

Full Length Research Paper

Globalization and economic growth in Iran

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In this paper, balance relation and long term of four variables: Gross domestic product (GDP) growth rate, growth rate of export of goods and services, the ratio of investment to GDP and population growth rate, and also their influences on each other in Iran for years 1971 to 2008 have been analyzed. For this purpose, vector autoregressive model (VAR) has been used. The first stability of variables by the use of Dickey-fuller test has been examined. Next, analysis of Johnson test for considering the convergence among five variables has been used. The results of this research show that the population growth rate has a negative effect on GDP growth rate. Also, the growth rate of export of goods and services and the ratio of investment to GDP have a positive relation with GDP growth rate.

Key words: Gross domestic product growth rate, growth rate of export of goods and services- the ratio of investment to GDP, population growth rate, vector autoregressive model (VAR).

INTRODUCTION

Globalization refers to the increasing unification of the world's economic order through reduction of barriers to international trade such as tariffs, export fees and import quotas. The goal is to increase material wealth, goods and services through an international division of labor by efficiencies catalyzed by international relations, specialization and competition. It describes the process by which regional economies, societies and cultures have become integrated through communication, transportation and trade. Globalization has created many opportunities for some peoples and countries. Social indicators such as literacy, school enrolment, infant mortality and life expectancy have improved a lot in the last few decades. Globalization has been particularly good for Asia, for the global growth of production and the owners of capital.

The process of globalization is both subversive and addictive. It is subversive because it undermines the status quo and challenges vested interests. It is addictive because choice, freedom, knowledge and greater material gain, once tasted, raise expectations for even more of the same, expectations that are not easily managed politically. Globalization has been used in many articles. Bergh and Nilsson (2010) in their article titled 'Good for Living? On the Relationship between Globalization and Life Expectancy' analyzed the relationship between three dimensions (economic, social and political) of globalization and life expectancy using a panel of 92 countries covering the 1970 to 2005 periods. Using different estimation techniques and sample groupings, they found that economic globalization has a robust positive effect on life expectancy, even when controlling for income, nutritional intake, literacy, number of physicians and several other factors.

The result also holds when the sample is restricted to low-income countries only. In contrast, political and social globalization has no such robust effects. Rao and Chaitanya (2010) in their article titled 'Globalization and growth in the low income African countries with the extreme bounds analyses used a comprehensive measure of a globalization of Dreher (2006), which is based on measures of globalization of the economic,

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Abbreviations: GDP, Gross domestic product; VAR, vector autoregressive model; EBA, extreme bounds analysis; OECD, organization for economic co-operation and development; IB, international business; WTO, world trade organization; FDI, foreign direct investment; GGDP, gross domestic product growth rate.

social and political sectors. Panel data estimates with data of 21 low income African countries showed a small but significant positive permanent growth effects. The sensitivity of this growth effect is examined with the extreme bounds analysis (EBA). Contrary to the findings by Levine and Renelt (1992) that cross-country growth relationships were fragile, the effects of globalization and some other determinants of the long run growth rate are found to be robust by EBA. Artis and Okubo (2009) in their article with this title 'Globalization and business cycle transmission' used long-run GDP data for developed countries drawn from Maddison (2003). 'The world economy historical statistics' Paris: organization for economic co-operation and development (OECD) development centre to generate deviation cycles for the period from 1870 to 2001. The cyclical deviates were examined for their bilateral cross-correlation values in three separate periods, those of the first globalization wave (1870 to 1914), the period of the "bloc economy" (1915 to 1959) and for the period of the second globalization (1960 to 2001). Cluster analysis is applied and the McNemar test is used to test the relative coherence of alternative groupings of countries in the three periods. The bloc economy period emerges as one that features some well-defined sub-global clusters, where the second globalization period does not and the first globalization period lying between the two in this respect. The second globalization period showed a generally higher level of cross-correlations and a lower variance than the other two periods.

The features uncovered suggest that the second globalization period is indeed one that comprises a more inclusive world economy than ever before. Arribas et al. (2008) in their article titled 'Measuring Globalization of International Trade: Theory and Evidence' proposed that measuring globalization required a standard of perfect international integration as a benchmark that a single world space would reach under conditions of geographic neutrality in international trade. They defined this standard and present indicator for openness, connectedness and integration, for each specific economy and for the world economy. They applied our indicators to data on trade flows for 59 countries for the 1967 to 2004 periods. Results showed that trade integration are higher than what traditional openness indicators suggest. Several economies found high levels of integration, but the low degree of openness in some large economies jeopardizes the progress of globalization.

Looney and Frederiksen (2004) in their article titled 'An assessment of relative globalization in Asia during the 1980s and 1990s' used factor and discriminant analyses to generated indices of globalization. The first part of the paper described the technique and they found that the Netherlands is the most globalized and Sierra Leone the least. In the second part of the paper, comparisons were made between South Asian, East Asian and Middle East countries to see if relative globalization process is

proceeding at a faster or slower pace. Although, the analysis is mostly regional, they introduced evidence for several countries, including Sri Lanka, Pakistan, the Philippines, Thailand, India and Malaysia to compare globalization and openness. Based on our findings, several conclusions are drawn concerning progress made and the economic implications of that progress. Because of the poor showing of Pakistan's globalization efforts, special attention has been focused on that country.

The main founding is that Pakistan appears to have fallen into a vicious cycle of low and declining globalization leading to low productivity causing low rates of return on investment. The result is low investment and technology transfer which only reinforces the drift towards an increasing globalization gap with the country's main international competitors Obadan (2006) in his article with the title 'Globalization of finance and the challenge of national financial sector development' examined the features of the phenomenon and the challenges they pose for national financial sector development. Although financial globalization confers notable benefits, it also entails huge costs including financial crisis. The factors of weak banking system and poor regulation helped to exacerbate the financial crises of the 1990s. The paper, therefore, stresses the need for sound macroeconomic policies, orderly liberalization of capital accounts, adequate preparation of national financial systems and meeting other pre-conditions for countries to reap the benefits of financial globalization at minimum costs. Wilpert (2008) in his article titled 'Impact of globalization on human work' addressed the phenomenon of globalization in its impact on the nature of work. Starting from an analysis and characterization of the general understanding of globalization, the contribution attempted to identify those factors of globalization processes which appear to affect most strongly the work of different employment categories (for example management, production workers and intellectual workers).

In a next step, the work and organizational psychological consequences of globalization in a two-pronged perspective will be analyzed: (1) The significant changes on work places (for example growth of mental work, expansion of service sector employment and corresponding shrinking of production work, work hour changes, unemployment, industrial relations). (2) The changing psychological demands on individuals in the work force (for example flexibility, coping with diversity, changing competence demands, changing the meaning of working). The concluding section considers the requisite political reorientation towards work in a globalizing world. Levy (2007) in is paper with title 'the interface between globalization, trade and development: Theoretical issues for international business studies' proposed that the relationship between trade and growth has been intensively debated in the economic literature, within the fields of economics, sociology, political sciences and others. However, in the areas of International Business (IB) and

management studies, research about an integrated approach to the issues of globalization deserves further attention. In particular, in the 21st century, companies are being challenged to think differently about the purpose and societal impact of their activities on the poorest nations. Therefore, this paper addressed economic and social issues of accelerating globalization within a framework of IB and management studies. Badinger (2009) in his article titled 'Globalization, the output–inflation tradeoff and inflation' provided comprehensive evidence on the relation between inflation and globalization, defined here as trade and financial openness, using a large cross-section of 91 countries over the period 1985 to 2004. They established two main empirical regularities: both higher trade and financial openness (i) reduce central banks' inflation bias, yielding lower average inflation and (ii) are associated with a larger output–inflation tradeoff. This evidence is at odds with the standard Barro–Gordon framework, which would require globalization to have a negative effect on the output–inflation tradeoff to yield lower equilibrium inflation, but it is consistent with a recent strand of new Keynesian models emphasizing the role of imperfect competition and nominal rigidities.

Their findings also support the relevance of the time-inconsistency hypothesis, which underlies the theoretical models predicting a relation between globalization and inflation. For the OECD subsample, however, they do not found an effect of openness on inflation (the output–inflation tradeoff), suggesting that these countries have created an institutional framework for central banks that eliminates distortions due to the time-inconsistency problem. Ruettimann (2011) in his article titled 'An Entropy-Based Inequality Risk Metric to Measure Economic Globalization' analyzed the world trade organization (WTO) trade figures between 2003 and 2009 with regard to the different evolution of globalization within the macro-geographic economic regions. The new economic interpretation of entropy allowed not only to quantifying the globalization degree of an economic system, but with its genotypic nature, it also allowed to give an explanation to the globalization phenomenon. Wallace et al. (2010) in their article with this title 'Globalization, labor market transformation and metropolitan earnings inequality' examined the impact of five measures of globalization (global capital, foreign direct investment, exports, foreign born non-citizens and foreign born citizens) and six measures of labor market transformation (deindustrialization, corporate restructuring, bureaucratic burden, casualization, bad jobs and multiple job holding) on metropolitan-level earnings inequality of full-time, full-year workers 16 years and older. Their study made several major contributions to the literature. First, they updated and extend the long line of studies on metropolitan earnings inequality. Secondly, they showed that these various dimensions of globalization and labor market transformation exert independent and mainly polarizing effects on the earnings distributions of metropolitan areas, net of controls for labor market structure and

sociodemographic variables. Thirdly, they demonstrated the benefits of looking at the causes of inequality in the upper and lower tails of the earnings distribution. Finally, they developed a procedure to estimate counterfactual values of earnings inequality for all major metropolitan areas in the United State in 2000.

In the process, the paper provided a comprehensive accounting of the impact of globalization and labor market transformation on metropolitan earnings inequality. Tomohara and Takii (2011) in their article titled 'Does globalization benefit developing countries? Effects of foreign direct investment (FDI) on local wages' expressed that two different reactions to globalization (either supporting or opposing globalization) were observed throughout the world. Focusing on the effects on the labor market, they examined whether foreign direct investment benefits workers employed by local establishments in a host developing country. The analysis showed that they received wages above the market-based wage that would otherwise prevail in the absence of foreign establishments. Although concerns exist that growing multinational business might have negative impacts on local workers, this paper suggests that those fears might be unwarranted.

DATA AND METHODOLOGY

We use this data from 1971 to 2008 of Iran. We found them in Central Bank of Iran. One VAR model which possess k as exogenous variable. And p as time's inhibition for each variable, in shape matrix is shown as follows:

$$Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \dots + A_p Y_{t-p} + U_t, \quad U_t \sim IN(0, \Sigma)$$

In this relation, Y_t and its lags, $k \times 1$ vectors are related to models variables. A_i , $i = 1, 2, \dots, p$ are model's coefficients for $k \times k$ matrix. And U_t , $k \times 1$ vector is related to terms of model's error. Now for linking short term behavior of Y_t to long term balance values, we can bring above relation as vector error correction model as:

$$\Delta Y_t = \beta_1 \Delta Y_{t-1} + \beta_2 \Delta Y_{t-2} + \dots + \beta_{p-1} \Delta Y_{t-p-1} + \pi y_{t-p} + u_t$$

Where:

$$B_i = -(I - A_1 - A_2 - \dots - A_p), \quad i=1, 2, \dots, p-1$$

$$\pi = -(I - A_1 - A_2 - \dots - A_p)$$

Matrix π contains of information of long term balance variables. We follow the Johansen approach in determining long-run relationships. Patterson (2000) and Doornik and Hendry (2001) provide a full treatment of the issues involved in this method. The first step is to estimate the VAR in levels with an appropriate lag structure. The next stage involves determining the cointegrating rank that is the number of long-run equilibrium relationships or cointegration vectors among the variables. Finally, to allow a reasonable interpretation of the results, cointegration vectors are identified (Abouie, 2011).

Table 1. Variable definitions and descriptions.

Variable	Description
GGDP	Gross domestic product growth rate
GXP	Growth rate of export
GDI	The ratio of investment to GDP
GPOP	Population growth rate

Table 2. ADF tests for unit roots.

Variable	ADF	Critical value			Lag
		1(%)	5(%)	10(%)	
GGDP	-3.78	-3.57	-2.93	-2.60	0
GXP	-4.93	-3.57	-2.93	-2.60	0
GDI	-2.19	-3.57	-2.93	-2.60	0
GPOP	-0.87	-3.60	-2.93	-2.60	0

Table 3. ADF tests for unit roots.

Variable	ADF	Critical value			Lag
		1(%)	5(%)	10(%)	
GGDP	-3.78	-3.57	-2.93	-2.60	0
GXP	-	-3.57	-2.93	-2.60	0
	4.93				
DGDI	-5.99	-3.57	-2.95	-2.61	0
DGPOP	-6.14	-3.60	-2.93	-2.61	0

Theoretical principles

The model which is used for measuring impact of labor force, investment and export on economic growth in Iran is defined as follow:

$GGDP=F$ (geospatial exploitation product (GXP), gross domestic income (GDI) and global parts order processing GPOP). Where, GGDP, gross domestic product growth rate; GXP, export of goods and services growth rate GDI, the ratio of investment to GDP; GPOP, population growth rate.

FINDINGS AND DISCUSSION

We use the aforementioned formulation to estimate a VAR model containing five variables. The variables are presented in Table 1. In order to carry out fitness of VAR pattern first, it is necessary to investigate the persistency of variables. One of the common examinations which are nowadays used for recognition of persistency of one time series process is unit root test; we can do this examination in two ways: Dickey Fuller's Test and Dickey Fuller's generalized Test. The results of the test for the variables in levels are presented in Table 2. The results reported in Table 3 show that the variables, GGDP and GXP are I(0) and the variables, GDI and GPOP, are I(1).

After investigation of the persistency of variables, one of the important stages in evaluation of vector regression model is choosing rank of pattern (magnitude of lag should be inserted in equations). For choosing optimum rank of pattern, we can use the criterion of Akaike or Schwarz. The most lag which is given to the model is 2. Considering Table 4, the least quantity of Akaike statistic is prepared in the second lag, where we can indicate that the optimum lag of VAR model is equal to 2. In this article, we followed vectors and accumulated vectors among variables of GDP growth rate, growth rate of export, the ratio of investment to GDP, and population growth rate by the use of Johansson's method.

In Johnson's method after doing necessary calculations for studying the existence of convergence, we use two criterions which consist of λ_{\max} and λ_{trace} . If existence of convergence among the variables is verified, we can say that balance and long term relation among the variables is established. The results which are concluded from the effect of the examination of maximum specific values for determination of accumulated vectors among the model's variables are presented in Tables 5 and 6. Both tests show that there is a vector. considering results of above tables in level of probability of 90% magnitude of long term relations among variables compatible pattern with

Table 4. Determination of magnitude of lag of VAR model.

Schwarz information	Akaike information	Lag
-12.72	-13.07	0
-13.87	-14.92	1
-13.66	-15.40	2

Table 5. Test statistics for co integrating rank (Trace tests).

Null	Alt.	Critical value	λ_{trace}	Probe
$r=0$	$r \geq 1$	47.86	67.43	0.0003
$r \leq 1$	$r \geq 2$	29.79	28.54	0.0692
$r \leq 2$	$r \geq 3$	15.49	8.57	0.4068
$r \leq 3$	$r \geq 4$	3.84	1.27	0.2602

Table 6. Test statistics for co integrating rank (Max tests).

Null	Alt	Critical value	λ_{max}	Probe
$r=0$	$r \geq 1$	27.58	38.88	0.0012
$r \leq 1$	$r \geq 2$	21.13	19.97	0.0720
$r \leq 2$	$r \geq 3$	14.26	7.30	0.4542
$r \leq 3$	$r \geq 4$	3.84	1.26	0.2602

Table 7. Co integrating vectors.

Variable	Vector 1
GGDP (-1)	1.00
GXP (-1)	-0.424(-10.13) (-14.3)
GPOP (-1)	3.12 (2.08) (2.33)
GDI (-1)	-0.347(-2.32) (-4.1)
C	0.0046

economic theory is equal to $(r=1)1$ is determined. In Table 7, Numbers in parentheses are statistic of accounting t. estimated coefficients of all variables in a meaning full level, 5% are significant from statistical aspect. Considering prepared results within investigated period, variables of growth rate of export, the ratio of investment to GDP, had positive effect on growth rate and variable of population growth rate has a negative effect on growth rate. According to results, with a single change in GDP growth rate, growth rate of export, the ratio of investment to GDP, 0.424, 0.347 units are increased and with a single change in population growth rate, in order growth rate will be decreased by 3.12 units.

Conclusion

Generally, in this article relation between globalization and economic growth in Iran was investigated. In this

article, first we presented a model and estimated this model, in order to fitness of VAR pattern we used unit root test, then the magnitude of inhibition of VAR model was determined after that by using of Johansson's and existence of accumulated vectors showed long term relations among variables. After certainty about existence of long term relation, we estimated this relation and then interpreted these coefficients. The results of this research show that population growth rate has a negative effect on economic growth. Also growth rate of export and the ratio of investment to GDP have a positive relation with economic growth. Because fast growing of population in developing countries more or less should have negative determined effects on economic development of countries. High rates of population growth have great effects on augmentation of consumption. When in developing countries there is surplus labor force, fast increase of population, causes an augmentation in unemployment,

augmentation of consumption as a result of population growth, hurts propensity to save or decreasing of total investment and finally, causes a negative effect on production, infrastructures, this problem, in its turn, hurts national product's growth and also possibility of augmentation of total demand. Because Iran is facing foreign exchange constraints the export growth has fewer restrictions on foreign exchange by imports of capital goods and this is created through economic growth.

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