

Subsidies reforms and economic growth in the Arab countries

Kamel Si Mohammed¹

Associate Professor

MECAS laboratory .Ain Temouchent University (Algeria)

simohammed_k@yahoo.fr

Medjahed Kenza

MIFMA Laboratory .Maghnia University (Algeria)

medjahedkenza@gmail.com

Smahi Ahmed

Professor

MECAS laboratory .Tlemcen University (Algeria)

Received date: 19.01.2021 / Accepted date:21.03.2021

Abstract :

The goal of this study is to analyze the role government subsidizes on economic growth in the Arab world over the last two decades by applying panel autoregressive distributed lag (ARDL) framework of pooled mean group (PMG) and mean group (MG) estimators that take into account heterogeneous of the effects across countries, with using various variables as determinants of growth. The result obtained from PMG estimators demonstrates that the government subsidies have had no effect on growth in short term would tend to appreciate the some Arab countries growth in long term.

Keywords: economic growth, the Arab world, dynamics heterogeneous panel, Pooled Mean Group; PMG

Jel Classification Codes:B55, O5.

¹ **Corresponding Author.** Kamel Si Mohammed. **E-Mail :** simohammed_k@yahoo.fr .

Introduction :

Economic growth has always been the main top economic policy objectives of governments were trying to achieve in this goal using various trade policies, fiscal and monetary policies. Also economic growth has always been the ultimate goal of seeking to economic theories through diving in the most important reveal its agreed that the main Classical (Adam Smith, David Ricardo..). In their conception the Capital (K) and human factor (L) are the key determinants of economic growth as the main significantly increases in economic activity. Swan 1957 and Solow 1956, (neoclassical theory named the first generation models) used technical progress in mathematical production function as an endogenous growth model. This model was a revolution in the economic growth and defined the glorious three decades from 1945 to 1975.

After this period, neoclassical model fails to explain economic stagnation that has led to develop and examine other variables and models. The second-generation models, in fact the pioneers of rational expectations school models, the most important of which is the model of Robert Lucas 1988, which circumscribed that human capital plays an important role by the revelation of the determinants of the Solow-Swan model. In addition, Barro generation models analysis of government spending, which otherwise would have element of what could be interpreted the development of the knowledge and scientific progress.

In the same school, Poul M. Romer 1990 concluded that knowledge accumulation will not achieve high growth rates in the long term without the expansion of the market (increasing returns).

Barro (1986, 1990) of their modeling exhibit a long-run that the government expenditure is the main determinant of economic growth. In this context, D Armev (1995) shape whether there is an "inverted U" as nonlinear relationship between government expenditure and economic growth. Moreover, Army study supports the optimal size expenditure, which implies that inefficiency in government expenditure to stimulate economic growth. for this reason, many studies analyze the impact of the subsidies and other transfers on the economic growth

The goal of this study is to analyze the main determinants of economic growth in the Arab countries during two last decades. GDP annual growth rates these Arab countries averaged 3.9 from 2000 unit 2015. Of course, oil-exporting countries grew better compared the non-oil producing countries, while Oil and gas revenues constitute the dominant income of oil-exporting countries (more 85% of exports, 30 to 50 % of GDP and 40 to 70 % of government revenue).

The rest of the paper is organized as follows. In section 2 we present a Literature Review; Section 3 presents the Model and the Methodology, followed by the results and discussion showed in Section 4, and finally, Section 5 presents the main conclusion.

1- Literature Review

Mohammad Al-Saidi (2020) concentrated on energysubsidy in some GCC countries namely Qatar, UAE, Bahrain, Kuwait, Oman and Saudi Arabia. He concludes that that the adopted subsidy reforms are not yet comprehensive in some GCC countries.

In Arabic Saud, Khatib M (2009) examined the main determinants of growth during the period 1970 to 2006. Results of this estimation demonstrate that government spending, subsidies and money supply positively affect growth. On the Contrary, neoclassical production function is mixed effect.

Food subsidy reforms have more attention for Egypt studies (see Scobie, G. 1981, Alderman and Braun. 1984, Ali and Adams, Jr ,Akhter U. Ahmed(2003)).

Many imparted-oil countries in Arab region like Jordan, Mauritania, Morocco, and Tunisia implemented a price subsidy for energy to equilibrium domestic demand when paid cash transfers to poor income (IMF, 2014; Sdravovich et al., 2014).

kamelsimohammed and abderrezakbenhabib(2019) the panel GMM model to Estimate the impact of the social transfers on economic growth in Algeria. In their results indicate that a 1% increase of government subsidizes would tend to appreciate the Algerian economic growth by nearly 0.2% This positive relationship emphasizes how this support policy has not social impacts but help swell economic objectives that would cater for public budget deficit curtailment and promote economic growth.

2– Methods and Materials:

The main objective of the econometrics study is to highlight on determinants of economic growth, for investigating the impact of these determinants, we can based on the equation that describes this relationship is as follows:

$$Y_{it} = f(X_{it}, \dots) \quad (1)$$

$$GDPG_{it} = f(CPS_{it}, GFCF_{it}, SE_{it}, TR_{it}, GS_{it}) \dots (2)$$

Y_{it} : is dependent variable that indicated Gross Domestic Product growth rate that represents economic growth (**GDPG**).

X_{it} :are independent variables that include the determinants of growth of interest such as financial development, investments, School enrollement, trade openness, government subsidizes. We show representative variables of these determinants, that include, CPS_{it} : is indicator of financial development that is the credit to private sector to GDP , it is the main variable that can capture the size and depth of financial intermediaries and used by almost previous studies , high ratio that reflect more financing private projects investments. In this context, this indicator measures the degree of bank intermediation toward the private sector in the developing and emerging of financial markets or absence in some countries (Bank-Based). This is one of the widely used measures (proxies) of financial development that can measure the quantity and the quality of services that are provided by financial intermediaries, « **the ratio of bank credit to private sector**

to GDP is more directly linked to investment and economic growth » (Gregorio and Guidotti, p: 434), so financial development promotes economic growth through capital allocation channel., SE_{it} : School Enrolment rate as proxy of human capital. TR_{it} : is the sum of exports and imports of goods and services measured as a share of GDP, $GFCF_{it}$: Gross fixed capital formation) as a percentage of GDP for proxy of the volume investments. GS : is the government subsidies as a percentage of GDP.

This study employs annual data of the selected indicators of Seven Arab economies, which depends on the data, notably: are Algeria, Morocco, Jordan, Oman, Egypt, Saudi Arabia and Qatar. All data is collected from International Monetary Fund (IMF) cover the period 2000-2018.

Error correction-based autoregressive distributed lag (p,q) (ARDL) model :

Since this research focuses on investigating the possibility of heterogeneous dynamic issue that is determinants of growth across the Arab countries, the appropriate technique to be used to the analysis of dynamic panels is autoregressive distributed lag ARDL (p, q) model in the error correction form. Then to estimate the model based on the mean group (MG) presented by Pesaran and Smith (1995), pooled mean group (PMG) estimator developed by Pesaran et al. (1999) is estimated in the following equation :

$$y_{it} = \sum_{j=1}^p \lambda_{ij} y_{i,t-j} + \sum_{j=1}^q \delta'_{ij} X_{i,t-j} + \mu_i + \varepsilon_{it} \dots \dots \dots \quad (4)$$

Where j is the number of time lag

We build equation (4) as an error correction model that allows estimating the relationship in the long and short by using PMG and MG methods, is rewritten as follows:

$$\Delta y_{it} = \theta_i y_{i,t-1} - \beta' X_{i,t-1} + \sum_{j=1}^p \lambda^*_{ij} \Delta y_{i,t-j} + \sum_{j=1}^q \delta'^*_{ij} \Delta X_{i,t-j} + \mu_i + \varepsilon_{it} \quad (5)$$

Where β' represents the parameters of the long run relationship between growth and its determinants, λ^*_{ij} and δ'^*_{ij} the parameters of the short run relating growth to its past values and determinants $X_{i,t}$, and the error-correction coefficient θ_i measures the speed of adjustment of GDP toward its long-run equilibrium following a change in $X_{i,t}$, to ensure the existence of long run effects the error correction term θ_i have to less than 0 also with negative sign, PMG estimate or indicate that the effects are homogenous in long term but in short are heterogeneous, and MG estimator shows that heterogeneous relationship cross sample in short and long run.

3- Results and discussion :

The following table represents the results of panel ARDL model estimation that investigating the effect of the main determinants of economic growth that take attention in recent years on gross domestic products growth rate in selected Arab countries through PMG and MG estimators and Hausman test (table 01) :

The table 01 above illustrates the results of the estimation as show, using the determinants of economic growth. The first column presents independent variables in the short term (D.), the long and the error correction term (ECT) and second and third columns for estimation results of PMG and MG, also the Hausman test that allows which estimation method is more efficient than other PMG or MG.

The Hausman test statistic and the corresponding p-values of the coefficients are outlined in Table 1 where the null hypothesis that there is long run homogeneity restriction is tested against the alternative hypothesis. We found that the Hausman test fails to reject the long run homogeneity restriction, at the conventional levels of significance, supporting the appropriateness of the PMG estimates in both cases. The Prob> chi2 is equal to 0.78, which is larger than 0.05. The P-value happens to be significant and thus the PMG is recommended. Since the Hausman tests confirm the PMG estimates, that is, the panel is heterogeneous in the short run and homogenous in the long run, emphasis will be based on the PMG estimators for interpreting the results.

The condition for the ARDL model is the existence of a long run relationship. The criterion for this is that the coefficient of the error correction term has to be negative and not lower than -2 . This is the main requirement for the validity, consistency, and efficiency of a long run relationship among the variables of interest. Table 1 illustrates the pooled error coefficient and the corresponding standard error. We note that the pooled error correction term falls within the dynamically stable range in the case of the PMG and MG estimates. Our main concern here is the PMG as recommended by the Hausman test.

The result obtained from PMG estimators demonstrates Government Transfer GS has a neutrally effect in the short term and modest positive over the long term at 1% level of significant, which is a clear indication inefficiency of government subsidy in Arab countries.

The GFCF indicator has a positive impact and non-significant in short run, but in the long run positive homogenous effect and statistically significant at the 5% level, this is in accordance with theoretical review that investment projects affect economic growth positively in the long run. We note that the variables school enrolment has a positive and significant if effect on economic growth at 1% level in short run, in long run negative and non-significant effect that allows to us that human capital does not contribute in economic development in Arab countries, that show that increasing the expenditure on educational sector do not reflect the performance of this sector on preparing output fittings with economic activity.

TR is negatively related to GDPG at 5% level of significant in short run, for long term related positively but no significant, trade openness does not seem to play as an important role for the Arab countries. Moreover, almost variables are related to growth as According to theoretical assumptions, the indicator of financial

development is credit to private sector has a positive sign in long run and negative in short term but non-significant that means financial development has no impact on growth through credit to private sector that result to the weak of quantity of credit toward this sector.

Summing up the results, it can be concluded that financial development does not increase the growth rate across selected countries, trade openness does not seem to play as an important role for this sample, we also conclude that the low quality of investment projects and school enrolment (human capital) are the key determinants of growth,

4-Conclusion:

This study examined the Government Subsidy as determinant of economic growth in the Arab countries during the past two decades, using the heterogeneous panel models that reflect this effect across selected countries. The main conclusion of this study is that the direct subsidies don't going efficiently to poor society and not allow to producers and consumers benefits stable and substantial prices.

References in Arabic

- كمال سي محمد، النمذجة القياسية للنتيجة بالحجم الأمثل للإنفاق الحكومي في الجزائر، مجلة الاقتصاد والتنمية البشرية، البلدة، العدد 15 ، 2016 ، ص 48-59.
- كمال سي محمد، الإنفاق العام والاستثمار الخاص : اثر مزاحمة أم اثر تكامل دراسة ، مجلة التنظيم والعمل ، معسكر، العدد 11 ، 2017 ، ص 61-71.
- ممدوح عوض الخطيب، اثر الدعم الحكومي على النمو الاقتصادي السعودي، السلسلة العلمية لجمعية الاقتصاد السعودي. المجلد السابع العدد السابع 1429.

References :

- Baltagi, B H.** (2005). *Econometric Analysis of Panel Data*, 3rd ed. John Wiley & Sons, Ltd.
- Barro, r.** (1990). «Government Spending in a Simple Model of Endogenous Growth», *Journal of Political Economy*. 98, 103-125.
- Barro, Robert J.** (1990), «Government Spending in a Simple Model of Endogenous Growth», *Journal of Political Economy* 98(5), 103-125.
- Barro, Robert J.** (1991), «Economic Growth in a Cross-section of Countries», *Quarterly Journal of Economics* 106(2), 407-443.
- Domar, E** (1946). «Capital Expansion, Rate of Growth, and Employment». *Econometrica* 14.
- Harrod, R. F** (1948). «" Toward a Dynamic Economics :SomeRecentDevelopment of Economic Theory and Their Application toPolicy». MacMillan Press Ltd. London.
- Kamel S., M., and Maliki S.** (2018). «Can Economic Diversification boost Growth? Evidence from Algeria». <https://afu.ac.ae/uploads/editor/source/files/pdf/TASK%202018%200%20Conference%20Program%20-%202026%20April%2018.pdf>
- Lucas, Robert, E. (1988), «On the Mechanics of economic development», *Journal of Monetary Economics*, Vol. 22.
- Mankiw; N. Gregory, Romer; David, Weil, David N.,** (1992), «A Contribution to the Empirics of Economic Growth», *The Quarterly Journal of Economics*, Vol. 107, No. 2.
- Murshed Chowdhury.** (2012), «Panel Cointegration and Pooled Mean Group Estimations of Energy Output Dynamics in South Asia», *Journal of Economics and Behavioral Studies* Vol. 4, No. (ISSN: 2220-6140).
- Obeng, K., Sakano, R.,** (2000). «The effects of operating and capital subsidies on total factor productivity: a decomposition approach». *South. Econ. J.* 67 (2), 381-397
- Pesaran, M.H. and R. Smith.** «Estimation of long-run Relationships from Dynamic Heterogeneous Panels», *Journal of Econometrics*, 68, 1995
- Pesaran, M.H., Y. Shin and R. Smith,** «Pooled Mean Group Estimation of Dynamic Heterogeneous Panels», *Journal of the American Statistical Association*, 94, 1999
- Romer, Paul M.,** (1990), «Endogenous Technological Change», *the Journal of Political Economy*, Vol. 98, No. 5, Part 2: The Problem of Development: A Conference of the Institute for the Study of Free Enterprise Systems.

Sala-i-Martin, Xavier & Artadi, V. Elsa, (2003), «Economic Growth Investment in Arab World», Columbia University, New York

Solow, R.M. (1956.) «A Contribution of the Theory of Economic Growth». Quarterly Journal of Economics. Vol 70 No 1.

Swan, T.W. (1956), «Economic Growth and Capital Accumulation». Economic Record, Vo 32.

Nadeem A. Burney, Kamiar M. Alawadhi A, Al-Musallam., M (2017) «The dynamics and determinants of Kuwait's long-run economic growth», Economic Modelling, Volume 71, Pages 289-304.

Daniel H. V, and Chasco C., (2016), «long-run determinants of economic growth in south america», Journal of Applied Economics, Volume 19, Issue 1, Pages 169-192

Anže Burger, Jože P. Damijan, Črt Kostevc, Matija Rojec (2017), «Determinants of firm performance and growth during economic recession: The case of Central and Eastern European countries», Economic Systems», Volume 41, Issue 4, Pages 569-590

Table 01 :results of Panel ARDL model estimation.

GDPG	PMG (Pooled Mean Group)		MG (Mean Group)	
	Long run	Short run	Long run	Short run
ECT	-0.8445101*** (0.1959436)		-1.460483*** (0.0955666)	
CPS	0.0441804 (0.0292795)		0.0624932 (0.1121629)	
GS	0.008517*** (0.088374)		0.1323546 (0.6726952)	
TR	0.0660933 (0.0408173)		0.0280931 (0.1551557)	
SE	-0.4331312*** (0.051786)		0.1312644 (0.1384417)	
GFCF	0.1198579** (0.0477954)		0.2293142** (0.0953325)	
Hausman test¹ (PMG or MG) 3.20 (Prob>chi²=0.7865) .				
D.CPS		-0.0453735 (0.1961987)		0.006044 (0.2371715)
D.GS		-0.8685643*** (0.2064965)		-1.109212 (0.7918518)
D.TR		-0.0695002** (0.0295002)		-0.0536092 (0.140629)
D.SE		0.4394508*** (0.1629734)		0.1168177 (0.1309568)
D.GFCF		0.1407835 (0.1863028)		0.2827996 (0.2660338)
Constant		-3.28706* (1.812835)		-21.75318 (42.99391)
N	98		98	

Notes: The dependent variable is GDPG. *, **, and *** indicate significance at 10 %, ** at 5 % and *** at 1 % respectively. Estimations are done by using (xtpmg) routine in Stata14. the speed of adjustment (ECT). Hausman test is indicating that PMG is consistent and efficient estimation than MG estimation. The lag structure is ARDL (1, 0, 0, 0, 0, 0), N : number of observation, the values in the parentheses (brackets) are the standard errors.

¹PMG is efficient estimation than MG under null hypothesis.

Table 2: Result from PMG Short run impact for each independent variable across the countries.

variables	Algeria	Egypt	Jordan	Morocco	Oman	Saudi Arabia	Qatar
ECT	- 1.419646 *** (0.1123281)	-0.6758991*** (0.1067942)	-0.2170798 (0.1564835)	-1.205921*** (0.2248067)	-1.053868*** (0.3276056)	- 1.228154** * (0.2974084)	-0.1110029 (0.0802287)
D.CPS	-0.2069304 (0.134119)	0.0756331 (0.1308603)	0.0595291 (0.0716212)	-0.421941*** (0.1533557)	1.017304** (0.4315711)	-0.3421398 (0.2740864)	- 0.4990699** * (0.1844707)
D.TR	0.0349327 (0.0709162)	-0.1216673** (0.0500003)	0.0410937 (0.0509802)	-0.1141223 (0.0784614)	-0.0892821 (0.1205465)	-0.1603397 (0.2605104)	-0.0771166 (0.1317024)
D.SE	0.5049652*** (0.1726275)	0.181811** (0.0786558)	0.2519127** (0.113529)	1.386385** (0.6388845)	0.2471457 (0.3907559)	0.305489 (0.7983734)	0.1984477 (0.1857317)
D.GFCF	- 0.0970626 (0.0801366)	0.3905558** (0.1506978)	-0.0485705 (0.1748537)	0.7208313 (0.6269883)	-0.6499957* (0.3411635)	-0.029715 (0.3756668)	0.699441 (0.4850447)
Constant	-2.700821 (4.168959)	3.294086*** (1.10306)	-0.9229022 (1.098417)	-11.32149*** (3.457032)	-7.448504* (4.203831)	-3.251903 (5.279537)	-0.6579335 (0.8576088)

Notes: *, **, and *** indicatesignificanceat 10 %, ** at 5 % and *** at 1%respectively,the values in the parentheses (brackets) are the standard errors.