The Effect of Financial Integration and Housing Price on Economic Fluctuations in D8 Member Countries

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Abstract

Global, financial and regional integrations for developing countries that are not prepared to enter free trade can be the most effective way for gradual opening of national economies in such countries and merging of them in the global economy. On the other hand, the construction and housing sector needs macroeconomic capitals for up-to-dating, investment and increased employment in this sector that can attract other countries' capitals given the integration among countries and reduction of technology transfer barriers in the region which is finally led to increased production. Four dependent variables and four models are employed in the present study. Economic fluctuations are adopted from different indices of the economic sector. In the last step, the results are compared with each other indicating the innovative aspect of this study. The effect of financial integration and housing price on economic fluctuations is explored in the current study via GMM method during the time period 2000-2013. Given the obtained results, housing price causes to stimulate production and increase economic fluctuations. Similarly, integration has a positive effect on increased economic activities.

Keywords: Financial Integration, housing price, economic fluctuations.

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Introduction

Appealing to different types of integration for developing countries that are not prepared to enter free trade can be the most effective way for gradual opening of national economies in such countries and merging of them in the global economy. Under such circumstances, regional economy becomes possible through omitting tariff obstacles and other customs barriers in the region as well as access of production units to more extensive markets. In this way, barriers of capital and technology transfer in the region are eliminated and generally broader horizons are created for manufacturing units and companies. Free trade in the region can eliminate the instability arising from periodic changes of import customs policies or minimize them and thus ensures safe investment by providing the possibility of having access to greater markets for manufacturing units and companies. Also regional arrangements can respond companies' expectations to a considerable level in order to improve competitiveness across the world (Tayebi & Azerbaijani, 2002).

Two factors have been effective on increasing of financial integration during the time: securities and deregulation in the banking sector. Intensive international competition in import and export has increased global and regional integrations. Finally, all these integrations help attract more foreign capitals, increase competitive power and economic growth and development. It is noteworthy that financial integration develops internal capital markets of banks and fosters integration of capital and capital flow. Such resources have lower cost for financing than foreign resources. On the other hand, integration decreases customs tariffs and expenses.

At last, it can be stated that housing and integration are two important effective issues on economic growth in most countries. This is because each country has a separate economic system before integration is shaped but after integration, business transactions and economic cooperation among the countries are increased; economic resources of these countries are integrated; and a bigger economic system is established which decreases costs, develops international work distribution model, reallocates the resources, and increases production, trade and welfare. Besides, many occupations and jobs in the society are used due to activity in housing sector and this is led to employment and increased investment. The present study, therefore, explores the effect of financial integration and housing price on economic fluctuations in D8 member countries.

Literature review and research background

According to existing theories, integration creates greater markets and motivates big financial and global markets in order to utilize tangible assets for the firm's growth and development. This increases foreign direct investment and creates a stronger competitive environment. Because of elimination of trade restrictions, investment, and intensive international competition, companies often intend to merge with their stronger competitors. When companies are integrated with each other and create a bigger company, investment for research, development and marketing is increased; intangible assets of the company and thus foreign direct investment are enhanced; and finally the

country's growth and production are improved. On the other side, housing sector is one of the cases that has always been proposed in growth and production of a country.

Recent studies show that housing market is often inefficient and is modified quietly with regard to the changes under market conditions. Housing sector policymakers intend to use tools which can control price fluctuation and housing investment and prevent from shaping or disintegrating of housing price bubble or at least reduce its intensity. Optimal economic policy should be able to stabilize residential investment in long term growth process besides controlling housing price bubble and fluctuation and at the same time it should not decrease investment in this sector. Undoubtedly, price fluctuation as the most important effective variable on investment decreases investors' trust and fluctuation of production and investment in the above sector. Housing is one of the important sectors of national economy that allocates more than 20% of gross domestic product and more than 30% of capital creation to itself. Thus, the major concern of economic policymakers is that policies which control housing price bubble and fluctuation decrease investment, production growth, and employment. Importance of housing in national economy is highlighted by proposing it as one of the major sub-sectors of economy. Among all economic sectors in developed or developing countries, housing allocates one of the biggest volumes of capitals to itself. Hence, there is a direct relationship between macro economy indexes and housing investment and development; housing investment and employment; housing policymaking and organizational structure as well as housing viewpoint as a socio-economic and productive not consumptive investment. Increasing of investment in housing sector increases investment in other economic fields and as a result increases production and employment. At national scale, housing is effective on inflation, labor mobility, and government budget through tax and subsidy. Housing price and subsidies in this sector are one of the most important economic topics in different countries. Totally, it can be stated that investment in housing sector is productive investment and its difference with other sectors is its long term output. One of the most basic issues in the process of economic growth and development of countries is employment and importance of human resources.

Planning and policymaking to provide the possibilities which reinforce human resources and supply the related resources are the priorities of economy in advanced industrial countries. Some steps have also been taken in this regard in developing contraries. The effect of economic policies of the government on human resources especially employment and labor market is obvious that is true about Iran's economy too.

Two significant viewpoints are mentioned about the relationship between residential investment and economic growth. The first theory is a viewpoint based on Kinzi's theory that the government considers employment and total demand as the most important policy tool to direct the economy towards general equilibrium. According to this viewpoint, if housing investment can change employment level or total demand, it is used as a policy tool to improve economic growth. Second, governments can employ neoclassical growth theory that emphasizes the importance of investment and saving in economic growth to explain use of public payments in housing investment.

Likewise, effects of different integrations on economic fluctuations and business cycles regarding liberalization of international and national capital markets have been

studied in different countries (e.g., Peek & Rosengren, 2000; Morgan, Rimeh & Strahan, 2004; Demyanyk, Ostergaard & Sorenson, 2007; Kalemli-Ozcan, Papaioannou & Peydró, 2013; Imai & Takarabe, 2011; Cetorelli & Goldberg, 2012). The effects of capital supply shocks have been explored in many of these studies and it has been indicated that integration can harmonize business cycles. Also, it is observable that integrations can reinforce profitability in strong and stable credit environments.

Morgan, Rimeh and Strahan (2004) proved that integrations can reinforce modification of local cycles theoretically which depends on resources of that shock. These integrations decrease the effects of credit supply shocks that are shared across all local regions. In the 1980's and 1990's, credit shocks were the major source of instability in business cycles (Bernanke & Lown, 1991). Ever-increasing development of firms and regional and economic unions, integration of financial markets, monetary union, free exchange of goods and capital transfer are appearances of globalization of economy. Globalization along with internationalization of global markets provides the ground for stabilization of efficient economies by creating a competitive environment.

Since development of economic and financial integrations increases the volume of tariffs for non-member countries, these countries prefer to enter the EU countries directly and invest and produce goods and services instead of exporting their manufacturing products to those countries. Finally, according to the last method that is based on customs union theory and domestic market, capital creation due to investment inflow from non-member countries into customs unions is the strategic response of multinational economic institutes to trade diversion effects (Yannopoulos, 1990).

Loutskina and Strahan (2015) explored this issue in a paper entitled "integration, housing and economic fluctuations". They indicated that the recent big financial recession showed sensitivity of the economy to housing sector. According to this study, integration has reinforced positive effects of housing price shock on economy during the time period 1994-2006. In this study, variety in credit supply across local markets under the protection of government is considered to measure housing price changes. The findings reveal that housing price shocks stimulate economic growth. This effect is more prominent where there is more integration that is done via the loan market and bank branches. Integrations as a result of increased shocks associated with collaterals in local economy increase economic fluctuations.

In a study entitled "are financial integrations effective on real exchange rate fluctuations and equity market returns?" Donadelli and Paradiso (2014) have investigated this issue. The existing empirical studies show that financial integrations are effective on behavior of average excess return, equity market returns (EMR), and real exchange rate fluctuations (RER). Moreover, the issue that how financial integrations are effective on correlation of equity market returns in the US and Canada as well as real exchange rate fluctuations in the US was examined by means of a model in two developed countries with recursive priorities, total markets and high innovations. The findings disclosed that sharing risk is increased when fluctuations are enhanced. Second, it is led to strong and positive correlation of mutual equity market returns in all countries. Both values were higher than pricing information of assets in the US-Canada. In contrast, values of

international consumption are weakly sensitive to change at the consumption level and risk.

In a study entitled "are financial development fluctuations effective on industrial growth fluctuations?" Huang et al (2014) explored whether or not financial development fluctuations play a role in determining industrial growth fluctuations. The findings include three important points. First, more instable financial development with higher fluctuations has an incremental role in industrial development of sectors that are more relied on foreign liquidity. Second, positive effect of financial fluctuations on fluctuations of industries that mainly operate through increased fluctuations in value-added growth in each company is more prominent. Third, banking sector and stock market fluctuations have a positive relation with higher industrial growth fluctuations. This is in contrast with the existing literature and shows that financial structure is not important in total state.

Research model and variables

Annual percentage of change at housing prince index level was used in this study to measure housing price growth. Four criterions were employed to evaluate economic growth: 1) revenue, 2) housing sector employment, 3- employment without considering housing sector employment, and 4) gross domestic product. In order to use fluctuations of these variables, Garch method was utilized.

The major purpose of this study is to explore causal relationship of the effect of different types of integration and housing price on the whole economy that requires some criterions. Financial integration index was exploited based on Ivan et al's study (2006) that is calculated as below:

$$FII_{it} = \frac{FI_{it} - Min_{FI}}{Max_{FI} - Min_{FI}}$$

where FII is financial integration; FI is ratio of financial assets to gross domestic product; and FI Min and FI Max are minimum and maximum of this variable.

Following Loutskina and Strahan (2015), the effect of different types of integration and housing price on economic fluctuations was explored using GMM method. Estimated regression equations are as follows:

$$Y = \alpha_0 + \alpha_1 HPG + \alpha_2 IN + \alpha_3 S + \alpha_4 P + \alpha_5 EF \tag{1}$$

$$em = \alpha_0 + \alpha_1 HPG + \alpha_2 IN + \alpha_3 S + \alpha_4 P + \alpha_5 ER + \varepsilon \tag{2}$$

$$em2 = \alpha_0 + \alpha_1 HPG + \alpha_2 IN + \alpha_3 S + \alpha_4 P + \alpha_5 ER + \varepsilon \tag{3}$$

$$GDP = \alpha_0 + \alpha_1 HPG + \alpha_2 IN + \alpha_3 S + \alpha_4 P + \alpha_5 ER + \varepsilon \tag{4}$$

Annual percentage of change at housing prince index level was used in this study to measure housing price growth. Four criterions were employed to evaluate economic

growth: 1) revenue (Y), 2) housing sector employment (em), 3- employment without considering housing sector employment ($em2$), and 4) gross domestic product (GDP). In order to use fluctuations of these variables, their degree of fluctuation was determined.

Independent variables include housing price growth and financial integration IN. Control variables include stock price (S), inflation (P), and exchange rate (ER).

Estimation of research models

First, fluctuation of the dependent variables is determined and then the research models are estimated. In the next step, stationary of research variables is examined through Levin-Lin-Chu test which shows stationary of the variables.

Table 1. Stationary of research variables

Variable	Levin-Lin-Chu test	Prob.	Result
GDP	-2.39781	0.0082	I(0)
Y	-2.14254	0.0161	I(0)
EM1	-2.78063	0.0027	I(0)
EM2	-2.94392	0.0016	I(0)
HPG	-4.51395	0.0000	I(0)
IN1	-5.19806	0.0000	I(0)
IN2	-8.01372	0.0000	I(0)
IN3	-17.2670	0.0000	I(0)
S	-2.84565	0.0022	I(0)
P	-9.53012	0.0000	I(0)
ER	-5.75278	0.0000	I(0)

In the present study, GMM method with panel data was used to estimate the intended model. Crosse-section (weight) was performed via software based on each country. Problem of variance dissimilarity in panel data was eliminated after weighting. The null hypothesis is about variance similarity and the alternative hypothesis is about variance dissimilarity. In equations where special unobservable effects of each country and lag of the dependent variable in explanatory variables are the major problem in their estimation, GMM estimator is used that is based on dynamic panel models (Barro & Lee, 1996). To estimate the model by this method, it is necessary to determine instrumental variables used in the model. GMM estimator consistency depends on validity of lack of serial correlation of error terms and tools that can be tested via two proposed tests by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998). The first is Sargan test about pre-determined limitations that tests whether the tools are valid or not. H0 was not rejected in both tests which shows evidences regarding lack of serial correlation and reliability of tools. GMM estimator has consistency if there is not second-order serial correlation in error terms from first-order difference equation.

Results of estimating the first equation via GMM method during the time period 2000-2013 are shown in Table 2. The first equation is as below:

$$Y = \alpha_0 + \alpha_1 HPG + \alpha_2 IN + \alpha_3 S + \alpha_4 P + \alpha_5 ER + \varepsilon$$

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Table 2. Estimating the first model

Variable	Coefficient	Std. Error	T-Statistic	Prob.
Y(-1)	0.692505	0.074281	9.322960	0.0000
ER	0.030691	0.009311	3.296187	0.0011
HPG	1.249005	0.318291	3.924098	0.0001
IN1	0.953123	0.532112	1.791207	0.0804
IN2	1.814390	0.243361	7.455580	0.0000
IN3	1.258596	0.629285	2.000040	0.0512
P	-0.030885	0.009691	-3.187289	0.0025
S	0.108700	0.059155	1.837539	0.0723
	$R^2 = 0.98$	Adjusted R^2 = 0.95	Durbin-Watson = 1.57	J-statistic = 45.13

Coefficient of determination (R^2) shows suitable goodness of the model and the employed variables show explanatory power of the model that is equal to 98%. Durbin-Watson statistic illustrates lack of autocorrelation that is equal to 1.57. Thus, probability coefficients indicate efficiency of all variables in the study and their significance. J-statistic is Sargan statistic that is used to test correlation of residues and instrumental variables. Sargan test statistic which is equal to 45.133 has chi-square distribution with degree of freedom equal to too many distinct constraints which rejects H0 regarding that residues are correlated with instrumental variables. Hence, validity of results for interpretation is confirmed. In interpreting j-statistic, it can be stated that correlation among estimation residues that can be led to bias in estimated coefficients is rejected. Indeed, this test examines the relationship among estimation residues to test autocorrelation problem as one of the probable classic problems of regression. Finally, existence of such autocorrelation is rejected and estimation results are totally precise and without any bias.

Results of the first model are as below:

Results of the first model show that the effect of increasing of housing price index (HPG) and financial integration *IN* on the dependent variable, i.e. revenue (Y) is positive and significant. This reveals that integration and housing sector growth will be resulted in revenue growth.

Results of estimating the second equation via GMM method for the time period 2000-2013 are displayed in Table 3. The second equation is as below:

$$em = \alpha_0 + \alpha_1 HPG + \alpha_2 IN + \alpha_3 S + \alpha_4 P + \alpha_5 ER + \varepsilon$$

Table 3. Estimating the second model

Variable	Coefficient	Std. Error	t-Statistic	Prob
EM1(-1)	0.697962	0.103746	6.727630	0.0000
ER	0.058633	0.007866	7.453838	0.0000
HPG	1.148907	0.127554	9.007228	0.0000
IN1	0.809976	0.345847	2.342010	0.0338
IN2	0.012450	0.006043	2.060075	0.0523
IN3	0.638099	0.301702	2.115001	0.0462
P	-0.090417	0.051508	-1.755414	0.0964
S	0.506118	0.230298	2.197666	0.0405
	$R^2 = 0.94$	Adjusted $R^2 =$ 0.93	Durbin-Watson = 1.63	J-statistic = 42.12

Coefficient of determination (R2) shows suitable goodness of the model and the employed variables show explanatory power of the model is equal to 94%. Durbin-Watson statistic illustrates lack of autocorrelation that is equal to 1.6. J-statistic is Sargan statistic that is used to test correlation of residues and instrumental variables. As it is observed in Table 4.8, Sargan test statistic is equal to 45.133 which has chi-square distribution with degree of freedom equal to too many distinct constraints. It rejects H0 regarding that residues are correlated with instrumental variables. Hence, validity of results for interpretation is confirmed.

Results of the second model are as below:

Results of the second model show that the effect of increasing of housing price index (HPG) and financial integration *IN* on the dependent variable, i.e. housing sector employment (*em*) is positive and significant. This reveals that integration and housing sector growth will be resulted in the growth of housing sector employment.

Results of estimating the third equation via GMM method for the time period 2000-2013 are displayed in Table 4. The third equation is as below:

$$em2 = \alpha_0 + \alpha_1 HPG + \alpha_2 IN + \alpha_3 S + \alpha_4 P + \alpha_5 ER + \varepsilon$$

Table 4. Estimation of the third model

Variable	Coefficient	Std. Error	t-Statistic	Prob
EM2(-1)	1.459651	0.945341	1.544049	0.1294
ER	0.507400	0.203702	2.490896	0.0258
HPG	0.070199	0.033392	2.102258	0.0459
IN1	0.580473	0.317596	1.827706	0.0741
IN2	0.986827	0.573426	1.720933	0.0912
IN3	0.890416	0.130442	6.826130	0.0000
P	-0.808235	0.423531	-1.908327	0.0658
S	0.092957	0.043325	2.145566	0.0372
	$R^2 = 0.97$	Adjusted $R^2 =$ 0.92	Durbin-Watson = 2.03	J-statistic = 49.38

Coefficient of determination (R^2) shows suitable goodness of the model and the employed variables show explanatory power of the model is equal to 97%. Durbin-Watson statistic illustrates lack of autocorrelation that is equal to 1.67. J-statistic is Sargan statistic that is used to test correlation of residues and instrumental variables. As it is observed in Table 4-7, all estimated variables have consistent signs with the theory. Sargan test statistic that is equal to 45.133 has chi-square distribution with degree of freedom equal to too many distinct constraints which rejects H0 regarding that residues are correlated with instrumental variables. Hence, validity of the results for interpretation is confirmed.

Results of the third model are as below:

Results of the third model show that the effect of increasing of housing price index (HPG) and financial integration *IN* on the dependent variable, i.e. employment without considering housing sector employment (EM2) is positive and significant. This reveals that integration and housing sector growth will be resulted in the growth of employment without considering housing sector employment.

Results of estimating the fourth equation via GMM method for the time period 2000-2013 are displayed in Table 5. The fourth equation is as below:

$$GDP = \alpha_0 + \alpha_1 HPG + \alpha_2 IN + \alpha_3 S + \alpha_4 P + \alpha_5 ER + \varepsilon$$

Table 4. Estimating the fourth model

Variable	Coefficient	Std. Error	t-Statistic	Prob
GDP(-1)	0.654508	0.078327	8.356127	0.0000
ER	0.031740	0.015841	2.003778	0.0400
HPG	1.778905	0.608494	2.923455	0.0023
IN1	0.087202	0.048706	1.788377	0.0896
IN2	1.747508	0.935752	1.867490	0.0679
IN3	1.161117	0.641757	1.809279	0.0767
P	-0.028368	0.010729	-2.644058	0.0110
S	0.062285	0.010587	5.883357	0.0000
	R^2= 0.95	Adjusted R^2= 0.89	Durbin-Watson = 1.87	J-statistic = 45.88

Coefficient of determination (R^2) shows suitable goodness of the model and the employed variables show explanatory power of the model is equal to 95%. Durbin-Watson statistic illustrates lack of autocorrelation that is equal to 1.87. J-statistic is Sargan statistic that is used to test correlation of residues and instrumental variables. As it is observed in Table 5, all estimated variables have consistent signs with the theory. Sargan test statistic that is equal to 45.88 has chi-square distribution with degree of freedom equal to too many distinct constraints which rejects H0 regarding that residues are correlated with instrumental variables. Hence, validity of the results for interpretation is confirmed.

Results of the fourth model are as below:

Results of the fourth model show that the effect of increasing of housing price index (HPG) and financial integration *IN* on the dependent variable, i.e. gross domestic product (GDP) is positive and significant. This reveals that integration and housing sector growth will be resulted in GDP growth.

Conclusion and recommendations

The results show that the effect of increased housing price index (HPG) and financial integration *IN* on the dependent variables is positive and significant in all four models. According to the results, increased housing price index will increase revenue in the first place and then it increases employment in housing sector and other sectors by developing the above sectors. In fact, housing sector has too many anterior and posterior links that can develop other sectors too. Consequently, the results in model 4 show the positive and significant effect of housing sector price on total gross domestic product. It indicates that this sector is a major and infrastructural sector for the country's economic growth and development.

Also, the results disclose that financial integration has a positive and significant effect on the dependent variables in all four models. These results demonstrate that increasing of financial integration index increases revenue in the first place and then will increase employment in housing sector and other sectors by developing these sectors. Financial integration is indeed an effective policy on production that can develop other sectors. The results in model 4 show the positive and significant effect of financial integration on total gross domestic product. This shows that the above policy is a major and infrastructural strategy for economic growth and development.

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