International Business Management 11 (2): 375-380, 2017
ISSN: 1993-5250

The Relationship Between Government Size and Trade Openness in Iran

[1]M. Sheihaki Tash, [2]T. Khoramabadi and [3]S. Barani Laghab
[1]Department of Entrepreneurship, Sistan and Baluchestan University,
P.O. Box 98169, Zahedan, Iran
[2]Department of Economic, Bandar Abbas Branch, Islamic Azad University, Bandar Abbas, Iran
[3]Department of Economic, Payame Noor Universtiy (PNU), Ahram, Iran

Abstract: In this research, we examined the effect of trade openness on the role of government in the Iranian economy during the period 1978-2012. The results suggested that there is a positive relationship between trade openness and government size. Perhaps the reason for this is due to the fact that with the increase in trade openness, the government size increases. Also, empirical findings illustrate the role of other variables in determining the size of government. The size of government increases with income, foreign debt, urbanization and investment while it decreases with increased inflation.

Key words: Trade openness, government, size, urbanization, inflation

INTRODUCTION

In terms of the International Monetary Fund, globalization refers to the countries growing dependent on each other due to the increasing volume and variety of goods and services between countries, global flow of capital and at the same time the rapid development of technology while some researchers have defined globalization as the more integration of global markets. The most important features of globalization affecting the economy include: Globalization of economic behavior, the use of global trade as a driver of economic development, economic concentration and competitiveness.

Size of government indicates the level of government intervention in the economy which refers to the volume of operations carried out by ministries, organizations and institutions affiliated to government, including federal, state, regional organizations, municipality and social security organization (Arani and Abargouei, 2010). In the current circumstances and the presence of dominant economies within the global economic system, if the third world economic developments are mainly provided by the limited wealthy category, the context of production of society will necessarily affected by trade and the service sector and therefore the productive capacities will not expand sufficiently.

Given these facts, it seems that economic development is not possible without the guidance of government. In other words, the government should be the main trustee of directing economic sectors in the modernization of the context of production and their activities (Razini *et al*., 2011).

One component highly affecting economic development is trade and its expansion, so that it is believed that trade is an engine of economic activity and economic development without trade will suffer from significant restrictions. The idea that free trade is the main source of wealth and economic growth forms the original theoretical framework of economics. Hence, globalization of economy can affect the size of government and thereby affect economic growth and development. In this regard, some government duties are:

- Entry into new activities in order to create and facilitate new business
- New volunteer training and retraining opportunities for workers who have lost their jobs
- Creating an decent institutional infrastructure and leaving traditional way to support the work force which will require more government spending

These changes may need to serious reforms in existing institutions or creating new institutions in direction of development plans, because the government cannot ignore those who have suffered from decreasing revenues. When the domestic market opens immediately, the government helps those who have lost their jobs or capital because of the presence of foreign companies. For this reason the public spending is likely to rise.

Corresponding Author: M. Sheihaki Tash, Department of Entrepreneurship, Sistan and Baluchestan University, P.O. Box 98169, Zahedan, Iran

According to Roderick theory, as a country's economy becomes more open, the country will be more vulnerable against fluctuation of the prices of imported and exported goods which appear in the form of "terms of trade" shocks. In developing countries where governments do not have the ability to effectively provide such services, expansion of government to hire more people and protect them from risks arising from international trade was a natural choice (Rodrik, 1998).

Given the importance of increasing the national income and lower inflation as macroeconomic objectives in modern societies, many studies have been conducted to determine the factors influencing these variables which one of these factors is the degree of economic openness. The simplest criteria for degree of economic openness is based on trade flows where the ratio of total exports and imports to GDP or the ratio of imports or exports or their growth rates to GDP is considered (Mohammadvandi and Khosroshahi, 2010).

The lack of consistent findings suggests that the relationship between government size and trade openness may be unique that warrants further study of country's events to characterize the systematic connections if exist. Research on the relationship between trade openness and government size in Iran is inadequate. This paper tries to partly cover the gap. So we use Iranian annual time series data for the period 1978-2012.

Theoretical foundation and research background: Tanzi states that the globalization process requires reform, reduction and elimination of government support through deregulation and tax cuts. Although, this government and legal support apparently support labor and the minimum wage but can have additional costs for producers and the government so that, these supports has sometimes been the origin of a portion of the unemployed. In globalization theory it is believed that distances disappear and in fact the local areas find global importance. Rozcrans also believes that, with economic globalization, governments not only geographically but also in terms of special task (duty), become small. In fact, the virtual government sets an overall approach and instead of focusing on production equipment pays attention to the human capital and leaves other tasks to governments who have expertise and need them (Tohydfam, 2001). Cameron (1978), states that public spending will be higher in more liberal countries because by taking control of a greater portion of the country's resources, this serves as a risk reduction tool. The reason for this is that if more open countries are more vulnerable against foreign demand and supply shocks and are related to increasing economic inequality, so a great government may be better able to play its stabilization role and compensate external risk by providing insurance and smoothing the consumption through the redistribution or other types of social programs (Cameron, 1978). In most researches this known as compensation hypothesis. Another explanation is that entrance to global markets increases specialization in an economy. This in turn causes reduction in the diversity and thus more exposure to risks due to rapid changes in the global economy. To deal with these risks, states that are open to global markets raise public consumption to support victims. Alesina and Wacziarg (1998) have proposed a different relation for positive theoretical relationship between trade openness and government size. According to them the issue is that too much openness means that the country size is small and the small countries have lot public consumption. Thus, countries with high trade openness have high government spending as well (Alesina and Wacziarg, (1998). Rodrik (1998) was the first person who conducted a detailed empirical research on the relationship between trade openness and the size of government. He concludes that there is a positive relationship between trade openness and government size. He suggests a one-way causality from trade openness to government size. Based on this evidence, he suggests that a degree of complementarity may exist between market and government. In addition, he states that the causality relation between trade openness and government size can be explained by the hypothesis compensation. More dependence on foreign trade means that the local economy is dependent to some extent on the development of its business partners which this in turn gives an incentive to the government to provide social insurance against international competition (Rodrik, 1998). The results of other studies were consistent with Roderick's findings, for example Commander, Garrett, Adser and Boi, Albertos all of these studies confirm and support the hypothesis compensation of Roderick.

Garen and Trask (2005) have evaluated Roderick's argue. They concluded that countries with lower economic openness have higher government spending growth (Garen and Trask (2005). Benarroch and Pandey (2008) have found no evidence on a positive relationship between trade openness and government size. Their tests showed that the larger size of the government leads to lower trade opening which is contrary to the findings of Roderick (Benarroch and Pandey, 2008). Liberati and Clolo also tested Roderick's offset hypothesis, but the findings did not support the hypothesis. They concluded that government size has not been changed to behave gently against foreign risks or conclude that causality does not move from trade openness to the size of government or trade openness leads to less instability (Liberati, 2007).

Sadeghi *et al*. (2012) have investigated the effects of globalization on size of governments in selected Asian countries (Indonesia, Thailand, Philippine, Malaysia and

Iran) during 1980-2005. Their results suggest that the globalization of economy has not reduced the size of government in studied countries. Globalization indicators have partly made larger the size of government (Sadeghi *et al*., 2012). Dadgar and Nazari (2008) have evaluated the impact of the globalization of economy on government size in Iran during 1974-2006. The results of their study indicate that trade globalization in Iran leads to rise in government size and show the highest explanatory power in growth of government size in Iranian economy (Dadgar and Nazari, 2008). Zakaria and Shakor (2011) have examined the impact of trade openness on government role in Pakistan's economy. They found that there is a positive significant relationship between trade openness and government size. In addition, the empirical results are indicative of the role of other variables in determining government size. The size of government increases with increased revenue, democracy, foreign debt and investment while reduced with increased urbanization and inflation (Zakaria and Shakoor, 2011). Lee and Geo, seek to show that growth depends on openness of the economy, internal efficiency and level of development. Results showed that the relationship between economic growth, economic openness and internal efficiency are influenced by income level and the two introduced indices (Li and Zhou, 2010). Afonso and Furceri (2010) have addressed the effect analysis in terms of government size and volatility of revenue and spending on growth in OECD countries and European union. The results show that the indirect taxes, public donations, government consumption expenditure and subsidies have negative impact and private-sector investment has a positive effect on economic growth in these countries, while capital expenditure of government does not have a significant impact on it (Alfonso and Furceri, 2008). Thus, empirical research on the relationship between trade openness and government size have been inconclusive so that some studies show a positive relationship, some show a negative relationship and other find no relationship.

MATERIALS AND METHODS

Dataset: In this study, to investigate the trend of domestic investment, we use gross fixed capital formation as well as to investigate income we use GDP and to calculate trade openness we use the ratio of the sum of export and import to GDP. Data and information needed for indicators of government spending, trade openness, foreign debt, inflation, domestic investment (gross fixed capital formation), the total population and urban population is obtained through economic time series database of central bank of Iran and GDP figures are collected from economic accounts department of the central bank. Data are annually for the period of 1978-2012.

The introduction of the model: In this research, we use cointegration test to determine the relationship between trade openness, income, inflation, investment, foreign debt and the size of government in Iran over the period 1978-2012. In order to examine the relationship between trade openness and government size, the following model is used:

$$g_t = \theta_0+\theta_1\ open_t+\theta_2 y_t+\theta_3 fd_t+\theta_4\ inf_t+\theta_5 inf+\theta_6\ urb_t+\theta_7 t+\theta_8 dw+\eta_t \quad (1)$$

Therefore, model variables are defined as follow: The dependent variable (g) is government expenditure, while independent variables include trade openness (open): Total exports and imports to GDP ratio, internal Revenue (y), foreign debt (fd), inflation (inf), domestic investment (inv), Urban rate (urb): urban population to total population, trend variable (t), dummy variable (dw): dummy variable of imposed war which takes the value 1 for the years 1980-1988 and 0 otherwise.

Before estimating the model, we should ensure of the stationarity of the variables used in the model using Dickey-Fuller test. In this research, the Dickey-Fuller test is conducted in the case where the model has intercept and without trend as well as in a case where the model has both intercept and trend. In this study, we use vector autoregressive model to examine the Granger causality between variables. Also, for long term relation between model variables the Autoregressive Distributed Lag (ARDL) Model will be used. And to evaluate the long-term relationship between the variables Pesaran and Shin method will be used.

RESULTS AND DISCUSSION

Empirical results: To examine the long-run relationship between variables in error correction model, ARDL method is used. After determining the long-run relationship between variables the Pesaran and Shin method is applied. Before estimating the model, we test variables for stationarity using Augmented Dickey-Fuller (ADF) method.

Unit root test: In order to test variables stationarity, the ADF test is applied to level of variables and then, this test is applied to first difference of those variables which are not stationary in levels. The results of this test are reported in Table 1.

Table 1: The results of ADF test for variable stationarity

Variables	No. of lags	Trend	Constant	Test statistic	Critical value	Results
G	4	Yes	Yes	-1.82	-2.96	Non-stationary
G	4	Yes	Yes	-2.44	-3.56	Non-stationary
Open	4	No	Yes	-2.35	-2.36	Non-stationary
Open	4	Yes	Yes	-2.43	-3.56	Non-stationary
Inv	4	no	Yes	-0.32	-2.96	Non-stationary
Inv	4	Yes	Yes	-1.57	-3.56	Non-stationary
Fd	4	No	Yes	-0.31	-2.96	Non-stationary
Fd	4	Yes	Yes	-2.73	-3.56	Non-stationary
Y	4	No	Yes	-0.83	-2.96	Non-stationary
Y	4	Yes	Yes	-2.37	-3.56	Non-stationary
Inf	4	No	Yes	-2.26	-2.96	Non-stationary
Inf	4	Yes	Yes	-2.21	-3.56	Non-stationary
Urb	4	No	Yes	-3.56	-2.96	Stationary
Urb	4	Yes	Yes	-5.11	-3.56	Stationary

Table 2: The ADF test results for first difference stationarity of variables

Variables	No. of lags	Trend	Constant	Test statistic	Critical value	Results
G	4	No	Yes	-8.04	-2.96	Stationary
G	4	Yes	Yes	-8.76	-3.57	Stationary
Open	4	No	Yes	-4.35	-2.96	Stationary
Open	4	Yes	Yes	-4.39	-3.57	Stationary
Inv	4	No	Yes	-5.49	-2.96	Stationary
Inv	4	Yes	Yes	-5.99	-3.57	Stationary
Fd	4	No	Yes	-3.69	-2.96	Stationary
Fd	4	Yes	Yes	-5.50	-3.57	Stationary
Y	4	No	Yes	-4.45	-2.96	Stationary
Y	4	Yes	Yes	-6.87	-3.57	Stationary
Inf	4	No	Yes	-3.45	-2.96	Stationary
Inf	4	Yes	Yes	-5.01	-3.57	Stationary

As seen in Table 1, except the variable of urban rate (urb) all the variables are of I(1) order. In ARDL method when the variables are a combination of I(0) and I(1), the model can be estimated.

Estimation using ardl method: It is shown in the previous section that the variables of government expenditure, internal revenue, inflation, and investment are I(1) and the variable of urban rate is I(0). Hence, as all the variables are not I(1), to investigate the cointegration (long-term relationship) of variables, Johansen- Juselius method cannot be used. In this case, the ARDL Model is used to estimate dynamic long-run relationship as well as error correction. To investigate the cointegration relation between variables one can use bounds testing approach of Pesaran, Shin and Smith based on estimating Unrestricted Error Correction Model (UECM) including dynamic relationship and long-run equilibrium relationship. The form of unrestricted error correction of variables when the economic growth is dependent variable is as follows (Table 2):

$$\Delta g_t = \alpha + \beta t + \sum_{i=1}^{p} \Delta g_{t-i} + \sum_{i=0}^{p} \Delta opent_{-i} + \sum_{i=0}^{p} \Delta y_{t-i} + \sum_{i=0}^{p} \Delta inf_{t-i} + \sum_{i=0}^{p} \Delta inv_{t-i} + \sum_{i=0}^{p} \Delta urb_{t-i} + \quad (2)$$

According to the Shvarz- Bayesian criterion and for the case where the intercept is unrestricted and trend is restricted, the optimal lag order according to the following table is one (Table 3).

Given the optimal lag order, the above model is estimated in Microfit software using the OLS method. The condition of the existence of cointegration relationship is the importance of levels and variable lags. So, the null hypothesis is the lack of long run relationship, that is:

$$H_0: \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0 \quad (3)$$

Here, the F-statistic is used to test whether all the variables equal to zero- there is no long run relationship. Since the mentioned statistic is not normally distributed regardless of whether the variables are I (0) or I(1), hence, the critical values provided by Pesaran should be used. The number of regressors is 6 and the model has only constant term. On the other hand, the model has both I(0) and I(1) variables. Hence, both upper bound and lower bound critical values are the bases. Since the upper bound and lower bound are 3.64 and 2.47, respectively, at 95% confidence level and the calculated F-statistic (7.14) is greater than upper bound value, we can reject the null hypothesis of the lack of a long-run relationship (Table 4).

After performing cointegration test and ensure of the existence of a long run relationship between variables under study, in order to estimate the long run relationship

Table 3: Determining optimal lag (dependent variable: government expenditure)

Shvarz- Bayesian criterion	Order
-25.2	0
-23.9	1
-23.8	2
-23.3	3

Optimal lag = p = 1

Table 4: The results of F-test for checking the existence of a long-run relationship (dependent variable: government expenditure)

	At 95% level		At 90% level	
F-statistic	I(1)	I(0)	I(1)	I(0)
7.14	3.64	2.47	3.25	2.14

Table 5: The results of estimation using ARDL method

Variables	Coefficient	t-statistic	Result (90% confidence level)
Inpt	-0.25	-2.10	Significant
g(-1)	0.79	8.53	Significant
Open	0.14	3.12	Significant
Y	0.13	2.94	Significant
Inf	-0.24	-2.20	Significant
Inv	0.09	1.99	Significant
Fd	0.20	2.09	Significant
Urb	0.22	2.00	Significant
T	0.15	3.52	Significant
Dw	0.015	1.48	Non-Significant

$R^2 = 0.90$; F = 37.24 (0.000); D.W = 2.28

of government size and short term dynamics of its adjustments we use ARDL modeling approach of Pesaran and Shin and Unrestricted Error Correction Model (UECM) presented in the relationship (Eq. 2).

In this step, after ensuring the existence of a long run relationship, we estimate dynamic ARDL model with lags determined by the system. This criterion does not give any lag to all of the variables except for government expenditure to which allocates the lag order of 1. After identifying the variables of the model, the results of model estimation using ARDL method are as the following (Table 6).

In this case, as seen the signs of estimated coefficients are consistent with theoretical foundation and all of them are statistically significant at 90% level. The F-statistic is also significant at 99% level.

After ensuring the existence of the long run relationship we can interpret it. The results of the long run relationship related to the above ARDL model with lags determined by the system are reported in Table 6.

As seen, all the coefficients are significant at 90% confidence level. The coefficient of trade openness in the long run is 0.25 indicates that the trade openness has positive significant effect on government expenditure so that if the trade openness increase by one percent, the government expenditure will increase by 0.25%. This result may be justified according to Roderick theory that states government consumption expenditure increases in order to reduce the negative consequences of globalization.

Table 6: The results of long-run relationship (dependent variable: government expenditure)

Variable	Coefficient	t-statistic	Result (90% confidence level)
Open	0.25	5.00	Significant
Y	0.12	3.13	Significant
Inf	-0.34	-2.64	Significant
Inv	0.10	4.55	Significant
Fd	0.63	2.46	Significant
Urb	0.39	4.02	Significant
T	22.78	4.02	Significant
Dw	-0.22	-1.98	Significant

Logarithm of the urban population has had a significant positive impact on government size. By increasing the number of urban population, government expenditure and government size has practically increased. In any economy, cities are formed due to economies of scale but on the other hand, urbanization has also a series of negative externalities (increased crime, environmental pollution, increased social conflicts, issue of congestion, urban infrastructure and increasing the cost of commuting). In fact, by expansion of urbanization these issues further arise and lead to an increase in public expenditure that must be spent by the government. This is synonymous with the increase in government spending or getting bigger the size of government.

Foreign debt: With increasing foreign debts, the government is obliged to repay the debt. Therefore, in order to repay the debts the government increases its revenue through increased tax revenues or further participation in economic activities and thereby government spending rises and, as a result, the size of government or government intervention in the economy increase. Investment has had significant positive impact on government size while inflation has had significant negative impact on the size of government.

Error correction model: This model actually examines the equilibrium and long-term role of variables in moderating short term fluctuations. The existence of co-integration among a set of economic variables, provides the statistical basis for the use of Error Correction Models (ECM). These models which associate short-term fluctuations of variables to their long-term equilibrium values, in fact, are a type of partial adjustment models including stationary residuals of a long term relationship as the independent variable. The coefficient of ECM shows that what percentage of short-term imbalances of private sector investment is moderated in each period to achieve long-term equilibrium; in other words, this coefficient shows that how many periods it takes that government expenditure return to its long term trend. According to the results, the error correction model which relates short term changes of variables to their long term equilibriums is as follows:

$$dg_t = -0.25\ dinpt + 0.14\ dopen + 0.13dy - 0.24d\ inf + 0.2\ dinv + 0.13dfd + 0.42durb + 0.15dt + 0.015ddw - 0.48ecm\ (-1)$$

According to the results of error correction model, it is revealed that in the short term there is a positive significant relationship between trade openness and government size. In other words, in the short term one percent increase in trade openness will increase government size by 0.14%.

In the error correction model, the coefficient of all variables in the short-term relationship is statistically significant at 90% confidence level. The coefficient of error correction term in this model equals to 0.48 and is statistically significant. Hence, the short term and long term models are related together and in each period, 48% of imbalances are corrected.

CONCLUSION

This study investigates the impact of economic openness and other economic variables such as income, inflation, investment, foreign debt and the country's urbanization rate on government size. In this research, in order to examine the long run relationship between model variables we have used bounds testing approach of Pesaran Shin and Smith and to determine the short term and long term coefficients and error correction coefficient we have used ARDL Model. Also, by taking advantage of Augmented Dickey-Fuller test in microfit software, stationary of variables were examined.

The results of bounds testing approach of Pesaran Shin and Smith indicate a long term relationship between the mentioned variables. The results of estimating long run coefficients from ARDL method in the first model imply that the globalization in the long run has a positive effect on government size in terms of total spending. Roderick compensatory hypothesis based on that the trade openness has effect on the size of government is confirmed. The results also illustrate the role of other variables in determining the size of government. The size of government increases with income, foreign debt, urbanization and investment, while it decreases with increased inflation.

The results of this hypothesis are consistent with those of Sadeghi *et al*. (2012), Dadgar and Nazari (2008), Zakaria and Shakoor (2011) and Rodrik (1998) who found a positive relationship between trade openness and government size while it is not consistent with the findings of some researchers such as Garen and Trask (2005) and Benaroch and Pandey (2008) who found a negative relationship between trade openness and government size.

REFERENCES

Afonso, A. and D. Furceri, 2010. Government size, composition, volatility and economic growth. Eur. J. Political Economy, 26: 517-532.

Alesina, A. and R. Wacziarg, 1998. Openness, country size and government. J. Public Econ., 69: 305-321.

Arani, A.A. and V.A. Abargouei, 2010. The relationship between government size and human development (comparison of oil-producing countries and non-oil developing countries). Soc. Welfare, 10: 61-90.

Benarroch, M. and M. Pandey, 2008. Trade openness and government size. Econ. Lett., 101: 157-159.

Cameron, D.R., 1978. The expansion of the public economy: A comparative analysis. Am. Political Sci. Rev., 72: 1243-1261.

Dadgar, Y. and R. Nazari, 2008. The impact of trade globalization on government size in Iran. Iran. J. Trade Stud., 48: 1-38.

Garen, J. and K. Trask, 2005. Do more open economies have bigger governments?. Another Look J. Dev. Econ., 77: 533-551.

Li, K.-W. and X. Zhou, 2010. Openness, domestic performance and growth. Econ. Lett., 107: 13-16.

Liberati, P., 2007. Trade openness, capital openness and government size. J. Public Policy, 27: 215-247.

Mohammadvandi, M.R. and N.J. Khosroshahi, 2010. The effect of degree of economic openness, employed population and human capital on management of labor productivity in Iranian economy. J. Ind. Manage., 12: 89-100.

Razini, E., A.R. Souri and A. Tashkini, 2011. Unemployment and government size: Is there a reasonable relationship?. Econ. Res., 2: 35-57.

Rodrik, D., 1998. Why do more open economies have bigger governments? J. Political Econ., 106: 997-1032.

Sadeghi, H., M. Sameti and M. Sameti, 2012. The impact of economic globalization on government size: A study of selected Asian countries. J. Econ. Growth Dev., 6: 209-249.

Tohydfam, M., 2001. The national government in the era of globalization. National Stud., 3: 34-47.

Zakaria, M. and S. Shakoor, 2011. Relationship between government size and trade openness: Evidence from Pakistan. Transition Stud. Rev., 18: 328-341.