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Factors affecting housing prices with an environmental approach (Comparison of some developed and developing countries)

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EXTENDED ABSTRACT

INTRODUCTION

Housing, as an asset and shelter after food and clothing, is the most basic human need, which is very important for the life and survival of the individual as well as for the society. Changes in housing prices, on the one hand, as the main asset in households' portfolios, will lead to changes in individual wealth over time, and on the other hand, fluctuations in housing prices, especially their rapid increases, are among the threats that governments aim to provide access to. People face challenges in housing. This issue has become more important especially in recent decades with population growth, urbanization and the formation of new families. Air pollution as one of the most important environmental concerns of this century and the result of increasing population and urbanization and housing construction threatens the lives of millions of people in developing countries as well as in developed and industrialized countries. Therefore, considering the importance of air pollution and its impact on housing and housing prices, this research tries to use the panel data technique of the effect of air pollution on housing prices in developed countries (including: Norway, Switzerland, Australia, Iceland, Denmark, America , Japan and the Czech

Republic) and developing countries (including: Turkey, Mexico, Brazil, China, Colombia, South Africa, Indonesia, India) during the period of time (2010-2017) and then this review for Iran using self-explanatory vector technique with extended non-linear intervals (NARDL) and during the years (1375-1996).

METHODOLOGY

As mentioned in the introduction, the purpose of this research is to analyze the impact of air pollution and some economic variables on housing prices in developing countries, developed countries and Iran. For this purpose, the following model has been used:

$$LogRHP_t = \beta_1 + \beta_2 LogAPI_t + \beta_3 LogY_t + \beta_4 LogM2_t + \beta_5 LogCPI_t + \beta_6 LogER_t + \beta_7 IR_t + \varepsilon_t$$

Which in this model:

$LogRHP_t$: Logarithm of housing price in year t

$LogAPI_t$: Logarithm of air pollution index in year t

$LogY_t$: Logarithm of per capita income in year t

$LogM2_t$: Logarithm of liquidity in year t

$LogCPI_t$: Logarithm of the price index of consumer goods and services in year t

$LogER_t$: Logarithm of exchange rate in year t

IR_t: Interest rate in year t

It is important to mention two points here: First, the index considered for air pollution is the amount of suspended particles PM2.5. Second; The base year is 2010 for developed and developing countries and 2010 for Iran.

The desired statistical information, which is in the form of a time series, was collected through the information portal of the World Bank, the International Monetary Fund, the Organization for Economic Cooperation and Development, the Central Bank of Iran, the Statistical Center of Iran, and the energy balance sheet.

FINDINGS

The impact of air pollution on housing prices in developed and developing countries:

Due to the short period of time (due to the limited access to information) and the invalidity of the results of the unit root test in these conditions, in the first step, the problem of heterogeneity of units was investigated using

the F-test statistic of Limer. Considering that the probability value of the F test for both groups of developed and developing countries is less than 0.01, therefore, Panel Data technique is used to estimate the model in both groups of countries. As the next step to examine the correlation between disturbance components and explanatory variables (i.e. choosing between the fixed effects method and the random effects method), the Hausman test was performed, and the results of this test indicated a probability value smaller than 0.01 for both groups of countries. Investigating and applying the fixed effects method.

The results of model estimation are as follows:

In developed countries, air pollution leads to a decrease in housing prices by 30%. But in developing countries, there is no significant relationship between air pollution and housing prices. The effect of per capita income on housing prices is positive and significant in both groups of countries under investigation. The effect of liquidity on housing prices is positive and significant in developed countries, but the effect of liquidity on housing prices is not significant in developing countries. Considering the relative stability of the consumer goods and services price index in developed countries, this index has no effect on housing prices in the aforementioned countries. In developing countries, the effect of the price index of consumer goods and services on the price of housing is positive and significant at the rate of 48%.The stability of the exchange rate in developed countries has caused this variable to have no significant effect on housing prices. But in developing countries, an increase in the exchange rate causes a 4% decrease in housing prices. The increase in interest rate causes the housing price to increase by 0.5% in developed countries and decrease by 0.2% in developing countries.

The impact of air pollution on housing prices in Iran:

As the first step, the variables used in the model were tested for reliability. The results of the ADF unit root test showed that all the variables investigated in this research were I(1) and this means that the vector self-explanatory model with wide ARDL intervals is a suitable method for analyzing the short-term and long-term behavior of the variables in this research. Then, in order to check the classical assumptions, relevant diagnostic tests were used, and the obtained results indicated that the model does not have any problems in terms of the classical assumptions, that is, there is no autocorrelation and heterogeneity of variance, and the distribution of disturbance components is normal.

The results of model estimation are as follows:

The effect of negative and positive air pollution shocks on housing prices is significant, which means that the decrease in air pollution leads to an increase in housing rent and an increase in the level of air pollution leads to a decrease in the housing rent index in Iran. An increase in per capita income leads to an increase in housing rent index. The variable coefficient of liquidity logarithm is negative and meaningless. An increase in the price index of consumer goods and services and the exchange rate will lead to an increase in housing rent. The results of the model estimation indicate the insignificant effect of the interest rate of this variable on the housing rental index in the long term, but in the short term, with the increase in the interest rate, the demand for housing rent and consequently the rent will increase.

CONCLUSION

Based on the results obtained in this study, the effect of air pollution on housing prices was negative and significant in developed countries, while this effect was insignificant in developing countries. The results of the model estimation in Iran show that air pollution has a significant effect on housing rent.

According to the obtained results, the following suggestions are presented in order to control housing prices:

- Stability of prices and prevention of excessive growth of the price index of consumer goods and services through control of liquidity and exchange rate.
- Exchange rate management: Since the fluctuations and instability of the exchange rate can leave destructive effects in the economy of the countries, therefore, the forecasting and use of tools that enable the economy of the countries to face the fluctuations of the exchange rate should be considered.

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