Journal of Economics and Sustainable Development
ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
Vol.6, No.12, 2015

The Effect of Privatization on Economic Growth in the Middle East and North Africa Region
The Case of Egypt, Jordan, Morocco, Tunisia and Turkey (Panel Data Analysis)[1]

Musa Foudeh
College of Economics and Administrative Sciences, Al-Imam Muhammad Ibn Saud Islamic University
P.O. Box 5701, Al-Riyadh 11432, Saudi Arabia

Abstract
More than fifteen years have been passed since the application of privatization programs in the Middle East and North Africa region (MENA). One of the most important objectives of privatization in these countries was to enhance economic development.
This paper aims at studying the effect of privatization process on economic development in MENA region. The sample of the study concludes data collected from the five most committed and advanced countries in applying privatization policies in the region: (Egypt, Jordan, Morocco, Tunisia and Turkey).
Panel Data Analysis has been employed in order to study the statistical relationship between privatization and economic growth. The descriptive statistics indicate that privatization in MENA countries was accompanied by a growth in the levels of foreign direct investment during the period (1990-2008). The empirical evidence from Pedroni and Kao residual co-integration tests show no possible long run relationship between privatization which is represented by foreign direct investment on economic development represented by the logarithm of GDP per capita. A clear statistical relationship in MENA region between privatization and economic development couldn't be established.
Key Words: MENA Region, Privatization, Economic Development, Panel Data Analysis.

1. Introduction

Despite the fact that there are many differences concerning their economies, Egypt, Jordan, Morocco, Tunisia and Turkey were characterized at the end of the 1980s by five common elements:
1- Chronic budget deficits.
2- High unacceptable levels of public debt which is a logic consequence of the undisciplined budget deficits.
3- Unprofitable and inefficient state owned enterprises (SOEs) because of the bad management of these establishments.
4- The limited amount of domestic savings and the inability of mobilizing national savings.
5- The small role of private sector in the economic activities especially in the vital sectors (Electricity, telecommunication, mining, transport, infrastructure services).
Monetary and financial policies in the Middle East and North Africa countries were also characterized by the intervention of the government in the economy during 1970s and 1980s. It aimed at encouraging the local investors by offering them low interest rates and allocating resources in specific sectors. Therefore, in the 1990s, many countries in the region applied financial liberalization programs which included privatization programs and opened their financial markets for foreign investments in order to stimulate the economic growth. The reform programs consisted also of measures in order to improve investment in private sector, reduce the budget deficit and liberalize the financial system by removing financial restrictions. These measures have been adopted as a part of structural adjustment programs proposed by the World Bank and the IMF. Between 1990 and 2008, the majority of privatization initiatives in MENA took place in Egypt, Jordan, Morocco, Tunisia and Turkey which accounted for 94.5% of total sales proceeds in MENA region[2]. The privatization process was not to take place without the active participation of foreign capital due to the scarcity of domestic savings in these five countries. Many studies[3] indicate that FDI participated in about 85% of privatization of SOEs in developing countries. Privatization exercises its positive effects on economic growth implicitly via its direct influence on foreign direct investment which has been proven to have a net effect on economic growth.

[1] The author gratefully acknowledges and thanks the Deanship of Academic Research at Al-Imam Muhammad Ibn Saud Islamic University / Saudi Arabia for financing this project of research under the number 351108 / 2014. I would like to thank dear Professor Hatem Mahran, Dr. Abdul-Aziz Algaeed, Dr. Mustapha Benhassine and Dr. Imad Trabelsi for their help and support. I would also like to thank the editor and the anonymous reviewers for their assessment of my paper.
[2] World Bank Privatization database 2013.
[3] Boubakri, Cosset, Debab & Valery (2013), Boubakri, Cosset & Guedhami (2005) and Foudeh (2013).

Rahbar, Sargolzaei, Ahmadi R, Ahmadi M (2012) define privatization process as an approach to gradually access to the market mechanism. They consider it as an effective step towards achieving a competitive society based on market economy which can help to achieve higher growth and economic development.

The study of Hassouneh, Akho-Ershaida, Mobaydeen, and Rezq (2010) advanced four motives which incite every developing country to adopt the privatization programs:

1- Increase the economic growth of GDP and encourage foreign direct investments.
2- Remove the crowding phenomenon between private sector and public sector.
3- Rise the efficiency of economy and ameliorate its performance.
4- Reduce budget deficits and subsidies.

Based on the foregoing, it is important for the author to complete his previous study [Foudeh (2013)] concerning the effect of privatization on economic in Jordan as he admitted that his empirical results must be taken with some cautions because of the small sample size of 14 years only. The objective of this study is to place Jordan in a large regional sample by examining the effect of privatization on economic development in MENA region using panel data analysis instead of times series analysis. This study is organized as follows. Section 2 reviews the latest empirical studies which addressed the relationship between privatization and economic growth at long-run term. Section 3 determines the basis on which the five countries in the sample of study have been selected, while section 4 sets the dependent and independent variables and displays a table of descriptive statistics with some important remarks. The econometric model and the method of estimation (FMOLS), panel unit root tests and panel co-integration tests of the variables are presented in section 5. Finally, before concluding in section 7, the result of a possible long run relationship between privatization represented by FDI and economic development represented by the logarithm of GDP per capita is given in section 6.

2. Empirical Studies Reviews

Since the mass application of privatization policy, several studies have been accomplished using different empirical methods in order to investigate the effect of this policy on economic growth at long-run term.

Measuring the impact of privatizing SOEs on GDP growth at long term isn't an easy task. Cook & Uchida (2003) advanced two major reasons for the complication of measuring the contribution of ownership changes on economic growth:

1) Privatization is often accompanied in developing countries by changes in economic policies that affect economic growth.
2) Enough data wasn't available to carry out studies capable of measuring the dynamic effects of privatization.

Despite this fact, several studies have been done using various methods:

Plane (1997) studied a sample of 35 developing countries. He found that privatization had a significant positive effect on economic growth, particularly when it takes place in infrastructural and industrial sectors rather than other sectors.

In order to assess the effect of privatization on GDP growth in 41 developing countries over the period (2000-2008), Rahbar, Sargolzaei, Ahmadi R, Ahmadi M (2012) used a cross country regressions. Their results were various: While the estimation results in the MENA region, Latin America, Caribbean region and Sub-Saharan Africa showed insignificant effects on growth, they had significant positive effects in West Asia, Pacific area, Central Asia, South Asia and Western Europe.

The study of Sala-I-Martin (1997) found that economies with higher share of private sector in GDP had more rapid GDP growth rates.

Barnett (2000), employed data of 18 countries to examine the effects of privatization on real GDP growth rates, investment and unemployment. His empirical results indicated that privatization deals of 1% of GDP raise the real growth rate of GDP by 0.5% in the next year and by 0.4% in the following year.

The OLS method was used by Katsoulakos & Likoyanni (2002) for studying a possible relation between privatization and economic growth in a sample of 23 OECD countries over the period (1990-2000). Their results showed no statistically significant relation between GDP growth rate and privatization indicator.

Cook & Uchida (2003) used data of 63 developing countries over the period (1988-1997) and applied cross-country growth regression analysis to examine the relation between privatization and economic growth. Their results concluded that privatization negatively contributed to economic growth. But they emphasized that despite the attempt to be methodologically rigorous, their result must be treated with a fair degree of caution, due to difficulties surrounding the determination of the direction of causality.

Using several econometrics specifications, including fixed effects and generalized method of moments (GMM), Bennett, Estrin & Urga (2007) studied the impact of privatization methods on economic growth at long term in 26 transition countries for the period (1990-2003). Their results didn't find a direct relation between privatization and growth. They found a significant influence between capital market development and private sector development on economic growth. They also found that only voucher privatization had a statistically significant effect with faster growth. So they concluded that countries which applied speed mass privatization had higher growth, compared with countries that used other methods. On contrary, the study of Gouret (2007) found that

mass privatization had a small positive effect on economic growth compared with the more gradual methods of privatization.

Filipovic (2005) used a sample of 83 developing countries and he employed a cross country regressions analysis in order to examine the relationship between growth and privatization from an incentives perspective. The privatization indicator was measured as the total privatization proceeds during the study period (1990-1999) in percentage of GDP in 2000. He concluded that the results obtained couldn't lead to generalize whether or not privatization can promote growth in developing countries. He also concluded that the very dependence of privatization on other economic factors might imply that privatization decisions should be made based on specific social, political and economic conditions for each particular country.

The empirical study of Naguib (2010) used time-series model to estimate the effects of privatization and FDI on economic growth in Argentina over the period (1971-2000). An error correction model was constructed to estimate both short and long run effects of privatization and FDI on GDP growth rates. Her results showed that privatization had negative significant effects on economic growth in the long run only. She explained that the reason behind this negative result was attributed to the absence of application of any regulatory procedures prior to privatization process. This goes with Staehr study conclusion (2005) which indicated that large-scale privatization carried out without adjoining reforms could lead to negative effects on economic growth. So it isn't the default of privatization itself but the fact of not implementing previous appropriate reforms, in order to ensure the success of such policy. Furthermore, Naguib (2010) explained that the negative effect of privatization is reflecting the negative effects of FDI on economic growth because 63% of privatization proceeds are in form of FDI. In the end of her study, she stressed that interpreting her results of time-series error correction model must be taken with caution because of the shortness of the time period covered and possibility of multicollinearity between privatization and FDI variables. She thinks that panel data models can provide more variability that lead to less collinearity among variables and provide more reliable and efficient estimates.

Boubakri, Smaoui & Zammiti (2009), used a panel data of 56 developing countries over a long period (1980-2004). They used a dynamic panel approach employing GMM estimation technique in order to:

1) Reduce the statistical problems of cross-sectional growth regressions estimated by OLS.
2) Control for country-specific effects, omitted variables biais and endogeneity of explanatory variables.

They found that privatization proceeds over GDP have a robust positive effect on economic growth. They found also that shares issue privatization method through the stock market is positively correlated with economic growth especially when it was accompanied with a good institutional environment that protects property rights. In fact, the earlier study of Boubakri, Cosset & Guedhami (2005) concluded that regardless of the method which was adopted to privatize the SOEs in the developing countries, foreign direct investment participated in 86% of privatization in these countries between 1980 and 1999. Indeed, this led Boubakri, Cosset, Debab & Valery (2013) to examine the link between foreign direct investment and privatization of SOEs in 55 developing countries over the period (1984-2006) by using GMM approach in a dynamic panel and by carrying out a panel causality tests. Four countries from MENA region were among the 55 countries of their sample of study: (Egypt, Jordan, Morocco and Tunisia). According to their results they concluded that << privatization has an effect on globalization represented by FDI and FPI as the process of fostering private sector participation often involved the allocation of substantial shares to foreign investors in newly privatized firms. Similarly, we expect FDI/FPI to foster privatization efforts as new capital inflows. Technology and managerial skills that accompany globalization make the economic environment more prone to competition, thus fostering GDP growth. We provide strong evidence of a bi-directional positive relation between privatization proceeds and FDI>> Boubakri, Cosset, Debab & Valery (2013:1912).

In the same direction, the study of Onyeiwu (2003) from the fixed effects panel regressions concluded that while corruption was found to reduce flows to the MENA region, trade liberalization and privatization are important preconditions for FDI flows to the region.

Here, I have to mention that FDI is an important factor that determines the growth of GDP as well as that privatization is considered as a factor that determines FDI. The Granger test of causality carried out by Foudeh (2013) concerning the Jordanian case over the period (1998-2011) indicated no causality between privatization and growth of GDP. But while privatization was found to cause FDI, not vice-versa and FDI was found to cause economic growth, not vice-versa. So this led the author to conclude that privatization influences GDP growth implicitly via its positive effect on FDI which is positively correlated with the growth of GDP at 5% of significance level.

3. The sample of study

This study aims at studying the effect of privatization on economic growth over the period (1990-2012). There are 21 countries belong to MENA region mentioned in Table (1). Among them only five countries have been

chosen to be in the sample of study: Egypt, Jordan, Morocco, Tunisia and Turkey; as their total amount of privatization accounts for 94.5% of the total sales proceeds in the region[4].

The criteria which represent the reasons to exclude countries from our sample are:

1) Every country which hasn't applied a privatization program.
2) Every country which has a population less than 1 million.
3) Every country where the petrol accounts for more than 60% of annual GDP.
4) Every country with few observations and short time series.
5) Every country which occupies territories of other nation or under occupation.
6) Every country with political instability for more than 5 years over the period of study.
7) Every country which was during the period of study under United Nations sanctions.

Table (1): The MENA countries

The country	Included in the sample (√) or Excluded from it (X)	The reason of exclusion
Algeria	X	3
Djibouti	X	2
Egypt	√	
Iran	X	3 + 7
Iraq	X	1 + 3 + 5 + 6 + 7
Israel	X	5
Jordan	√	
Lebanon	X	6
Libya	X	3 + 7
Morocco	√	
Syria	X	1 + 4 + 7
Tunisia	√	
Turkey	√	
West Bank and Gaza	X	1 + 4 + 5 + 6
Yemen	X	4
Gulf Cooperation Council countries (6 countries)	X	3

Source: The list of all members of MENA countries is given by the World Bank.

Table (2): Privatization in Egypt, Jordan, Morocco, Tunisia and Turkey (1990-2008)

Country	**No. of SOE Sold*[5]**	**Total Proceeds amount (US $ Billion)**
Egypt	171	15,730.86
Jordan	19	1,924.84
Morocco	91	11,019.50
Tunisia	87	4,450.54
Turkey	163	39,004.52
Total	**531**	**72,131.04**

Source: The author's calculations based on World Bank Privatization Database 2013.

4. The variables of the study and descriptive statistics

There are three kinds of variables: the dependent variable, the main independent variable and other explicative variables (control variables).

4.1. The dependent variable

The explained variable which is the real GDP per capita for country (i) in time (t). Beck & Levine (2004) and Andersen (2003) confirmed that the annual growth rate of GDP per capita is a good indicator for measuring the

[4] The total amount of privatization proceeds in the whole region was $76,349 billion over the period (1990-2008). This amount is calculated by the author based on World Bank Privatization Database 2013. All the countries in the sample finished privatizing their SOEs in 2008 except Turkey one year later in 2009.

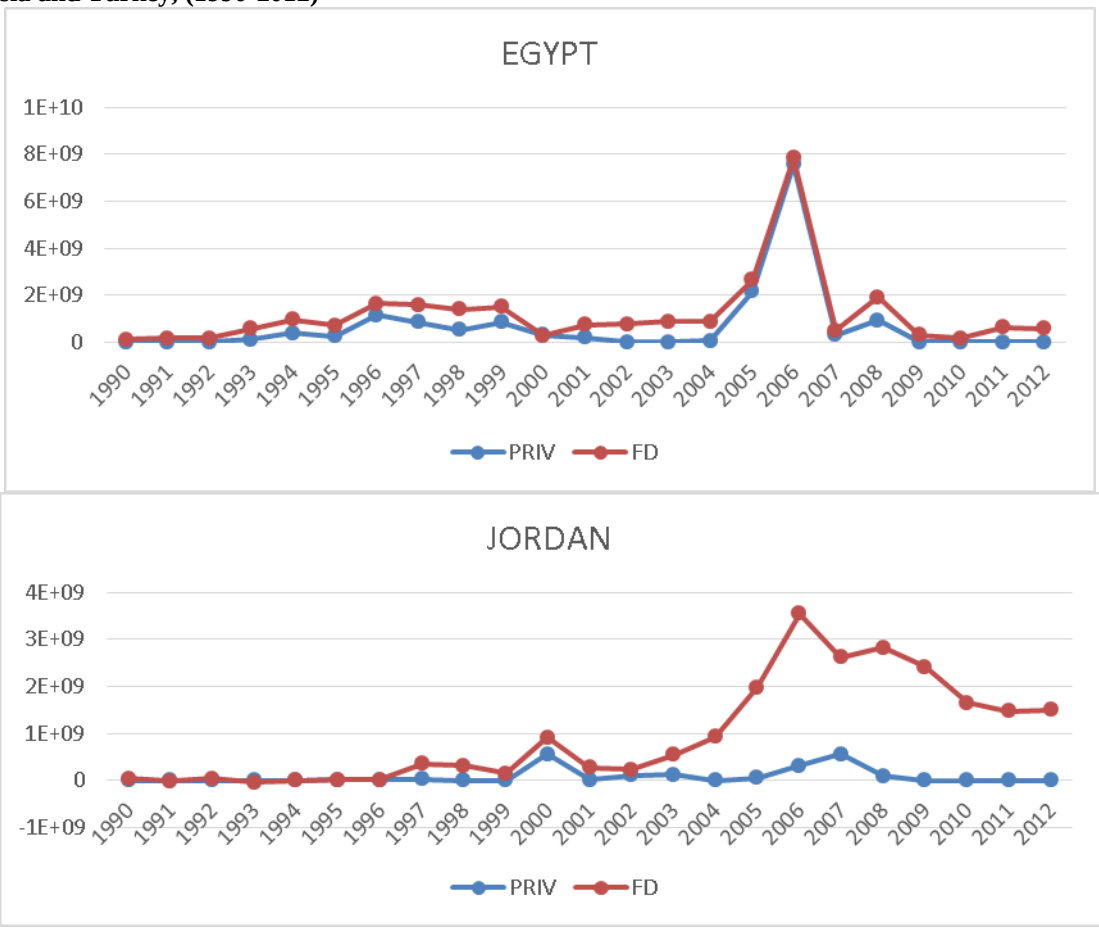
[5] The numbers of firms in this table were taken in account one time as there were some firms privatized partially over several years. For example Tunisiana was sold for an amount of 224 million US$ in 2002, then in 2004 the operation was completed by selling the rest of this enterprise for 247 million US$.

economic development and to see the differences in economic development between countries. It is a good indicator to examine the effect of privatization on economic growth.

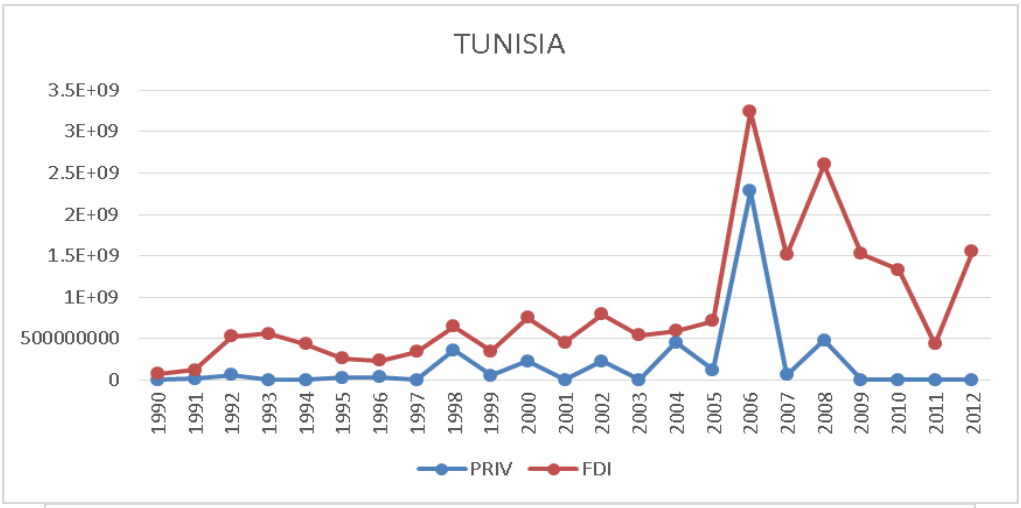
4.2. The main independent variable

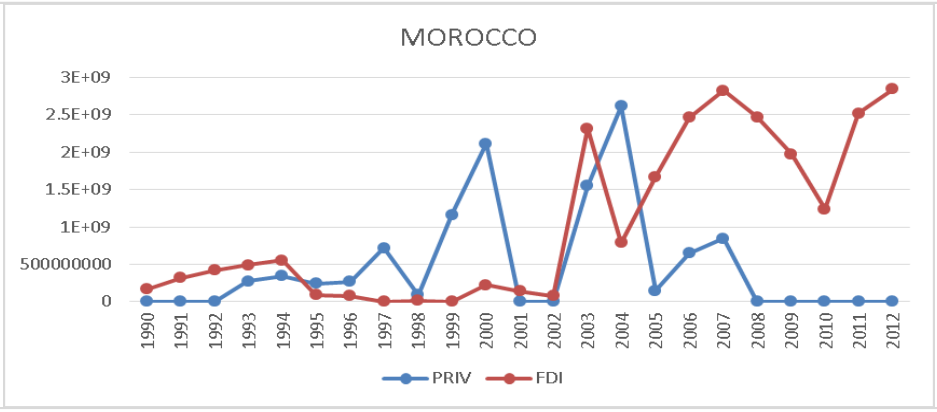
The explicative variable is the privatization indicator which we want to examine its influence on economic growth. It is measured by dividing the volume of privatization transactions for country (i) in time (t) by GDP. As it has been mentioned before, FDI[6] participates in 85% of privatization of SOEs in the developing countries and privatization exercises its positive effects on economic growth implicitly via its direct influence on FDI, which has been proven to have a net effect on economic growth. Sader (1995) indicated that privatization is an important determinant of FDI decisions in developing countries. In MENA region about 70% of privatization transactions are in form of FDI. Privatization attracts FDI through the direct acquisition of SOEs and by spreading an atmosphere of trust through reducing governmental intervention. Therefore, the ratio of FDI in percentage of GDP is going to be used as a proxy measure of privatization process in MENA sample, because privatization variable is stationary from level, while LGDP per capita and FDI are stationary from first difference. The curves in the figures below show clearly that when privatization rises, FDI follows it in the same direction for each single country and for all countries as a group [See Figures (1) below].

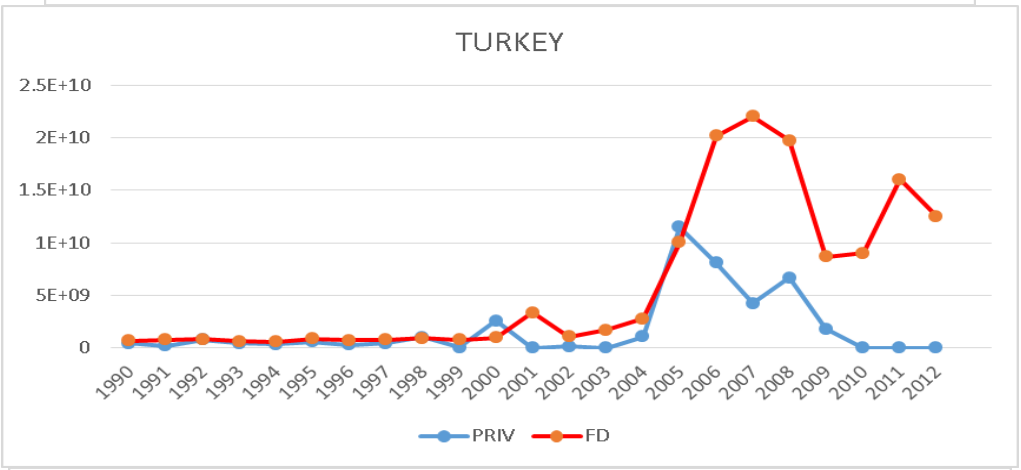
Figures (1): The evolution of privatization and foreign direct investment in Egypt, Jordan, Morocco, Tunisia and Turkey, (1990-2012)

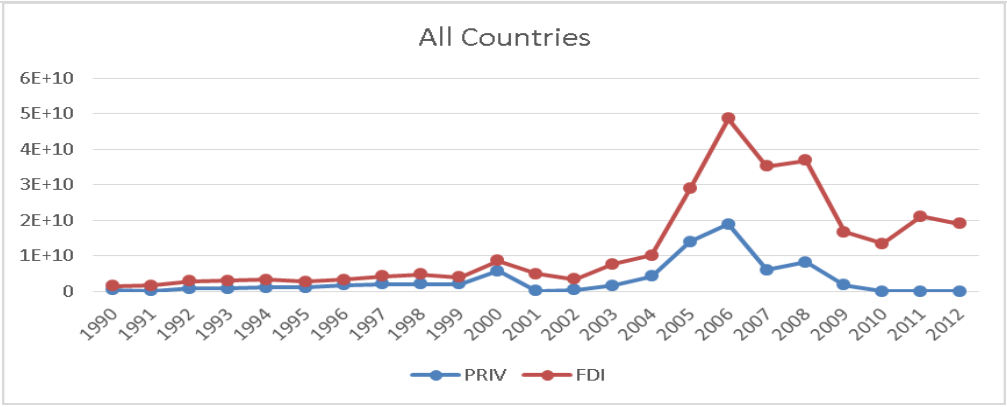


[6] Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long term capital, and short term capital as shown in the balance of payments (Definition of World Bank).









Source: Figures elaborated by the author based on data collected from the World Bank, 2013.

4.3. Control variables

There are many other explicative variables which are supposed by the theory to determine the economic growth of GDP per capita such as: Inflation rates, secondary school enrollment, trade openness, public expenditure, the employment rate and the financial development represented by domestic credit to private sector and Value traded to GDP.

Table (3) summarizes and regroups all the independent variables supposed to have an influence on the real GDP per capita.

Table (3): The expected signs of the explanatory variables supposed to have an influence on the real GDP per capita

Variable	Definition	coefficient	Expected Signe
Y	Log of real GDP per capita for country (i) in time (t)	Dependent	
X_1 :	The main independent variable (explicative variable):	$B_1^{/}$	+
LPRIVPIB	Log of privatization transactions for country (i) in time (t) by GDP	B_1^{PRIV}	+
FDGDP	Foreign Direct Investment / GDP for counrty (i) at time (t)	B_1^{FDGDP}	+
X_2 :	Vector of control variables (explicative variables):	$B_2^{/}$	
LDCGDP	Log of Domestic credit to private sector / GDP for counrty (i) at time (t	B_2^{CGDP}	+
LVTGDP	Log of Traded value of the exchanged stocks/ GDP for country (i) in time (t) by GDP	B_2^{VTGDP}	
LSSE	Log of the secondary school enrollment for counrty (i) at time (t) measured by those who hold secondary level in % of the total population (over than 25 years old).	B_2^{LSSE}	+
LCPI	Log of consumer's price index (CPI) for country (i) in time (t)	B_2^{CPI}	-
LPEGDP	Log of Public expenditure/GDP for counrty (i) at time (t)	B_2^{PEGDP}	- or + [7]
LXMPIB	Log of Exportation + Importation /GDP for counrty (i) at time (t)	B_2^{XMGDP}	+
LER	Log of Employment Ratio (% of total labor force)	B_2^{ER}	+
SRGDP	Gross Saving / GDP for counrty (i) at time (t)	B_2^{SRGDP}	+

4.4. Descriptive statistics

Table (4) below gives us a general idea about the economic situation in the five countries over the whole period of study (1990-2012). This table elaborated in this way in order to facilitate for the readers the comparison between countries in the sample. We can remark that Turkey has the highest level of real GDP per capita. Its' Mean over the period of study which equals (6415.2 US$) exceeds significantly the mean of the sample. In contrast, Egypt has the lowest mean of GDP per capita at constant price of (2005) as well as the lowest mean at current prices (1175.1US$ and 1499.9US$) respectively. More interesting remarks concerning the data can be pointed as following:

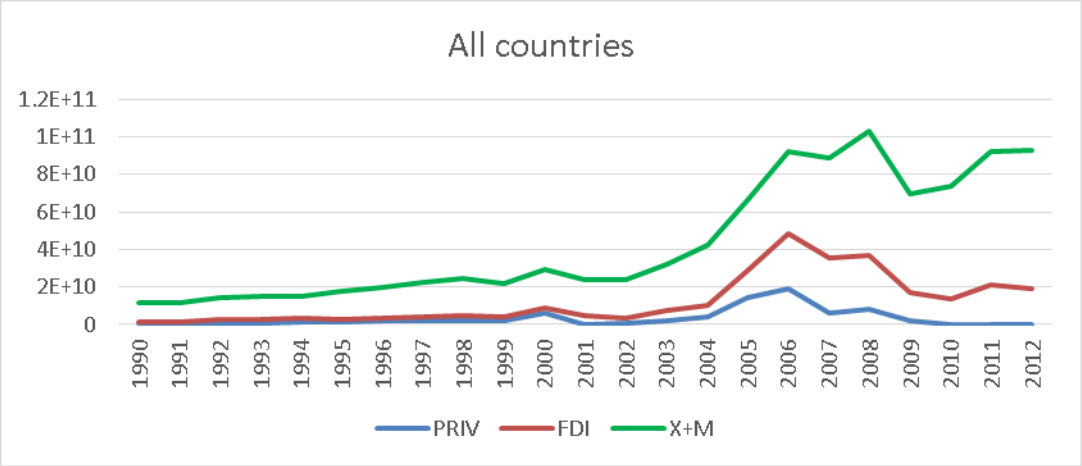
1) There was a remarkable increase of FDI directly after the application of privatization among the five countries, as an important part of SOEs selling operations were achieved by foreign participations because of the lack of local savings represented by a low mean of SRGDP over the period of study (21.8%).

2) The size of financial markets in the economies of MENA region sample is small reflected by a mean of VTGDP equals only 15.5%. The capital markets in these countries have played a limited role in financing economic activities if we compare it with banking sector represented by an average of DCGDP over the period (49%). However, privatization has played a role in developing some financial markets in MENA region especially Jordan and Turkey by attracting FDI in order to finance firms listed in the markets. The mean of VTGDP for these two countries are above the mean of the group (38.4% and 32.6%) respectively.

[7] It depends the size of the government in the economy. There is an optimal size of the government (α) estimated by Barro (1990) around 30% of GDP, percentage beyond it the negative effect of taxation dominates and where growth gives way to decrease.

3) There is a high degree of trade openness represented by XMGDP especially after the application of privatization policies in MENA region. The mean of the sample over the period (1990-2000) equals 71.4%, while it is 80% for the period (2001-2012).
4) We can also remark that the trade openness is accompanied by an increase of FDI. This confirms Shirazi, Rodrigues & Karnik (2008) finding that trade openness is a good determinant of FDI. Briefly, (PRIV in MENA region → ↑ XMGDP → ↑ FDI) and this supposed by the theory to increase the GDP and therefore enhance the growth [See Figure (2)].
5) Turkey and Egypt experience more instability over the whole period of study as their mean inflation ratios are the highest in the sample (44.8% and 9.09%) respectively.

Figure (2): Evolution of Privatization, FDI and Trade openness in MENA region (1990-2012)



Source: Figure elaborated by the author based on data collected from the World Bank, 2013.

Table (4): The main statistics of all indicators concerning MENA region sample (1990-2012)

	GDP pc 2005	Growth GDP %	GDP pc capita_ curr	Growth of GDP curr (%)	PRIV GDP (%)	FDGDP (%)	DCGDP (%)	VTGDP(%)	SRGDP (%)	SSE (%)	ER (%)	PEGDP (%)	XMGDP (%)	INF (%)
Mean(all)	2889.7	2.6	2789.2	6.64	0.71	2.77	48.98	15.5	21.8	70.5	88.1	31.9	75.9	13.1
Egy_	1175.1	2.7	1499.9	7.46	0.72	2.35	39.86	12.09	22.0	79.1	90.2	34.1	51.4	9.09
Jor_	2166.4	2.04	2377.4	8.15	0.72	5.91	72.11	38.36	21.52	87.04	85.8	35.9	126	4.5
Mar_	1827.5	2.5	1755	5.39	1.07	1.60	45.55	7.80	26.27	45.72	86.3	28.1	35.96	2.9
Tun_	2863.6	3.06	2781.4	5.59	0.63	2.84	62.53	1.67	21.05	71.52	85.9	30.6	91.57	4.11
Tur_	6415.2	2.75	5532.2	9.08	0.42	1.15	24.44	32.64	18.05	74.83	90.8	31.3	45.48	44.8
Median(al	2154.9	3.0	2156.8	6.03	0.21	1.59	52.0	6.97	21.2	75.9	88.9	32.2	63.6	4.9
Egy_	1161.7	2.74	1286.2	10.21	0.24	1.17	39.69	7.11	19.44	76.9	90.6	33.9	50.2	8.2
Jor_	1978.1	1.62	1824.9	7.28	0.06	4.83	72.11	13.95	21.09	88.44	86.6	35.7	121	3.49
Mar_	1710.9	2.69	1386.2	6.0	0.25	1.38	44.55	3.14	25.64	39.89	87.8	28.6	32.26	2.04
Tun_	2813.8	3.53	2365.8	4.29	0.16	2.84	60.75	1.43	21.19	76.18	85.9	29.8	89.55	3.65
Tur_	6111.1	4.66	4219.5	8.51	0.27	0.54	18.12	32.82	17.93	82.87	91.0	33.1	47.74	54.4
Max. (all)	8492.6	12.7	10661	39.7	7.05	23.5	91.77	189.2	34.20	93.89	93.5	45.2	149	106.3
Egy_	1559.6	5.3	3256	19.86	7.05	9.34	54.9	44.15	34.20	87.7	91.9	39.3	71.7	19.7
Jor_	2838.6	12.7	4909	22.12	6.72	23.54	91.77	189.2	32.58	93.89	87.8	45.2	149	16.2
Mar_	2516.4	10.54	3044.1	22.03	5.70	4.64	73.34	34.93	32.93	68.88	91.1	34.5	50.87	7.99
Tun_	3807.1	5.63	4342.8	18.75	6.64	9.42	75.46	3.86	23.43	91.31	87.7	37.0	115.7	8.19
Tur_	8492.6	7.88	10661	39.7	2.38	3.80	54.40	67.23	24.07	89.89	93.5	42.7	58.0	106.3
Min. (all)	872.4	-8.9	644.2	-28.7	0.0	-0.60	14.52	0.15	10.6	35.16	77.1	17.4	30.5	-0.68
Egy_	872.4	-0.77	644.23	-16.66	0.0	-0.20	22.27	0.29	13.03	68.9	87.3	27.8	38.4	2.27
Jor_	1608.5	-8.95	1225.5	-1.47	0.0	-0.60	55.89	4.29	10.56	76.39	80.3	30.4	104.6	-12.7
Mar_	1428.8	-8.03	1021.4	-10.12	0.0	0.007	19.62	0.17	17.19	35.16	77.1	20.9	28.11	0.62
Tun_	2002.2	-3.14	1507.2	-7.55	0.0	0.62	53.76	0.15	16.39	45.41	84.0	28.7	77.91	1.98
Tur_	4964.7	-7.06	2268.4	-28.7	0.0	0.31	14.52	3.88	12.88	50.29	86.0	17.4	30.48	6.25
	GDP pc 2005	**Growth % GDP**	**GDP pc capita_ curr**	**Growth of GDP curr (%)**	**PRIV GDP (%)**	**FDGDP (%)**	**DCGDP (%)**	**VTGDP(%)**	**SRGDP (%)**	**SSE (%)**	**ER (%)**	**PEGDP (%)**	**XMGDP (%)**	**INF (%)**
S.D (all)	1954.6	3.6	2125.6	10.9	1.37	3.6	20.29	28.52	5.1	18.5	3.33	4.96	31.4	22.0
Egy_	233.54	1.63	740.78	9.38	1.51	2.64	11.64	14.32	5.33	6.8	1.28	2.63	9.58	5.25
Jor_	411.44	4.03	1159.6	5.29	1.54	6.27	9.07	50.48	5.67	5.37	1.98	3.42	13.72	4.04
Mar_	349.97	4.43	708.85	8.86	1.59	1.37	15.72	10.23	4.97	10.95	4.36	3.64	7.08	2.23
Tun_	630.02	2.16	974.11	7.51	1.41	1.89	5.71	1.14	1.60	16.69	1.40	2.16	9.84	1.54
Tur_	1123.4	4.84	3027.7	18.26	0.57	1.04	11.64	16.61	3.27	14.48	1.88	7.12	8.0	33.43
Obs. (all)	115	115	115	115	115	115	115	115	115	103	98	110	115	115
Egy_	23	23	23	23	23	23	23	23	23	19	23	19	23	23
Jor_	23	23	23	23	23	23	23	23	23	18	16	23	23	23
Mar_	23	23	23	23	23	23	23	23	23	23	22	23	23	23
Tun_	23	23	23	23	23	23	23	23	23	22	14	23	23	23
Tur_	23	23	23	23	23	23	23	23	23	21	23	22	23	23

This table elaborated by the author based on World Bank dataset 2013 available online at the official website: http://data.worldbank.org/indicator

All the numbers above are in (%) except for GDP_per_capita_constant (2005) and GDP_per_capita_current which are in US$.

5. Econometric Model & Methodology

5.1. The basic model to be estimated

In order to examine the effect of privatization process on economic development represented by the logarithm of GDP per capita, we employ an empirical model using panel data for the countries of MENA region over the period (1990-2012). In fact, the double dimension of panel data - combining time series of cross country observations- have a decisive advantage over other types of data. This double dimension also allows to account for simultaneously of dynamic behaviors and their possible heterogeneity, which is not possible with the time-series studies or those in cross section [Mátyás & Sevestre (2008)]. In addition, as it is mentioned by Gujarati (2004: 637): << Panel data give more informative data as they increase the sample size considerably, more variability, less collinearity among variables, more degrees of freedom and more efficiency >>.

The choice of the model depends on the hypothesis of the existence of a positive causal relationship between privatization and economic development. Due to the empirical studies of King & Levine (1993), we have a standard formula for the regressions estimated with panel data:

$$\underset{NT,1}{Y} = \alpha_0 \underset{NT,1}{Z} + \underset{k_1,1}{\beta_1} \underset{NT,k_1}{X_1} + \underset{k_2,1}{\beta_2} \underset{NT,k_2}{X_2} + \underset{NT,1}{\varepsilon}$$

(1)

Where:

Y: The dependent variable (economic development indicator).

Z: is a matrix of predetermined variables. Its dimension can depend, in particular, on the presence or absence of fixed effects.

X_1 : is a matrix of dimension ($\sum_{i=1}^{N} T_i, k_1$) of proxies that measure the privatization indicator which is expected to have an influence on the economic growth.

X_2 : is a matrix of control variables which dimension is ($\sum_{i=1}^{N} T_i, k_2$). It includes all the other factors supposed to have an influence on economic growth.

α_0 : The constant. It can be a vector of fixed effects in a fixed effects model (**FEM**).

β_1' **and** β_2' : are the vectors of the coefficients associated with X_1 and X_2.

ε : represents the error of measure, missing data and omitted variables that influence the dependent variable but which haven't been taken in consideration (left-out variables). The estimated error equation is:

$$\hat{\varepsilon}_{it} = Y_{it} - \alpha_i - \beta_1 X_{1it} \ldots\ldots\ldots\ldots \beta_k X_{kit}$$

(2)

Where: $\hat{\varepsilon}_{it}$ is the residual of the estimated model.

The errors of the model must have two essential properties:

1- They aren't correlated : $E(\varepsilon_{is}\varepsilon_{jt}) = 0 \quad \forall_{i,s,j,t} \quad s \neq t$

2- They are homoscedastic: $E(\varepsilon_{it}^2 / \chi) = \sigma_\varepsilon^2 \quad \forall_{it}$

As it is mentioned by Gujarati (2004), the simplest approach is to estimate the model by using OLS regression with disregard the space and time dimensions of the pooled data where the intercept α_0 doesn't vary for each country and the coefficients of independent variables are constant across countries and over time. Only the error term captures differences over time and individual. The equation will be as following:

$$Y_{it} = \alpha_0 + \beta_1 X_{1it} + \beta_2 \sum_{k=2}^{K} X_{2it} + \epsilon_{it}$$

(3)

Where:

i : Represents the country =1,2,3,4,5 and t : represents the year =1,2,3,4…..,21

Y_{it} : The dependent variable (the real GDP for country (i) in time (t).

α_0: The constant.

β_1: Represents the coefficient of the explanatory variable X_{1it} which is FDI indicator (the proxy of privatization ratio).

β_2: Represents the coefficients of other explanatory variables (Control variables) $\sum_{k=2}^{K} X_{2it}$.

ϵ_{it}: Represents the error term.

Under the precondition of stationary of all series, the Fixed Effects or Least-Square Dummy Variable (LSDV) approach is used for estimation panel data regression model by using Panel Least Square. This means that we allow for the fixed effect (intercept) to vary between countries by using the fixed effect panel model, where we assume that the intercept varies for each country but still constant over time and the slope coefficients are constant across countries and over time. The model can be rewritten as following:

$$Y_{it} = \alpha_i + \beta_1 X_{1it} + \beta_2 \sum_{k=2}^{K} X_{2it} + \epsilon_{it}$$

(4)

Where the only difference between equation (3) and equation (4) is:

α_i: represents the unobserved country-specific effects which differ across countries (i) but is assumed to be fixed over time (t).

5.2. Panel unit root test

To test the stationarity of the variables, five panel unit root tests can be used: Levin, Lin & Chu tset, Breitung test, Im, Peasaran &Shin test, ADF Fischer Chi-square test and Phillips Perron - Fischer Chi-square test.

The panel unit root tests of Levin, Lin & Chu and Breitung are tests of unit root in series in order to test the null hypothesis of non-stationary of the serie for example (y) employing the following basic Augmented Dickey Fuller (ADF) specification [Ramirez (2006)]:

$$\Delta y_{it} = \alpha y_{it} + \sum B_{ij} \Delta y_{it-j} + \delta X_{it} + \varepsilon_{it}$$

(5)

Where:

y_{it} : is a pooled variable.

X_{it} : is the exogenous variables in the model (country fixed effects and individual time trends).

ε_{it} : represents the error terms which are assumed to be mutually independent disturbances.

On the other hand, the IPS panel unit root test, PP- Fischer Chi-square and ADF Chi-square tests estimate a separate ADF regression to allow for individual unit root process may vary across sections (countries). Thus, they have the following general formula expressed by Narayan S, Narayan P & Mishra (2010):

$$\Delta y_{it} = \alpha_i + B_i y_{it-1} + \sum_{j=1}^{k} \gamma_{ij} \Delta y_{it-j} + \lambda_i d_{it} + \varepsilon_{it}$$

(6)

Where :

Δ : The first difference operator.

y_{it-1}: The lagged dependent variable which is included in order to allow for serial correlation.

d_{it} : The deterministic components.

ε_{it} : A white noise disturbance term with variance σ^2.

The null hypothesis of a unit root in the panel is defined as: H_0: B_i = 0, for all i, which means that y process has unit root for individual i, while the alternative hypothesis: H_1: B_i < 0 means that the process is stationary around the deterministic part. As we can remark from the results below in Table (5), the pre-condition which is required in order to proceed a co-integration test is possible between **LGDP** and seven variables which are integrated from the same level I **(1)**: FDGDP, LSSE, LVTGDP, LPEGDP, LDCGDP, LER and SRGDP.

Table (5): Panel Unit Root Tests (Individual Effects, Individual Linear Trend)

Variable	Test for Unit Root	Levin, Lin & Chu	Breitung	Im, Peasaran & Shin	ADF- Fischer Chi-square	PP- Fischer Chi-square
LGDP	Level	-2.10328**	1.18694	-2.76460***	26.0381***	9.29672
	1st Difference	(0.0177)	(0.8824)	(0.0028)	(0.0037)	(0.5042)
		-6.63897***	-2.4536***	-7.06011***	63.2185***	84.3096***
		(0.0000)	(0.0071)	(0.0000)	(0.0000)	(0.0000)
LPRIVGDP	Level	-6.87321***	-5.95447***	-7.1185***	56.8823***	70.3057***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
FDGDP	Level	-0.49942	-3.36654***	-2.02655**	19.5762**	15.3385
	1st Difference	(0.3087)	(0.0004)	(0.0214)	(0.0335)	(0.1202)
		-7.50836***	-5.56866***	-7.70476***	60.3179***	65.2665***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
LCPI	Level	-1.77428**	0.02708	-2.41651***	23.8391***	16.9944
	1st Difference	(0.0380)	(0.6067)	(0.0078)	(0.0080)	(0.0745)
		-0.76151	-0.43363	-2.4703***	22.4349**	24.4094***
		(0.2232)	(0.3323)	(0.0068)	(0.0130)	(0.0066)
LSSE	Level	0.63583	1.95298	3.84136	0.57229	1.00647
	1st Difference	(0.7376)	(0.9746)	(0.9999)	(1.0000)	(0.9998)
		-5.31759***	-2.46177***	-2.27320**	27.9210***	35.1126***
		(0.0000)	(0.0069)	(0.0115)	(0.0019)	(0.0001)
LVTGDP	Level	-1.34957	0.14410	-2.29200**	20.4639**	5.21533
	1st Difference	(0.0886)	(0.5573)	(0.0110)	(0.0252)	(0.8763)
		-2.47133***	-2.11090**	-2.90538***	24.0283***	48.6087***
		(0.0067)	(0.0174)	(0.0018)	(0.0075)	(0.0000)
LPEGDP	Level	0.17745	1.17148	-0.21779	9.86755	11.6798
	1st Difference	(0.5704)	(0.8793)	(0.4138)	(0.4522)	(0.3071)
		-4.23500***	-8.07421***	-6.97389***	54.9003***	54.8656***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
LDCGDP	Level	3.30172	2.45760	2.49690	4.03012	3.93296
	1st Difference	(0.9995)	(0.9930)	(0.9937)	(0.9460)	(0.9503)
		-5.29113***	-2.39400***	-6.02165***	47.9842***	45.6484***
		(0.0000)	(0.0083)	(0.0000)	(0.0000)	(0.0000)
LER	Level	-2.38183**	-2.16197**	-1.35262	15.2559	10.4054
	1st Difference	(0.0086)	(0.0153)	(0.0881)	0.1230	(0.4057)
		-4.23500***	-4.85517***	-3.07766***	31.3533***	53.6796***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
LXMPIB	Level	-2.78467***	-2.12537**	-2.49868***	21.9519**	10.8267
		(0.0027)	(0.0168)	(0.0062)	(0.0154)	(0.3712)
LSRGDP	Level	-0.04975	2.45760	-0.2105	11.2669	11.5434
	1st Difference	(0.4802)	(0.5153)	(0.4166)	(0.3371)	(0.3168)
		-5.0038***	-1.3707*	-5.2476***	43.3428***	79.7758***
		(0.0000)	(0.0852)	(0.0000)	(0.0000)	(0.0000)

The Null hypothesis: No stationary. *** Significant at 1% ** Significant at 5%

The statistics are asymptotically distributed as normal with left hand side rejection area except ADF- Fischer Chi-square & PP- Fischer Chi-square which are right hand side rejection area.

Levin, Lin & Chu and Breitung assume common unit root process. The rest assume individual unit root process.

5.3. Panel Co-integration Test: Pedroni residual co-integration tests

The eight variables[8] develop gradually as non-stationary process which can result in biased and inconsistent estimates by using OLS or (GLS) to equation (4). Therefore, it is important to confirm whether the estimated equation is co-integrated (whether a long run equilibrium relationship exists among the non-stationary variables

[8] LGDP, FDGDP, LSSE, LVTGDP, LPEGDP, LDCGDP LER and LSRGDP.

in level) by applying panel co-integration tests of Pedroni (1999, 2004). Then we can apply FMOLS to estimate the model.

5.3.1. Engel Granger co-integration test

The method of Engle Granger (1987) is presented as an introduction in order to understand Pedroni tests of co-integration relationship between variables.

The simple method of Engle Granger (1987) for time series suggests that if series are integrated from the same level, we can proceed the co-integrating test by regressing the original second serie(s) over the original first serie (LGDP) using Least Squares method. Then we obtain the residual:

$$\varepsilon_t = Y_t - \alpha - \beta X_t \quad (7)$$

We examine whether the residual serie itself is stationary. If the residual is stationary, so the variables in the regression are said to be co-integrated, they have a possible long run relationship. In other word, if the regression produces an I(0) error term, the variables are said to be co-integrated. The residual serie ε_t is stationary when Y_t and X_t are co-integrated. As it is mentioned by Basile, Costantini & Destefanis (2005) << Testing the null hypothesis of no co-integration in panel is equivalent to test the regression residuals for a unit root using the following auto-regression:

$$\hat{e}_{it} = \gamma\ \hat{e}_{i,t-1} + \mu_{it}$$

Where:

$\hat{e}_{it}$: is the estimated residuals from the estimated equation (4).

For the test statistics, the null hypothesis of no co-integration can be formulated as: $H_0 : \gamma = 1$ for all i, against the alternative hypothesis of co-integration $H_1 : \gamma < 1$ for all i. The OLS estimate of γ is given by Kao, Chiang and Chen (1999) : $\hat{\gamma} = \dfrac{\sum_{i=1}^{N}\sum_{t=2}^{T} \hat{e}_{it}\hat{e}_{i,t-1}}{\sum_{i=1}^{N}\sum_{t=2}^{T} \hat{e}_{it}^{\,2}}$ >> Basile, Costantini & Destefanis (2005: 10) and Kao, Chaing & Chen (1999: 699).

5.3.2. Pedroni panel co-integration tests

In order to test the null hypothesis of no co-integration between variables in our panel data, the methodology of Pedroni (1999, 2004) derives seven statistics: four panel statistics which are based on within dimension and three group panel statistics which are based on between dimensions. These test statistics are standard normal distribution.

First we compute the regression residuals from the hypothesized co-integration regression. In the most general case, this may take the form:

$$Y_{it} = \alpha_i + \beta_{1i} X_{1it} + \beta_{2i}X_{2it} + \cdots + \beta_{Mi}X_{Mit} + \epsilon_{it} \quad (8)$$

t =1, 2,3, ……T and i=1, 2, 3, ……N

Where:

T refers to the number of observations over time.

N refers to the number of the individual members in the panel.

M refers to the number of regression variables.

X and Y are assumed to be integrated of order one.

$\beta_{1i}, \beta_{2i}, .. \beta_{Mi}$ and specific intercept α_i vary across individual members of the panel.

Pedroni summarized the procedures of his methodology by four major steps:

1. Estimate the panel co-integration regression from equation (8), make sure to include any desired intercepts, time trends or common time dummies in the regression and collect the residual for later use.

2. Difference the original series for each member, and compute the residual for the differenced regression

$$\Delta Y_{it} = \beta_{1i} \Delta X_{1it} + \beta_{2i}\Delta X_{2it} + \cdots + \beta_{Mi}\Delta X_{Mit} + \eta_{it} \quad (9)$$

3. Calculate L_{11i}^2 as the long-run variance of η_{it} using any Kernel estimator such as the Newey-West (1987) estimator.

4. Using the residuals ϵ_{it} of the original cointegration regression, estimate the appropriate autoregression, choosing either of the following from (a) or (b):

a) For the non-parametric statistics all except number four and number seven[9] estimate $\hat{e}_{it} = \hat{\gamma}_i \hat{e}_{i,t-1} + \hat{\mu}_{it}$ and use the residuals to compute the long run variance of $\hat{\mu}_{it}$ denoted $\hat{\sigma}_i^2$

b) For the parametric statistics number four and seven estimate:

$\hat{e}_{it} = \hat{\gamma}_i \hat{e}_{i,t-1} + \sum_{k=1}^{ki} \hat{\beta}_{i,k} \Delta \hat{e}_{i,t-k} + \hat{\mu}_{it}^*$ and use the residuals to compute the simple variance of $\hat{\mu}_{it}^*$ denoted $\hat{S}_i^{*2}$. >> Pedroni (1999: 659).

5.4. The method of estimation: FMOLS

In the last step, if the variables which are integrated from the same level show a possible long run relationship due to the rejection of the null hypothesis of no co-integration, then we can estimate equation (8) by applying Fully-modified OLS in panel data which are between estimators[10] developed by Pedroni (1996, 1999, 2004) and discussed by Kao and Chiang (1999) because of the limiting distribution of the OLS estimator which is normal with non-zero mean, while FMOLS and also dynamic ordinary least squares (DOLS) estimators in panel data are asymptotically normal with zero means. In addition, the OLS estimator is consistent in the presence of a serial correlation in the error term and\ or a correlation between the regressors and co-integration errors. As Basile, Costantini & Destefanis (2005) well explain it << The test statistics derived from the between-dimension estimators are constructed to test the null hypothesis ($H_0 : \beta_i = \beta_0$ for all i) against the alternative hypothesis of co-integration ($H_1 : \beta_i \neq \beta_0$), so that the values for β_i are not constrained to be the same under the alternative hypothesis. Consider the following co-integrated system for a panel of i=1,2,3,…..N members.

$Y_{it} = \alpha_i + \beta_i X_{it} + \epsilon_{it}$

$X_{it} = X_{i,t-1} + \psi_{it}$ >> Basile, Costantini & Destefanis (2005: 10-11).

The objective is to compare the results from estimation FEM in equation (4) by Panel LS method with the results of the FMOLS & DOLS estimation approaches concerning equation (8) of the co-integrated regression.

As it is discussed by Kao, Chiang and Chen (1999) the OLS estimator of the slope coefficients $\beta_1, \ldots, \beta_k$ in the fixed effect panel regression on equation (8) is:

$$\hat{\beta}_{OLS} = \left[\sum_{i=1}^{N} \sum_{t=1}^{T} \left(x_{i,t} - \bar{x}_i \right) \left(x_{i,t} - \bar{x}_i \right)' \right]^{-1} \left[\sum_{i=1}^{N} \sum_{t=1}^{T} \left(x_{i,t} - \bar{x}_i \right) \left(y_{i,t} - \bar{y}_i \right) \right] \quad (10)$$

Where:

$$\bar{x}_i = \frac{1}{T} \sum_{t=1}^{T} X_{i,t} \quad \text{and} \quad \bar{y}_i = \frac{1}{T} \sum_{t=1}^{T} y_{i,t}$$

While the FM estimator is:

$$\hat{\beta}_{FMOLS} = \left[\sum_{i=1}^{N} \sum_{t=1}^{T} \left(x_{i,t} - \bar{x}_i \right) \left(x_{i,t} - \bar{x}_i \right)' \right]^{-1} \left[\sum_{i=1}^{N} \left(\sum_{t=1}^{T} \left(x_{i,t} - \bar{x}_i \right) \hat{y}_{i,t}^{+} - T \hat{\Delta}_{\psi\varepsilon}^{+} \right) \right] \quad (11)$$

Where:

$\hat{y}_{i,t}^{+}$: The modified variable $y_{i,t}$ in (8) which is achieved by making correction for endogeneity and serial correlation to the OLS estimator $\hat{\beta}_{OLS}$ in (10) with the transformation:

$$\hat{y}_{i,t}^{+} = y_{i,t} - \hat{\Omega}_{\varepsilon\psi}^{次} \Omega_{\psi}^{-1} \psi_{i,t}$$

$$= \alpha_i - \beta X_{it}' + \varepsilon_{i,t} - \hat{\Omega}_{\varepsilon\psi}^{次} \Omega_{\psi}^{-1} \psi_{i,t}$$

[9] For the seven panel cointegration statistics of pedroni please see pages 660 and 661 at this link: http://web.williams.edu/Economics/wp/pedronicriticalvalues.pdf

[10] The advantage of using the between estimators is that the form in which the data is pooled allows for greater flexibility in the presence of heterogeneity of the cointegrating vectors.

$$\hat{\Delta}^{+}_{\psi\varepsilon} = \hat{\Delta}_{\psi\varepsilon} - \hat{\Delta}_{\psi}\hat{\Omega}_{\psi\varepsilon}\hat{\Omega}^{-1}_{\psi}$$

Where $\hat{\Delta}_{\psi\varepsilon}$ and $\hat{\Delta}_{\psi}$ are kernel estimates of $\Delta_{\psi\varepsilon}$ and Δ_{ψ}.

6. The results of co-integration tests

Table (7): Pedroni Panel Residuals Co-integration Tests

	Variables	Panel v-statistic	Panel rho-statistic	Panel pp-statistic	Panel ADF-statistics	Group rho-Statistics	Group PP-Statistics	Group ADF-Statistics
1	**LGDP &** FDGDP	6.6069*** (0.0000)	-0.053702 (0.4786)	-1.291091 (0.0983)	-1.781993** (0.0374)	0.681719 (0.7523)	-0.741240 (0.2293)	-3.31000*** (0.0005)
2	**LGDP,** FDGDP & LSSE	4.9142*** (0.0000)	-0.766812 (0.2216)	-1.67301** (0.0472)	-0.907179 (0.1822)	0.528134 (0.7013)	-2.05538** (0.0199)	-1.67603** (0.0469)
3	**LGDP,** FDGDP, LSSE & LVTGDP	5.0408*** (0.0000)	-0.337933 (0.3677)	-2.75714*** (0.0029)	-3.841935*** (0.0001)	0.847042 (0.8015)	-2.09604** (0.0180)	-1.93047** (0.0268)
4	**LGDP,** FDGDP, LSSE, LVTGDP and LER	5.2125*** (0.0000)	0.358523 (0.6400)	-1.049955 (0.1469)	-0.792679 (0.2140)	2.227615 (0.9870)	1.077071 (0.8593)	0.183754 (0.5729)
5	**LGDP,** FDGDP, LSSE, LVTGDP and LDCGDP	3.2566*** (0.0006)	0.308846 (0.6213)	-1.540385 (0.0617)	-0.731324 (0.2323)	1.424886 (0.9229)	-1.382117 (0.0835)	-0.315637 (0.3761)
6	**LGDP,** FDGDP, LSSE, LVTGDP and LPEGDP	5.6944*** (0.0000)	0.929382 (0.8237)	-1.108453 (0.1338)	-1.196581 (0.1157)	1.926613 (0.9730)	-0.751979 (0.2260)	-0.943031 (0.1728)

*** Significant at 1% ** Significant at 5%

The statistics are distributed as standard normal variables with left hand rejection area with the exception of variance ratio statistics.

Based on the results given in Table (7), we can only reject with caution the null hypothesis of no co-integration concerning the variables in the group number 3. For the rest, the null hypothesis of no co-integration can't be rejected. In order to be sure about the possible co-integration relationship existing among the four variables in number 3 (**LGDP,** FDGDP, LSSE & LVTGDP), Kao (1999) co-integration test has been carried out leading to accept the null hypothesis of no co-integration among these four variables which means there is no possible long run relationship between these four variables.

Table (8): Kao (Engle Granger based) **Residual Co-integration Test**

Series: LGDP FDGDP LSSE LVTGDP
Sample: 1990 2012
Included observations:115
Null Hypothesis: No cointegration
Trend assumption: No deterministic trend
Automatic lag length selection based on SIC with a max lag of 3
Newey-West automatic bandwidth selection and Bartlett kernel

	t-Statistic	Probability
ADF	0.015	0.4936

7. Conclusion

This paper has tried to study the long run relationship between privatization represented by foreign direct investment and economic development represented by gross domestic product per capita over the period (1990-2012).

The descriptive statistics show clearly that FDI follows privatization in the same direction for each single country as well as for all countries as a group. Privatization process increases the degree of trade openness in the region which in turn contributes to an increase of FDI during the period of study. Foreign direct investment is important for the five countries in MENA region regardless if FDI was increased by privatization process or not. In our case, the descriptive statistics indicate that, privatization process participated actively in the total increase of FDI during the period of study. In fact, privatization in itself was used as an instrument by these countries to attract FDI due to the low saving rates.

The privatization proceeds in Egypt, Jordan, Morocco, Tunisia and Turkey represent 94.5% of the total sales proceeds in the MENA region during the period (1990-2008). Foreign direct investment as percentage of GDP has been used as a proxy measure of privatization process in the MENA region sample. The empirical evidence from various unit root tests indicate that all variables are integrated from the first difference except for both privatization and trade openness variables which are stationary from level I(0). Pedroni residual co-integration tests can't reject the null hypothesis of no co-integration among the variables which are integrated from the same level I(1). Kao residual co-integration test concerning the four variables (**LGDP,** FDGDP, LSSE & LVTGDP) shows no possible long run relationship between these variables. Thus, FMOLS method can't be applied to estimate the coefficients regression of the model. Therefore, there is no empirical evidence of a clear relationship in MENA region between privatization and GDP per capita. Further studies using other methods are needed to accomplish this study.

References

Andersen, S. (2003), "The influence and effects of financial development on economic growth: An empirical approach", Chr. Michelsen Institute (CMI Report R 2003: 14).
http://www.cmi.no/publications/2003/rep/r2003-14.pdf

Barnett S (2000)," Evidence on fiscal and macroeconomic impact of privatization", IMF Working Paper (WP/00/130), July, Washington D.C.

Basile, R., Costantini M., & Destefanis, S. (2005), "Unit root and cointegration tests for cross-sectionally correlated panels. Estimating regional production functions", ISAE Working Paper 53. ISTAT- Italian National Institute of Statistics-(Rome-Italy).
https://ideas.repec.org/p/sal/celpdp/94.html

Beck, T., & Levine, R. (2004), "Stock markets, banks, and growth: Panel evidence", Journal of Banking and Finance, 28 (3), 423-442.
http://www.sciencedirect.com/science/article/pii/S0378426602004089

Bennett, J., Estrin, S., & Urga, G. (2007), "Methods of privatization and economic growth in Transition Economies", Economics of Transition, 15(4), 661-683.
http://onlinelibrary.wiley.com/doi/10.1111/j.1468-0351.2007.00300.x/abstract

Boubakri N, Cosset J-C, Debab N & Valery P (2013), "Privatization and globalization: An empirical analysis", Journal of Banking & Finance, Vol. 37, 1898-1914.
http://www.sciencedirect.com/science/article/pii/S037842661300023X

Boubakri, N., Cosset. J-C., & Guedhami, O. (2005), "Post privatization corporate governance: the role of ownership structure and investor protection", Journal of financial Economics, 76(2), 369-399.
http://www.sciencedirect.com/science/article/pii/S0304405X04002004

Boubakri, N., Smaoui, H., & Zammiti, M. (2009), "Privatization dynamics and economic growth", Journal of Business & Policy Research, 4(2), 16-44.
http://wbiaus.org/2.Houcem.pdf

Cook, P., & Uchida, Y. (2003), "Privatization and economic growth in Developing Countries", Journal of Development Studies, 39(6), 121-154.
http://www.tandfonline.com/doi/abs/10.1080/00220380312331293607

Hurlin, C., & Dumitrescu, E. (2012), "Testing for Granger on-causality in heterogeneous panels", Economic Modeling Journal, 29(4), 1450-1460.
http://www.sciencedirect.com/science/article/pii/S0264999312000491

Filipovic, A. (2005), "Impact of privatization on economic growth", Undergraduate Economic Review, 2(1): Art. 7.
http://digitalcommons.iwu.edu/cgi/viewcontent.cgi?article=1016&context=uer

Foudeh, M. (2013), "Macroeconomic Evaluation of Privatization in Jordan (1998-2011): Theoretical, Descriptive and Empirical Analysis", Journal of Economics and Sustainable Development, 4(10), 85-99.
http://www.iiste.org/Journals/index.php/JEDS/article/view/6517/6532

Gouret, F. (2007), "Privatization and output behavior during the transition: Methods matter", Journal of Comparative Economics, 35(1), 3-34.
http://home.cerge-ei.cz/hanousek/jel_survey/remaining%20pdf/JCE_recent.pdf

Granger, C.W.J. (1969), "Investigating causal relations by econometric models and cross-spectral methods", Econometrica, 37(3), 424-438.
http://webber.physik.uni-freiburg.de/~jeti/studenten_seminar/stud_sem_SS_09/grangercausality.pdf

Gujarati, D. (2004), "Basic Econometrics", Fourth Edition, New York: The McGraw-Hill.
http://www.slideshare.net/antoniolipool/gujarati-d-2004-basic-econometrics

Hassoneh, A., Ershaida, A., Mobaydeen, B., & Rezq, L. (2010), "Privatization of the firms owned by the government: Objectives and Barrier, An applied study on Jordanian industrial firms", Presented at Conference proceedings, Economic organization policies and completion policy and its impact on economic development: practices and challenges, University of Jordan, Amman.
Katsoulakos, Y., & Likoyanni, E. (2002), "Fiscal and other Macroeconomic effects of privatization", FEEM Working Paper No. 113.2002, This paper can be downloaded without charge at: Social Research Network Electronic Paper Collection (accessed 7 October 2012).
http://papers.ssrn.com/abstract_id=363900

Kao, C. (1999), "Spurious regression and residual-based tests for cointegration in panel data", Journal of Econometrics, 90, 1-44.
http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.81.4924&rep=rep1&type=pdf

Kao, C., & Chiang, M. (1999), "On the estimation and inference of a co-integrated regression in panel data", Working Paper No.2, Center for Policy Research, Syracuse University, New York.
http://surface.syr.edu/cgi/viewcontent.cgi?article=1144&context=cpr

Kao, C., Chiang, M. & Chen B (1999), "International R&D spillovers: An application of estimation and inference in panel co-integration", Oxford Bulletin of Economics and Statistics, 61(4), 693-711.
http://faculty.maxwell.syr.edu/cdkao/working/rd.pdf

King, R., & Levine, R. (1993 a), "Financial intermediation and economic development in financial intermediation in the construction of Europe", London: Colin Mayer and Xavier Vives.
http://faculty.haas.berkeley.edu/ross_levine/papers/1993_Book_Mayer_Intermediation.pdf

King, R., & Levine, R. (1993 b), "Finance and growth: Schumpeter might be right", Quarterly Journal of Economics, 108(3), 717-737.
http://www.jstor.org/stable/2118406?seq=1#page_scan_tab_contents

King, R., & Levine, R. (1993 c), "Finance, entrepreneurship, and growth: Theory and evidence", Journal of Monetary Economics, 32(3), 513-542.
http://www.sciencedirect.com/science/article/pii/030439329390028E

Mátyás, L., & Sevestre, P. (2008), "The econometrics of Panel Data: Advanced studies in theoretical and applied econometrics", Third Edition. Berlin Heidelberg: Springer, Verlag.
http://www.springer.com/us/book/9783540758891

Naguib, R. (2010), "The effects of privatization and FDI on economic growth in Argentina", Discussion Paper No. 1013, University of the West of England / Department of Economics.
https://ideas.repec.org/p/uwe/wpaper/1013.html

Narayan, S., Narayan, P., & Mishra, S. (2010), "Investigating the Relationship between Health and Economic Growth: Empirical Evidence from a Panel of 5 Asian Countries", School Working Paper 2010\08, Economic series, Faculty of Business and Law, School of Accounting, Business and Finance, Deakin University Australia.
https://ideas.repec.org/a/eee/asieco/v21y2010i4p404-411.html

Onyeiwu, S. (2003), "Analysis of FDI flows to Developing Countries: Is the MENA region different?", ERF 10th Annual Conference, Marrakech, Morocco.
http://www.mafhoum.com/press6/172E11.pdf

Pedroni, P. (1996), "Fully modified OLS for heterogeneous co-integrated panels and the case of purchasing power parity", working paper in economics, No. 96-020, Indiana University.
http://web.williams.edu/Economics/wp/pedroniaie.pdf

Pedroni, P. (1999), "Critical values for co-integration tests in heterogeneous panels with multiple regressors", Oxford Bulletin of Economics and Statistics, 61(Special Issue), 653-670.
http://web.williams.edu/Economics/wp/pedronicriticalvalues.pdf

Pedroni, P. (2004), "Panel co-integration: Asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis", Econometric Theory, Vol. 20, 579-625.
http://web.williams.edu/Economics/wp/pedronipanelcointegration.pdf

Plane P (1997)," Privatization and economic growth: An empirical investigation from a sample of Developing Market Economies", Applied Economics, Vol. 29, pp. 161-178.
http://www.tandfonline.com/doi/abs/10.1080/000368497327245

Ramirez, M. (2006), "A panel unit root and panel co-integration test of the complementarity hypothesis in the Mexican case, 1960-2001", Center Discussion paper No. 942, Economic Growth Center, Yale University.
http://www.econ.yale.edu/growth_pdf/cdp942.pdf

Rahbar, F., Sargolzaei, M., Ahmadi, R., & Ahmadi, M. (2012), "Investigating the effects of privatization on the economic growth in developing countries: A fixed effects approach", Journal of Economics and Sustainable Development, 3(4), 61-66.
http://iiste.org/Journals/index.php/JEDS/article/viewFile/1476/1408

Sader, F. (1995), "Privatizing public enterprises and foreign investment in developing countries (1998-1993)", FIAS Occasional Paper No.5.
http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1995/07/01/000009265_3961219095337/Rendered/PDF/multi0page.pdf

Sala-I-Martin, X. (1997), "I just ran four million regressions", The American Economic Reviews, 87(2), 178-183.
http://www.nber.org/papers/w6252.pdf

Shirazi, A., Rodrigues, G., & Karnik, A. (2008), "Determinants of foreign direct investment in MENA countries: an empirical analysis. Research Online", University of Wollongong in Dubai-Paper 132, First International Business Conference.
http://ro.uow.edu.au/dubaipapers/132/

Staehr, K. (2005), "Reforms and economic growth in Transition Economies: Complimentarily, Sequencing and Speed", The European Journal of Comparative Studies, 2(2), 177-202.
http://eaces.liuc.it/18242979200502/182429792005020202.pdf

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:
http://www.iiste.org

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: http://www.iiste.org/journals/ All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: http://www.iiste.org/book/

Academic conference: http://www.iiste.org/conference/upcoming-conferences-call-for-paper/

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar