INTERNATIONAL CAPITAL INFLOWS AND GOVERNMENT SIZE: EVIDENCE FROM PANEL DATA IN SELECTED MENA COUNTRIES

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Received January 08; accepted May 2021; published online 18 June 2021

ABSTRACT

In the era of globalization, international capital inflows increase dramatically, in specific, ODA and FDI. FDI and ODA would increase employment, GDP and government finance. The impact on GDP and government finance is different, and varies between ODA and FDI. The main purpose of this article is to examine the impacts of ODA and FDI on the government size, considering the trade openness, in specific, and country size. We use simultaneous equations and dynamic panel GMM analysis for seven selected middle income MENA countries for the period 2000-2019. Our results show that FDI reduces government size, meanwhile, ODA increases it. Furthermore, openness and country size are associated positively and negatively with the government size, respectively. We concluded that attracting more FDI and guiding ODA for development purposes is highly recommended. In addition, package of reforms and policies have been recommended to realize such purposes.

Keywords: FDI, ODA, Government Size, Dynamic Panel Models, MENA.

Jel classifications: C33, C36, F21, F35, H11.

INTRODUCTION

Globalization increases trade, FDI, ODA and countries openness dramatically, in the last two decades. ODA may increase openness as long as it decreases the trade barriers between countries, and this may increase FDI and increase the need for facing potential external shocks. Size of government, which is government expenditure as a percentage of GDP, plays a stabilizer role in the local economy, and influenced positively with openness. Country size, proxies by population, associates negatively with government size, as long as higher population realizes economies of scales, i.e. more taxpayers, as a result of higher number of population and economic units. The international capital inflows reflect in different aspects on the recipient countries, such as production, employment and government size.

Market-seeker FDI increases the employment, production and government revenues and size, on one hand, and decreases the need for more openness and imports that reduces the government revenues and size. On the other hand, vertical FDI type should increase imports, and hence openness and government indirect taxes that increase government size. Furthermore, ODA may participate in reaching the development goals and increases production, employment and reduce openness and government size. On the other hand, ODA may finance public budget and encourage government to more inefficient current expenses and imports, which creates aid dependency, and higher government size.

Therefore, we are looking forward to detect for the impact of these international capital inflows on government size, capturing at the same time for openness, in specific, and country size. So, we aim to detect for the FDI and ODA relationship with the government size, controlling for the countries openness and countries size, in seven selected middle income MENA countries for the period from 2000 to 2019, using different econometric techniques.

We proceed as follows, we review the literature, and then derive the empirical model considerations, then we introduce the econometric techniques and data, then we estimate, conclude and recommend.

LITERATURE REVIEW

Globalization and trade liberalization increase international capital inflows, in specific, ODA and FDI. In fact, more trade openness increases government size, which plays stabilizer role facing potential and expected external shocks, and GDP volatility. In addition, more openness increases international capital inflows. More ODA increases donors' exports, trade and public budget finance, from one side, and increases political, economic and military ties between donors and recipients' countries, from other side. This reduces various barriers between these countries that allow more donations and international investments, FDI in specific, to the host countries. Therefore, it should influence the government size. Furthermore, more FDI increases further FDI to the same area. These inflows have various impacts on macroeconomic indicators including, finance the public budget, increase tax revenues, increase employment, production and trade, which reflects on government revenue. Therefore, such increase in openness and inflows should clearly influence the government size.

It's well known in the economic literature that more openness increases the government size, whereas government in this case plays a stabilizer factor in the economy against the eternal shocks.

These shocks can cause more volatility in income and consumption that could be confronted by higher government size that comes through social welfare system, Rodrik, (1998), furthermore, Sabra, (2016), provided an evidence for the positive relationship between openness and government size the MENA area. In addition, more open economies have a higher collective bargaining, such as labor unions and federations, that requires more government transfers such as pensions, employment insurance, social security and job training, which reduce the external shocks and risks, this is a result of industrial concentration, Cameron, (1978). Fatás, and Mihov, (2001) found a positive relationship between openness and government size through the strong negative correlation between government size and output volatility for the OECD countries and across US states, that confirms the stabilizer role of government. Furthermore, literature suggests a negative relationship between country size and government size from one side, and between country size and openness, from another side. This indicates the existence of a positive relationship between openness and government size. However, the positive relationship between openness and government size is not affected by the inclusion of other control variables, and prevails for both low and high income level countries, Rodrik, (1998). Anyway, the inclusion of the country size, which proxies by population size, impact on openness asserts for the impact of openness on government size. This, in addition, asserts the impact of international capital inflows on government size.

Several motives stand behind the positive relationship between openness and ODA. Alesina and Dollar (2000) provide evidence that donors allocate donation to recipient countries according to the quality of their policies, including trade liberalization policies, particularly. Sabra, (2013) provides an evidence of strong positive relationship between Development Assistance Committee (DAC) countries' exports and their donation to MENA recipient countries. On the other hand, donors imports from recipient countries and their donation are negatively associated, both as a percentage of donors GDP, Lundsgaarde et al. (2007). These evidences prove that trade openness increases ODA flows to the recipient countries.

Country trade openness reduces barriers, liberalizes trade and indicates better country macroeconomic policies. This indeed increases outward and inward flows of goods and capital, including aid and FDI. More openness may increase FDI [The vertical types of FDI enhanced by differences in the factor endowments between home and host countries, Markusen, (2002), and low trade costs either transport or tariff barriers. In fact, such type locates a part of value chain in the host country to benefit lower costs that requires increasing intra-firm trade between headquarter and affiliates.

Furthermore, complex vertical FDI enhanced in case of; high income in region, or similarity between countries, similarity in relative factor endowments, home and third countries are different in relative factor endowments, countries are different in relative unskilled labor and when transport costs between countries are high, Matsuura and Hayakawa (2008). This type produces overseas in the host country to serve the domestic market more cheaply, or to save trade costs, and targets the host country as an exports platform FDI to serve, in addition, other countries in the region through exports or more FDI, which suggested by Ekholm et al. (2003). Knowledge Capital (KC) model stands if the first two previous types were merged, which combines the main features of the vertical and horizontal models.]; in particular, vertical, complex vertical and Knowledge Capital model (KC) types. Trade liberalization and exposure of host country encourage MNEs to invest internationally and produce overseas, as long as exporting intermediate goods from headquarters, in home country, to affiliates, in host country, associated with low barriers, and similarly, it applicable to final goods that re-exported to home country or third country in the region. This, in fact, encourages MNEs decision of complex, complex vertical and KC model types of FDI. Hence, positive relationship between openness and FDI should be raised, in such cases. However, empirical investigations would detect if such types dominant or not, in a particular economy or region. More trade, employment, production reflects on government revenues and finance public budget, which should influence the government size.

Country size and government size are associated negatively, where as population as larger the cost of various non-rival (public) goods will be shared over more economic units, and per capita costs of these public goods declining as taxpayers increase, from one side, and the per capita required government expenditure will be lower, from other side, that means smaller countries have relatively larger governments, and vice versa ,Alesina and Spolaore, (1997), Alesina and Wacziarg, (1998), Alesina (2003).

Furthermore, Wagner's law pointed out that urbanization may cause higher government expenditure, which may refer to "the pressure of social progress" leads to increasing government size, as long as government expenditure on investments in education, health and infrastructure relatively highly in first stages of urbanization and industrialization, Cameron, (1978).

On the other hand, country size and openness are negatively associated as long as population, labor force and markets are large, which enjoy more labor division, higher factor productivity that creates fewer incentives for openness in large markets and economies comparing to small ones, Alesina et al. (2000).

Finally, we aim mainly to investigate and detect the relationships between both ODA and FDI from one side and the government size from other side. In addition, a few existing studies investigate these relationships separately, meanwhile, none has been found in MENA area. Furthermore, controlling for the well known relationships between country size, from one side and both government size and openness, from the other side, will be considered. Furthermore, dynamic analysis is highly important as long as previous decisions and behaviors of government are highly determine the future behavior, expenditure and size of government.

EMPIRICAL CONSIDERATION

The main target of our work is to investigate the impact of each FDI and ODA on the government size, proxies by government expenditure as share to GDP. Therefore, we include both variables in the estimated models. A limited empirical work has been done to detect the relationship between FDI, ODA and government size. In addition, no investigations have been found on these relationships in the MENA area. Furthermore, no pioneer model is standing. We use two techniques, the first, three equations estimated simultaneously using three stage least squares (3SLS) regression, and the first equation regressed on government size, and includes the main determinants, which are Official Development Assistance (ODA), Foreign Direct Investment (FDI) and openness. These variables are much related and much important to explain government size. The second and third equations include country size on each openness and government size equations. The relationship between government size, country size and openness has been discussed in theory, Rodrik, (1998), and empirically, including MENA area, Sabra, (2016). The second equation detects the impact of country size on openness that should be negative, as long as larger local market needs fewer incentives to be open. Finally, the third equation detects again the impact of both main variables ODA and FDI on government size , including the country size, which should impact negatively on government size, as long as larger economies have lower governments, Alesina and Spolaore, (1997), as mentioned before. In fact, this model captures that how ODA and FDI affect the government size considering the main determinants of government size, which are openness and country size.

The second model uses the dynamic panel data techniques namely Allerano-Bover / Blundell-Bond estimators. This estimates dynamically the impact of ODA, FDI, and openness on government size.

However, the positive relationship between openness and government size is not affected by the inclusion of other control variables, such as country size, and prevails for both low and high income level countries, Rodrik, (1998). Furthermore, government expenditure as a main component of calculating government size is determined by government decision and highly influenced by previous decisions of government, which presents the importance of dynamic analysis. The lagged government size variable has to be strongly, significantly and positively influence the current government decision of expenditure that determines the size of government. In addition, openness is positively associated with the size of government. Finally, ODA and FDI increasing may cause an increase in government size. In fact, their impact on government size is based on their direct and indirect finance to government budget. More productive resources such as FDI increases production, employment and economic units, which increases country size that decrease the government size, although these units finance the government budget. On the other hand, ODA such an easy resources finance government budget directly or through aid fungibility that increases the government size. Therefore, ODA impacts positively on government size. Furthermore, aid may cause Dutch disease and shrinks productive sectors that reduce financing government and leave the final impact ambiguous to be detected empirically according the region and time.

EMPIRICAL MODEL

Two stage least squares estimation

Model One

We use panel data of seven MENA countries (Morocco, Algeria, Egypt, Palestine, Jordan, Lebanon and Tunisia) for the period 2000 to 2019 basing on data availability that collected from World Bank database. The three-equation model avoids the simultaneity bias occurred in single-equation models. In addition, three-equation model allows for jointly determination of both ODA and FDI impact on government size, considering the openness and country size.

$$ln\ Gov.S = \beta_0 + \beta_1 Ln\ FDI + \beta_2 Ln\ ODA + \beta_3 Ln\ OPEN + \epsilon \quad \textit{Equation 1}$$

$$Ln\ OPEN = \alpha_0 + \alpha_1 Ln\ POP + v \quad \textit{Equation 2}$$

$$ln\ Gov.S = \beta_0 + \beta_1 Ln\ FDI + \beta_2 Ln\ ODA + \beta_4 Ln\ POP + \epsilon \quad \textit{Equation 3}$$

Where: Gov.S is the government size, which is government expenditure as a percentage of Gross Domestic Product (GDP). FDI is inward foreign direct investment flows. ODA is Official Development Assistance.

OPEN is the trade openness measured by the sum of exports plus imports as a share of GDP. POP is country size, which proxies by population size. And ϵ and v are error terms. The parameters β_1,β_2,β_3 and β_4 represent the elasticities of government size with respect to FDI, ODA, OPEN and POP, respectively. In addition, the parameter α_1 represents the elasticities of openness with respect to POP. Model aims to detect the impact of both FDI inflows and ODA on government size, considering openness and country size, as determinants of government size.

Dynamic Panel Data System

Model Two

In addition, we use the dynamic panel data GMM systems approach which estimates the parameters from a system of equations. This method is important for the dynamic panel data analysis, and it the first study, according our knowledge, in the empirical works detecting the ODA and FDI impacts on government size, relating to the subject and region.

$$\Delta\, \boldsymbol{Ln\ Gov.S} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1}\Delta\, \boldsymbol{Ln\ Gov.S_{t-1}} + \boldsymbol{\beta_2}\Delta\, \boldsymbol{Ln\ InFDI} + \boldsymbol{\beta_3}\Delta\, \boldsymbol{Ln\ ODA} + \boldsymbol{\beta_4}\Delta\, \boldsymbol{Ln\ OPEN} + \mu + \Delta\nu_t$$

Equation 4

Where: $Gov.S_{t-1}$ is the lagged variable of the dependent variable. This lagged independent variable is explanatory variable can strongly explain the dependent variable. In this case, government expenditure, which determines the government size, is in turn influenced by the government decision that is strongly determined by previous decisions. μ represents the unobserved country specific effects, and ν_t is the standard error. DPD system takes into consideration the cross country heterogeneity raise from pooled OLS estimation with cross sectional data. In addition, DPD system analysis provides more coherent estimation compared to fixed or random effect models, which addresses several biases related to heterogeneity across countries and time, Mitze, & RWI, (2010).

ECONOMETRIC METHODOLOGY

The Three-Stage Least Squares (3SLS) is a well known econometric technique and widely used in the literature. In fact, it used to estimate the parameters of simultaneous equations when errors across the equations are not correlated and the equations concerned are over-identified or exactly identified, Mishra, (2008). Estimation of government size and openness equations individually might endure simultaneous equations bias due to some of the explanatory variables might not be truly exogenous. Consequently, we estimate the three equations simultaneously.

Standard estimators for the static panel data model, which control for the existence of individual effects, are the Fixed Effects Model (FEM) and Random Effects Model (REM) approaches. The econometric analysis with this model addresses several biases, these biases related to heterogeneity across countries and time. The problem with standard FEM is that, it cannot estimate parameters such as time invariant variables. On other hand, the problem of standard REM is the biases caused of endogeneity problem due to the potential correlation between one or several explanatory variables, and the residuals, in addition. However, choosing among the FEM and REM estimator rests on an all or nothing decision with respect to the assumed correlation of right hand side variables (explanatory variables) with the error term. In empirical applications, the truth may often lie in between these two extremes, Mitze, & RWI, (2010). Arellano-Bover, Blundell-Bond is a recent econometric technique, which is dynamic panel data system (DPD system) analysis. This method is based on the Generalized Method of Moment GMM technique that has been widely used in empirical estimation of dynamic panel data models. (Blundell and Bond 1998) proposed system GMM estimators to overcome the inconsistent instrumental variables estimators caused by weak instruments. Firstly, They showed that the level GMM estimators by Arellano and Bover (1995) are free from weak instruments when even the parameters concerning the lagged variables is close to unity, and then combined the moment conditions, which are used in first differencing, and the level GMM estimators to improve the efficiency of the estimators, Hayakawa, (2005).

The dynamic panel data is GMM systems approach that estimates the parameters from a system of equations: the first differenced model using lagged levels government size as instruments for the lagged difference of government size equation. Secondly, use the difference instrumental variables in the model, Arellano and Bover, (1995); Arellano and Bond (1998); Blundell and Bond, (1998). Therefore, we run dynamic panel data system analysis, which is Arellano Bover Blundell Bond.

In fact, we rely on the DPD system estimation to detect the impact of FDI and ODA on government size. The long run coefficients are calculated by the equation: long run parameter (coefficient) = determinant (independent variable) coefficient / 1-dependent variable coefficient, Sabra, (2015).

DATA

This article uses panel data of seven selected middle income MENA countries, which are (Algeria, Egypt, Jordan, Lebanon, Morocco, Palestine, and Tunisia) for the period from 2000 to 2019. We use government size, inward FDI flows, openness, ODA and country size variables. ODA is the net official development assistance and official aid received. Trade openness measured by the sum of exports plus imports as a share of GDP. Government size is general government final consumption expenditure as a share of GDP. Population as a proxy of country size. The proxies of variables are widely used in the previous literature. All row data of variables are collected from World Development Indicators of the World Bank, except FDI inflows, which collected from UNCTAD database, besides openness and government size, which are calculated as exports plus imports, and government expenditure divided on GDP, respectively. Limited missing values are still standing. All variables are taken in logarithm. We use the variables in algorithm to get the elasticities, guarantee linearity and reducing any potential multicollinearity. STATA software has been used for the analyses.

RESULTS

The following table shows the estimation results of model one.

Table 1: three-stage least squares estimation for equations 1, 2 and 3.

	FDI	ODA	Open	Constant	F statistics	RMSE
Gov. Size	-.057*	.05***	.02***	-2.38*	12.45*	.25
	(-5.56)	(1.95)	(1.89)	(-4.54)		
	POP			Constant	F statistics	RMSE
OPEN	-.43*	-	-	-6.77*	17.74*	1.26
	(-4.21)			(4.01)		
	FDI	ODA	POP	Constant	F statistics	RMSE
Gov. Size	-.052*	.046**	-.044*	-1.62*	22.37*	.23
	(-6.00)	(2.13)	(-4.32)	(-3.39)		

Figures in parentheses are t statistics. R^2: 0.22**,** 0.08 and 0.35 for equation one and two, the symbols *, **, *** indicate significance at 1%, 5%, and 10% levels respectively.

Table 1 shows model one estimations for equations 1, 2 and 3. It shows a significant F-statistics, and low root mean square errors RMSE, which presents model validity.

All variables coefficients are significant at 1% except ODA and openness at 10% in the first equation, and ODA that significant at 5% level in the third equation, and R^2 is 0.22, 0.08 and 0.35 for the three equations, respectively.

FDI is negatively associated with government size, this shows that FDI participates in increasing local market and country size in term of increasing economic units. In fact, increasing FDI, that serves the local markets and, reduces the need of more openness, which reduces the government size, and explains the negative impact of FDI on governments' size. Furthermore, this indicates the importance of FDI attracted to the area in enhancing the economy size, productive sectors and economic agent's actors, which reduces the relative size of government in economy. Finally, as long as FDI reduces imports, Sabra, (2021) that reduces also the potential of external shocks, which in turn, have to reduce the need of high government size.

ODA is associated positively with government size, that indicates aid is enhancing government expenditure directly or through aid fungibility, in addition, it enhances the public and private consumption, expands non-tradable sectors, shrink tradable sectors, crowds out savings, increases imports and raises Dutch disease, Sabra, (2016), Sabra, (2021), Sabra, & Eltalla, (2016). This enhances more and more public and private imports, and increase openness that enlarges the government size.

Results show that more openness increases the government size, which comes in accordance with the economic literature in the field. Government plays a stabilizer role in the economy against the external shocks, facing income volatility, and require more expenditure through social welfare system that causes higher government size, (Rodrik, 1998), Sabra, (2016).

Country size and government size from one side, and with openness from the other side are associated negatively, that agrees the previous theoretical and empirical works. In fact, as large as population and economic agents in the economy, as larger as the cost of various public goods will be reduced, and per capita costs of these public goods declining as taxpayers increase, from one side, and the required per capita government expenditure will be lower, from other side. On the other hand, higher country size, including more employees and firms, which reduce the need of more openness. Furthermore, higher country size decreases trade openness and government size, that asserts the positive relationship between openness and government size. Hence, controlling for the country side on openness and government size allows for more robust results concerning the impact of international inflows on the governments' size.

Table 2: Dynamic Panel Data System estimation for equation 4

	L. Gov.S	FDI	ODA	Open	Constant	chi2
Gov.S	.97* (23.44)	-.007** (-2.55)	.017** (2.05)	.013* (3.21)	-.36** (-2.07)	631.99*
Long-run coef.	-	-.23	.57	.43	-	
			H0: overidentifying restrictions are valid			125.67* *

Figures in parentheses are z statistics. The symbols *, **, *** indicate significance at 1%, 5%, and 10% levels respectively.

Table 2 shows model 2 estimation for equations 4. It shows a robust model, all variables coefficients are significant at 1% or 5%. Furthermore, as shown in table 2, Sargant test shows that all moment restrictions are satisfied for the dynamic specifications can't be rejected. This means that the instruments are valid for model, model is robust and correctly specified. All signs are in accordance with the simultaneous analysis.

The lagged variable of government size shows that government behavior and size is mainly determined by previous size. This in fact true as long as government expenditure determined by government decision. FDI doesn't provide easy resources to government, meanwhile, it replaces imports, decrease openness and increases country size in term of increasing economic units such as employees and firms, and therefore, it tends to decrease government size.

ODA associates positively with government size, which means ODA makes government expenditure grows higher than GDP growth, i.e. government size grows. This point out that ODA enhances consumption behavior in government and finance public budget for the current expenditures, as long as government expenditure grows faster than GDP growth. In addition, this changes government behavior toward consumption, transfers and imports, Sabra, (2021), either financed by local revenues or aid. This is because of the rent seeking behavior and aid dependency.

Finally, openness works to increase government size, which plays a stabilizer role against the external shocks. In addition, as long as ODA reduces trade barriers and increases imports that increase openness, hence, both ODA and openness have to associate positively with government size.

RECOMMENDATIONS

FDI seems to work in complementarily way to local capital participates in realizing growth and development, bridge investment saving gap, finance public and private investment, creates new jobs and increase income. This in fact participates in enhancing the private sector, on one hand, and decreasing the government role in economy and its size, on the other hand. On contrary, ODA seems to crowd out savings and investment and increase private and public consumption behavior and increase government size and its dependency on aid.

For these reasons, packages of reforms and structural, institutional, legal, trade and economic policies that enhance FDI attraction to local economies, and regulate ODA for financing development goals, are highly recommended.

Governance, fighting corruption, reduce public current expenditure, facing banking system finance for consumption finance instead of productive, deep reforms in public health and education systems, restructure government bureaucrats and enhance trade agreements within region are necessary to attract more FDI and reduce aid dependency and to guide ODA according the national priorities, that should be initiated.

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