence the adoption of laws similar to Partially Subsidising of Full-Time Work Act ('Zakon o delnem subvencioniranju polnega delovnega časa' 2009) or Partial Reimbursement of Payment Compensation Act ('Zakon o delnem povračilu nadomestila plač' 2009), which both aim at decreasing the unemployment rate and increase the household income, which in turn leads to higher housing prices (Grum and Salaj 2010, 113).

Although the fourth hypothesized relationship between construc-

tion costs and housing prices was not verified in the Kosovo context, Kosovo real estate managers can benefit from the findings of validated hypothesized link in Slovenian context and other empirical evidence argued by Golob, Bastič, and Pšunder (2012) that one of the factors that influences the housing value and the speed of sales is the construction quality. The real estate managers should understand that the construction quality will bring them higher profits as housing prices increase and also increase the real estate demand. Real estate managers could achieve this by influencing the policy makers to intervene through increasing the construction quality in Kosovo by imposing stricter requirements in the Unified Construction Code of Kosovo. The construction quality can be considered as a service quality and as Burböck argues there is a link between the service quality and customer satisfaction explained through prospect theory (Burböck 2014). According to prospect theory, the greater the service quality, which in the context of the present study can be reflected through higher construction quality, the greater the customer satisfaction that in turn results in higher demand for quality housing services.

## Conclusions

The present study examined the influence of various fundamental economic factors on housing prices in Kosovo and Slovenia. The objective of the present study was to establish whether participants from different national backgrounds express statistically significant differences in terms of their perception of which fundamental economic factors influence the housing price dynamics in these two respective countries. The present study employed the research in terms of the following fundamental economic factors that influence the housing prices in both respective countries: gross domestic product, real interest rates, demographics, and construction costs. The study followed the hypotheses that suggest that there are no statistically significant differences in the perception of Kosovar and Slovenian respondents about the fundamental economic factors influencing the housing prices in Kosovo and Slovenia.

The study used a survey questionnaire as the primary instrument for measuring the respondents' perceptions about which fundamental economic factors influence the housing prices in their respective countries. The main goal of this research was to reveal which fundamental economic factors have a decisive influence on housing prices in Kosovo and Slovenia.

To answer the basic research question and to achieve the research

objective, this study developed a basic theoretical and conceptual model. Based on sound reasoning of modification indices in Structural Equation Modeling (SEM) analysis the proposed model was tested and slightly modified and compared with the overall measurement model to identify the better fitted model. This identified several items as not fitting to the model and upon their deletion the proposed model was modified. This process identified the modified proposed model as parsimonious and with better explanatory power and a better fitting to the data and the theory. In this model it was found that gross domestic product, real interest rates, and demographics are the significant contributory determinants of housing prices in Kosovo. On the other hand, the Structural Equation Modeling (SEM) analysis did not support the validation of construction costs as a significant contributory determinant of housing prices in Kosovo despite the two variables being highly correlated under correlation matrix. By contrast, the construction costs were found to be an significant factor in determining the housing prices in Slovenia. The Structural Equation Modeling (SEM) analysis dismissed the theoretical expectation that construction costs play a positive role in housing prices in Kosovo.

The overall findings of this study extended the use of several basic economic theories: conventional economic theory, Keynesian economic theory, gradient consumption theory, user cost theory, life cycle theory, and Tobin's Q Investment Theory in a new research context by using these theories as theoretical bases for the tested variables. Further, the present thesis signifies the usefulness of these economic theories in understanding the influence of these macroeconomic variables in housing price dynamics as a remarkable endeavor in real estate economic theory.

In this regard, Kosovar and Slovenian respondents had similar perceptions that gross domestic product, real interest rates, and demographics have an influence on the housing prices in Kosovo and Slovenia. The only difference was with the variable of construction costs. Kosovar respondents had low perception of the influence of construction costs on housing prices in Kosovo. On the other hand Slovenian respondents validate the influence of construction costs as an independent variable on housing prices in Slovenia.

By validating the set hypotheses that determine the fundamental economic factors that influence the housing prices in Kosovo and Slovenia, we have contributed to science in the construction industry, partly scientific disciplines, and real estate economics. First, the results obtained will help real estate developers to understand how

economic cycles affect the housing prices and when is the best time for them to benefit of housing price peaks. Second, the study will also help real estate appraisers in understanding that certain housing price cycles may be because of the influence of macroeconomic factors and not because of the manipulations of the participants in the market. Finally, the findings of the study will help also policy makers to know how they can influence the housing markets in Kosovo and Slovenia through policies and legislation.

Finally, over the last decades the housing markets were explained through the conventional economic theories of supply and demand. The present study attempts to establish a theoretical framework, which tries to use several other economic theories through which the influence of macroeconomic factors over housing prices and housing markets is exercised. The use of these theories serves as an impressive recognition of the contribution of this study in a new research setting. It is in this light that the contribution of this study can be further examined and analyzed.

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