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The Impact of Financial Stress on Iran per Capita GDP over the Period 2000(3)-2011(1)

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Abstract

Stress in financial markets influences economic agents' behavior by creating uncertainty and changing the expectations. Critical financial stress can lead to financial crisis. Financial crises are among the events always present in the world economy. Iran is not an exception. This paper aims to study the impact of financial stresses on Iran's per capita GDP. By using ARDL (Auto Regressive Distributed Lags), the effects of financial stress indices, including foreign currency, stock, and banking markets on Iran's GDP per capita is estimated. Our findings show that financial stresses in currency market and stock market have positive and negative effects on economic growth respectively. Banking stresses have a positive influence on economic growth. The cumulative impact of financial stresses is positive on Iran's economy, but is different from the effect of banking stresses with respect to intensity.

***Keywords**: Financial crisis, Banking crisis, Stock crisis, Currency crisis, Economic growth, ARDL model*

***JEL Classification:** E44, G01, O11, O16*

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1. Introduction

Financial Stress has been observed with various severities in all societies and during different periods of time. The importance of financial stress is studied using proxies available from information about related variables. Stresses have a variety of effects, so that a relevant proxy for a given sector may show different effects on other sectors. This results from differences in information about variables.

Empirical studies use applied definitions to identify financial stress. Frankel and Rose (1996) and Ferrett and Razin (1998) use a definite percentage of decrease in currency value as the measure to determine financial stress. Barro (2001) combines the decrease in currency value and Banks' Bankruptcy Index to identify financial stress. Various factors including price bubble in assets, shocks to financial sector, liquidity risk, and uncertainty about the financial safety of assets may lead to financial stress. Prior studies suggest that Iran's economic environment has experienced the above-mentioned stress.

The current study aims to investigate the impact of financial and banking stresses on GDP. Considering the financial structures of the economy of Iran, three prominent markets, monetary, credit (banking sector), and financial (stock and foreign currency) are selected. Choosing the variables is one of the important stages in creating the financial stress index. Currency to money (M1) ratio, money to liquidity (M2) ratio, and ratio of banks' liability to central bank to total money base are variables used for banking sector. Foreign market exchange rate index (average sales), is the variable for currency market, and finally stock price index is considered for stock market. The remaining parts of the paper are organized as follows: Literature review, Theoretical background, Studying and estimating the pattern, Analyzing the data, and Conclusion.

2. Literature Review

Crisis is generally applied to any kind of disturbance or disequilibrium in the prevalent order in a given area. When active systems lose their usual performance due to internal or external factors and system elements undergo substantial changes, an uncertain abnormal situation appears. The severity of the situation imposes a shock or a crisis to the system. This change may influence the performance of related systems and lead to system or non-system consequences (Marjan, 2000).

The most comprehensive definition of financial crises seems to be developed by Mishkin (2002): a financial crisis is a disruption in financial markets in which adverse selection and moral hazard problems become much worse, so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities. As a result, a financial crisis can drive the economy away from equilibrium with high output in which financial markets perform well to one in which output declines sharply (Dargahi and Nikjo, 2012). Such factors as asset price bubbles, inappropriate allocation of funds during a financial crisis or financial stress are more effective than others. Increase in economic stability in monetary and financial domains results in more investments by depositors. Shocks to financial sector influences real sector economy and consequently clients fail to fulfill their commitments to banking system. This leads to financial crisis. High level of confidence and decreasing risk help to minimize the damages from banking crisis. High liquidity risk as an indicator of financial market liquidity state would lessen the level of economic activities, because it lowers the power of financing and obtaining loans by investors, and as a result, it leads to a drop in transactions and liquidity. Lack of confidence and financial health of assets, along with the impact of financial pressure on economic performance influence the currency market and banks' financial structure due to the decrease in

deposits. As a result, investment opportunities transfer to non-monetary markets. This in return leads to crisis and sharp drop in economic growth.

3. Theoretical Background (financial crisis and its fundamental concepts)

Financial crisis refers to a situation in which due to market rush, the value of a local currency and/or international resources drops rapidly (Naderi, 2007). Here, types of financial crises are introduced briefly.

Banking crisis: It refers to a situation in which a large number of banks in a country face great difficulties in repayment of contracts and liabilities (Naderi, 2007). Due to specific characteristics and conditions, banks are always subject to risk and crisis in fierce situations. Weakness in the macroeconomic structure, low economic growth rates and hyperinflation may lead to an abrupt banking crisis. There are other factors leading to crisis in banking sector including high level of leverage, small amount of capital in relation to balance sheets in comparison to other business firms, lack of time symmetry between maturity of assets and liabilities, the necessity of maintaining the trust of depositors in banks, various risks such as currency risk, lack of clearance in financial statements due to rapid changes in balance sheet items, high levels of real interest rate, increasing credit in private sector, and increasing volume of credits, withdrawing money by depositors at one time, weaker formal institutions in economy, and the type of banks ownership may also lead to banking crisis. Public ownership in banking sector decreases the competition, productivity, and growth in the system. By creating a distrust of the performance of internal financial institutions, banking crisis leads to decrease in internal savings and significant increase in capital outflow. Serious problems and bankruptcy will prevail among all banks and institutions; consequently, the entire banking system and the macroeconomic environment will be involved. In such a situation the banking crisis ruins the country's economy (Noori et al., 1999).

Crises resulted from speculative and foreign currency crisis: It refers to a situation in which the drop in the value of local currency results in a considerable decrease in foreign currency savings or increase in interest rate (Frankel and Rose, 1996). Stock market crisis is a sharp drop in the stock market index. This may be a sign of losing more expectations (Edison, 2003). Stock market and its impact on firms financing impose a fundamental effect on economic growth. Stock market provides the motivation to save money and turning them into investment. It, therefore, plays an important role in accelerating economic growth. Foreign exchange rate is another variable that can influence economic performance and variables. Stock market and currency market are considered as sensitive sectors in financial market. They are subject to fluctuations and business cycles in economy. They reflect economic changes immediately as well. Disturbance in one of these markets or both is the cause of concern among policy makers. Asset bubble is formed when the prices of asset rise dynamically above its steady-state value. Price bubble occurs when traders are buying a given asset with the aim of selling it later at a higher price without caring about the possible return from the asset. Anyway, an economic bubble is followed by a drop in prices. In such a situation traders buy as much as they expect other traders to do so. When a large number of traders decide to sell their assets, prices drop sharply and the price bubble bursts. This is followed by a financial crisis (Hlafy et al., 2004).

Generally, common financial crises may result from: First, excess investment which occurs when the volume of investments is higher than that of savings. Investment resources can be accomplished directly or indirectly. Direct investment is for goods production a main proportion of which is allocated to domestic demand and the excess thereof is allocated to export. Indirect investment is guided toward monetary market, capital market, and properties. Decrease in export level due to weak competitiveness, short-term

loans for long-term investments, international speculations, and housing investments are some possible causes of crisis (Yu and Xu, 2001). Second, excess saving which occurs when savings are higher than investments. This in turn leads to financial bubble. As such savings may not be available, it is expected that capital be invested indirectly in stock exchange and housing markets. As a result, stock exchange experiences a high level of growth and housing prices rise sharply. Many speculators spend the money from stock to buy houses. Consequently, the housing price continues to rise until the sharp price falls abruptly and the bubble bursts.

4. Studying and Estimating the Pattern (empirical literature)

Using quarterly data on such financial markets as in monetary, housing, stock and currency, Dargahi and Nikjo (2012) built up a compound index for financial stress in the economy of Iran over the period 2004-2009. They studied the impact of the index on the economy of Iran by using an inductive method. Their findings show that Iran has experienced lots of financial stresses. The impact of long-term and short-term stresses of financial markets on economic growth is negative and significant. Stresses in banking sector is more important than those in other markets.

Hadiyan and Tahvili (2013) investigated the impact of uncertainty resulted from changes in financial policies on investments in private sector of Iran over period 1973-2009. Using Generalized Atuo-Rergeressive Conditional Heterodasticity (GARCH), they studied government financial policies by two proxies as the uncertainty variables: budget deficit and tax fluctuations. In addition, using Auto Regressive Distributed Lags (ARDL), they estimated the association between the above-mentioned uncertainty and investment in private sector. Their findings show that budget deficit has a negative short-time impact on investment in private sector. The same relationship goes with tax fluctuations and investments in private sector, but in long-run.

In order to evaluate banks vulnerability to changes in economic situation, Heidari and Saberiyan Ranjbar (2010) explained a method of analyzing sensitivity and designing scenarios on the basis of financial stresses. They used Financial Stress Index (FSI) to estimate the importance of different sources of risk. Their findings show that macro-stress test is a useful tool to analyze the stability of a financial system under fierce, but expected, shocks. It tries to analyze ways by which a risk can transfer from one bank to the other or from one financial system to the rest of the economy.

Using monthly data on monetary and banking variables, Nadali (2013) applied monetary market stress index to evaluate banking crisis in Iran over the period 1971-2008. His findings suggest that monetary market stress index lacks stability. It has been subject to lots of fluctuations in a few years. Comparison between the situation in which Iranian banks operate and that in other countries which have experienced banking crisis, particularly developing countries, suggest that Iran's economic environment has the potential for banking crisis, although public banks and financial support from Central Bank of Iran avoid evident crisis in the economy of the country. Khezri (2008) distinguished the nature and roots of financial crisis in American economy. In addition, on the basis of Iran's economy, he analyzed the consequences of financial crises in the world economy. He argued that depression and crisis in world economy will influence the economy in developing countries including Iran. While this crisis embodies potential opportunities for Iran's economy, it creates more threats and gradually leads the domestic economy toward depression.

Zaer and Shafiee (2009) studied the impact of 2009 world financial crisis on some of macroeconomic variables in Iran. Using VAR and variance analysis, the authors studied changes in GDP, oil revenue, government expenditure, foreign business, and capital market. Their findings about the

impact of income from tax on the basis of taxes received reveal that the consequences of 2009 crisis is quite observable in the economy of Iran.

Using a CGE Model, Sadeghi and Hasanzadeh (2011) showed that decrease in the prices of exported and imported goods have greater influence on income in cities than in villages. While decrease in prices of export goods and external savings leads to a downturn in families' income, it is compensated by the decrease in prices of imported goods. Consequently, decline in global prices of Iranian goods and external savings slightly decreases family income. Using a panel co-integration method, Efthyvoulou (2012) studied the effect of financial stress on production and services sectors in 12 OECD countries over 1981-2007. Their findings reveal a significant difference between production and service sectors. Through global development, financial stresses influence workforce in production sector. This effect in service sector results from internal financial stresses. This is more certain in the whole economy than in service sector.

Using financial Stress Index (FSI) and Economic Sensitivity Index, Krzak et al. (2014) studied the economic situation in 12 East and Center European countries over 2001-2012. Their findings suggest that financial crises had negative and significant consequences in the countries studied.

Applying FSI banking, securities, and currency markets, Islami and Kurz-Kim (2013) developed a Financial Stress Index for 17 countries over a 30 year period. Their findings reveal that about half of economic attacks were followed by a drop in economic growth or depression.

Dimitrios et al. (2013) investigated whether changes in FSI is a good proxy for financial crisis. Their findings show that FSI is capable to identify the exact period of crisis. It also determines the level of systematic stress in Greece financial system.

Cevik et al. (2013a) studied attacks of financial stresses and developed a Financial Stress Index for the economic environment of Turkey over 1997-2010. Having selected the indices, they studied the relationship between financial stresses and economic activities using bi-variant VAR Model. They

concluded that financial stresses had a significant effect on economic activities in Turkey.

Cevik et al. (2013b) studied building up a Financial Stress Index for Bulgaria, Czech Republic, Hungary, Poland, and Russia. In addition, they investigated the association between financial stresses and economic activities. Their findings revealed that increasing financial stresses (estimated by variables of banking, stock, and currency markets) are likely to negatively influence the real sector economy. Increase in financial stress leads to significant decrease in economic growth. Using dynamic threshold regression and quarterly data of 16 industrial countries over 1981-2013, Chrisian et al. (2014) studied the linear relationship between growth ration and debt ratio to GDP. Their findings show that debt does not necessarily have a negative impact. Only at high levels of financial stresses, the debt to GDP ratio may impose a negative impact. The impact of debt and financial stress levels on the linkage between growth and debt is of great importance. Growth during periods of high financial stress is lower than that during periods of low financial stress. Monetary union is more sensitive to changes in debts.

5. Description of Data

The data was collected from the Central Bank website (Economic Trend Statistical Bulletin). Variables and the applied calculation method are described below. The mean and Standard Deviation for variables are presented in the tables.

Capital stock (K_t): Includes (1- the depreciation rate) multiplied by the capital stock of the earlier period + gross fixed capital formation in year t (in constant prices). Figures for gross fixed capital formation are in a million dollars and depreciation rate here is considered to be 7%.

Openness :. In this study, we consider non-oil exports + imports divided by GDP without oil production (all in million Dollars) for openness.

Per capita GDP (y) is Ln (GDP divided by active population). Working population is (active population multiplied by one) – unemployment rate. Unemployment rate and employment statistics were collected from the national indicators on the website of the Central Bank (the unemployment rate is presented in percentage).

Stock Market Stress index (*sms*) is the four seasons moving average of standard Deviation for stock price index.

Currency Stress index (*cs*) is the four seasons moving average of standard Deviation for foreign exchange rate.

Banking Finance stress index (*bfs*) is the mean of moving average of the four seasons of standard Deviation for the ratio of volume of currency to M1, the ratio of M1 to M2, and the ratio of banks' debt to the central bank / total monetary base.

Table 1: Mean, standard deviation, maximum and minimum for the variables of model

	ly	**lk**	**lop1**	**sms**	**cs**	**bfs**
Max	8.89723	10.2396	-1.2785	3695.34	402.036	0.360699
Min	8.42157	8.68942	-2.20387	186.176	8.17642	0.20823
Mean	8.631094	9.599546	-1.6174	1038.221	119.6331	28.6683
Standard Deviation	0.12095	0.413827	0.183226	853.1938	114.2773	0.071522

Source: Research Results

6. Methodology

We obtained a long-term relationship which was fulfilled by ARDL method. Following Efthyvoulou (2001), we used ARDL Model and adjusted the

model to the available model to Iran's situation. Consider the following logarithm Cobb-Douglas Production Function:

$$LnY_t = \beta_1 LnL_t + \beta_2 LnK_t + A_t \quad (1)$$

Where Y is GDP, L is the number of labors, K is the capital, A is technical development, and t is the time index.

By dividing the sides of equation (1) to Ln L_t, we will have:

$$Lny_t = \beta_1 + \beta_2 Lnk_t + A_t \quad (2)$$

Consider the technical progress as log function of openness of economy (ratio sum of export and import to GDP) and time trend variable is:

$$A_t = \beta_3 Lnopenness_t + \beta_4 T \quad (3)$$

By substituting (3) and including banking financial stress Index (bfs), currency stress Index (cs), stock market stresses Index (sms) in (2), the long-run relationship of GDP will be as follows due to the impact of financial market variables in the level of capital and investment in production function:

$$Lny_t = \beta_1 + \beta_2 t + \beta_3 Lnk_t + \beta_4 Lnopenness_t + \beta_5 bfs_t + \beta_6 cs_t + \beta_7 sms_t + e_t \quad (4)$$

The presence of the above-mentioned long-run relationship is evaluated by F banded test by Pesaran et al. (2001) and ECM. Long-run coefficients and the significance level are obtained from the same model in case of long-run relationship.

$$Lny_t = \alpha_1 + \alpha_2 t + \alpha_3 S_2 + \alpha_4 S_4 + S_1 Lny_{t-1} + \delta_2 Lnk_{t-1} +$$

$$\delta_3 Lnopenness_{t-1} + \delta_4 Lnbfs_{t-1} + \delta_5 Lncs_{t-1} + \delta_6 Lnsms_{t-1} + \sum_{n=0}^{N} {}_{Y\mathrm{n}}\, \Delta Lny_{t-n} + \sum_{m=0}^{M} \xi\, \Delta Lnk_{t-m} + \sum_{q=0}^{Q} \eta_{\mathrm{q}}\, \Delta Lnopenness_{t-q} + \sum_{p=0}^{P} \tau_{\mathrm{p}}\, \Delta Lndi_{t-p} + \sum_{s=0}^{S} \omega_{\mathrm{s}}\, \Delta Lnbfs_{t-s} + \sum_{g=0}^{G} \emptyset_{\mathrm{g}}\, \Delta Lncs_{t-g} + \sum_{v=0}^{V} \theta_{\mathrm{v}}\, \Delta Lnsms_{t-v} \qquad (5)$$

S2 and S4 are related to the dummy variables of second and fourth seasons respectively. ε_t is the variance of σ_ε^2 and a random error with zero average.

In this model, the number of optimal lags for each independent variable is identified using Swhartz-Bayesian Criterion (SBC) and Akaike Information Criterion (AIC), Hannan–Quinn information criterion (HQC), or R2. The hypothesis of presence of long-run relationship on the basis of F banded test is tested using($H_0: \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0$). EMC coefficient ($\delta_1$) indicates the dynamics of the short-run model. It shows approaching a short-run deviation to a long-run equilibrium. Finally, long-run coefficients are obtained using the following equation:

$$\beta_i = -\frac{\delta_i}{\delta_1}\ (i = 3, \dots, 7) \quad and \quad \beta_j = -\frac{\alpha_j}{\delta_1} \qquad j = 1,2$$

7. Analyzing the Data

In case of I(0) or I(1) in reliability test of variables, ECM in (5) in the framework of ARDL and Microfit 4.1 were used to determine the maximum

optimal lag on the basis of Schwartz-Bayesian measure. Using finite financial-test the long-term equilibrium relationship was evaluated. Then long-term coefficients are obtained using ECM, and finally CUSUM and CUSUMSQ structural stability test was conducted

In order to estimate ARDL, the stability of variable must be tested at I(0) or I(1). Dicky-Fuller Test and Augmented Dicky-Fuller Test were used to determine whether a unit root is present for variable. The optimal lag is determined using SBC and AIC[1]. Then computational statistic in optimal lag is compared with the critical values. In order to reject null hypothesis, the absolute value of computational statistics must be higher than its critical value. The results from Augmented Dicky-Fuller test is presented in Table 2.

As it is shown in table 2, Y, K, openness, sms, bfs, and cs are stable at the first order difference. The presence of long-run relationship is tested by comparing F-statistic from $(H_0: \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0)$ with critical value of F banded test in the case of the presence of intercept and time-trend terms in ECM in (5). As F=17.8948 is higher than the upper critical value of F banded test (4.33)[2] given by Pesaran et al. (2001), it confirms the presence of long-term relationship. In spite of the confirmed stability of the variables and the presence of long-run relationship at 5% error level, ECM estimates in the framework of ARDL (2, 2, 2, 0, 1, 1) are presented on the basis of Schwartz-Bayesian maximum level in Table 3[3].

1.This research used Schwarz-Bayesian Criteria (SBC).

2. In the presence of 5 independent variables together with intercept and time-trend terms at 5% error level

3. Calculated F-statistic in Shin and Sons (2001); in the case of 5 independent variables (with intercept, and time-trend variables) is 5.79 at less than 1% error level.

Table 2: Results of the unit root test on the variables of model

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Variable	Calculated statistic value	Critical statistic value	Test result	Calculated statistic value	Critical statistic value	Test result
Ly	-5.0465	-2.9320	stationary	-12.2594	-3.5189	stationary
Lk	-2.9749	-2.9320	stationary	-4.0382	-3.5189	stationary
Lopenness	-3.9124	-2.9320	stationary	-5.0397	-3.5189	stationary
bfs	- 3.271	-2.9378	stationary	- 3.3362	-3.5279	stationary
Dbfs	-4.3639	-2.9339	stationary	-4.3138	-3.5217	stationary
sms	-.46751	-2.9320	stationary	-1.2315	-3.5189	Non-stationary
cs	-2.2133	-2.9378	stationary	-3.0632	-3.5279	Non-stationary
Dcs	-4.7079	-2.9339	stationary	-4.7246	-3.5217	stationary

Source: Research Results

Table 3: framework of ARDL (2, 2, 2, 0, 1, 1)

Variable	Coefficient	T-statistics	Possibility
D Ln y(-1)	0.22447	0.11942	0.076
DLn y (-2)	0.84156	0.14674	0.000
D Ln y	1.6789	0.18353	0.000
D Ln y(-1)	0.28697	0.14357	0.061
D Ln y(-1)	1.4801	0.22128	0.000
D Ln openness	0.12462	0.030387	0.001
D Ln openness (-1)	-0.053741	0.042599	0.223
D Ln openness (-2)	-0.11405	0.031948	0.002
DSFS	0.4196E-4	0.7128E-5	0.013
DSFE	0.1043E-3	0.6483E-4	0.125
DSFE(-1)	0.9005E-4	0.5267E-4	0.105
DSFB	0.7376E-3	0.3848E-3	0.071
DSFB(-1)	-0.0011827	0.4409E-3	.015
C	-1.3240	1.9023	0.495
T	-0.011260	0.0032981	0.003

Variable	Coefficient	T-statistics	Possibility
Ln y(-1)	-0.52278	0.20116	0.018
Ln k(-1)	0.59870	.011914	0.000
Ln openness(-1)	-0.11594	0.059283	0.066
SFS(-1)	0.9852E-5	0.4964E-5	0.063
SFE(-1)	0.2609E-3	0.7880E-4	0.004
SFB(-1)	0.0017142	0.233E-3	0.004
S2	0.1413	0.015429	0.000
S4	0.18438	0.039739	0.000

Source: Research results

Table 4 shows the results for diagnostic tests which confirm the statistical reliability of results.

Table 4: The Diagnostic Test Statistics for ECM model

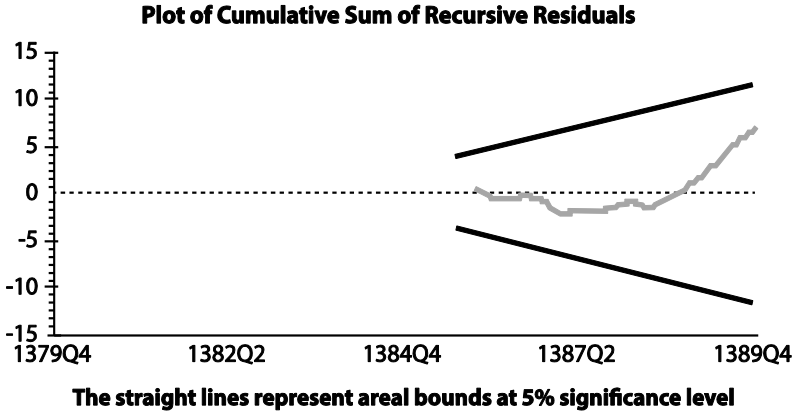
Test Statistics	LM Version	F Version
A:Serial Correlation	CHSQ(4)= 16.5488[.002]	F(4, 14)= 2.3688[.103]
B:Functional Form	CHSQ(1)= .026220[.871]	F(1, 17)= .010879[.918]
C:Normality	CHSQ(2)= .39044[.823]	Not applicable
D:Heteroscedasticity	CHSQ(1)= 2.0017[.157]	F(1, 39)= 2.0017[.165]

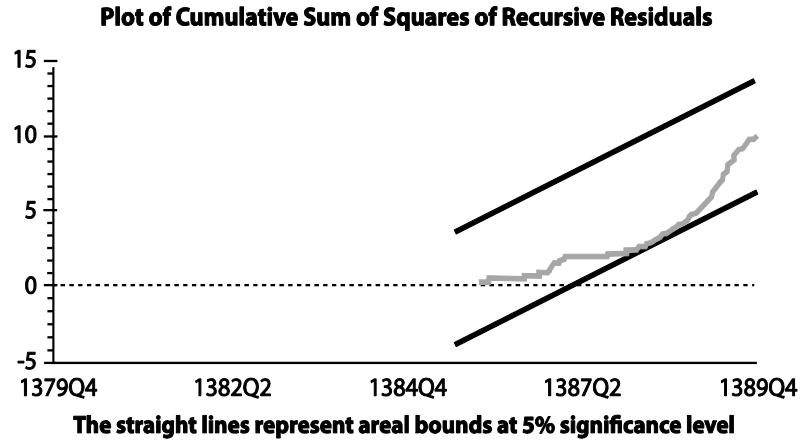
Source: Research results

In Table 4, A stands for test statistic of Lagrange multiplier. F-statistic rejects the first order serial correlation of errors at levels lower than 10%. B stands for Ramsey test showing that model does not have misspecification. C is Jarque-Bera test statistic showing the normality of residuals, and D is

heteroscedasticity variance and all are rejected at error term lower than 1% and on the basis of F and X^2 values. The stability of short-run coefficient which indicates the stability of long-run coefficients was studied using CUSUM and CUSUMSQ for ECM residuals. Both tests estimate the structural stability of parameters under H_0. Results reveal a lack of H_0 rejection. This test result confirms existence of a relationship in both short and long term.

Figure 1: The results of CUSUM and CUSUMSQ tests





Considering F banded test indicating long-run relationship, results of table 2, diagnostic tests, and the structural stability of coefficients, calculated coefficients for long-run relationship between variables of our model are presented in Table 5.

Table 5: Estimated coefficients of long-run relationship derivation from ECM model

Variable	Long-term rates	Standard deviation	T-statistics
Ln k	1.1450624	0.4670674	2.452
Ln openness	-0.2217377	-0.1119754	1.980
sms	0.0000100299	0.0000188422	1.879
sc	0.0004990	0.0002064	2.418
sfb	0.0032784	-0.0014700	-2.230
C	-2.5321782	-4.4582362	0.5679776
T	-0.0215350	-0.0114819	1.8755584

Source: Research results

As it is shown in table 5, all independent variables, from a statistical point of view, have a significant long-run relationship. Being statistically significant for per capita capital and Banking Stress Indices at 1% error term, economic openness at 5% is confirmed. It is 10% for currency and Stock Stress Index. Per capita capital variables, Banking Stress Indices, and stock market variables are positively related with the dependent variable in long-run. Economic openness and currency stress index are negatively related with the dependent variable. A significance level of 99% and ECM coefficient in Table 3 suggest that about 52% of short-run deviations in each period is augmented toward long-run equilibrium. In other words, each deviation from long-run equilibrium is adjusted over both periods and long-run equilibrium holds again.

Conclusion

Calculations of trends and values show that 1% increase in capital and economic openness results in 1.45% and 22% increase in dependent variable respectively. 1% increase in stresses in stock market and banking market (sfb and sfs) leads to 1.019 % and 0.00093% increase in production respectively, while 1% increase in stress in foreign currency ratio (sfe) results in 0.059% decrease in production level. In addition, Chi square (10.9689) from the main null hypothesis and ineffectiveness of cumulative effect of financial stresses (the sum of variables *sfs* and *sfe* with positive and negative effect on production respectively) suggest that financial stress affects economic growth. The positive effect of stock market on production is probably due to the increasing stock price over the period of study which is influenced by industrialization of Iran through economic growth and development programs. Due to the negative impact that the stress in foreign currency ratio imposes on production level, which can be the consequence of decrease in the value of money as a result of economic sanctions against Iran and global changes in oil price, estimations from financial stresses suggest

that the earlier mentioned markets have a negative cumulative effect on economic growth, while findings show that banking stress has a positive effect on Iran's economy over the studied period. This can be the result of the fact that most banks in Iran are public and that government's monetary transactions are done through such banks. Another reason is the low independency of the Central Bank which leads to an increase in the money supply by the government with the aim of increasing production and economic growth. Chi square value (9.74) for the main null hypothesis of equality of absolute value of financial stresses coefficients and banking stresses confirms the difference in the two coefficients. On the other hand, long-term coefficients show higher impact of banking stress. This means that stress in financial markets has a positive impact on economic growth, so that 1% of simultaneous change in the three studied markets leads to 0.053% increase in production.

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