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**FISCAL POLICY AND ECONOMIC GROWTH: EGYPT,  
MOROCCO AND TUNISIA COMPARED**

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**Abstract in English:**

*Classical economics considers capital and labor as the main determinants of economic growth. Modern economics reveals however that differences in economic growth across countries may be due to additional factors. According to the endogenous growth theory, public spending would be an important explanatory variable of differences in growth rates across countries. Using modern time-series analysis, this paper goes toward this direction, analyzing the impact of public spending structure on short and long-run economic growth in Egypt, Morocco and Tunisia.*

*Following a survey of the main theoretical and empirical foundations of the impact of fiscal policy on economic growth, we have constructed an econometric model in order to estimate the impact on economic growth in the three countries of investment in the private and public sectors as well as current public spending and labor force.*

*In addition to the positive impact of private capital accumulation and labor force, our empirical results based on error correction models reveal that public investment exerts a crowding-in effect on economic growth in Egypt, Morocco and Tunisia. Nevertheless, public investment positively affects economic growth in Egypt and Tunisia only in the long run. By contrast, in the Moroccan case, the positive impact of public investment is observed in the short as well as long term. Our empirical results indicate that: i) public investment completes instead of crowding-out private capital accumulation; ii) it conforms generally to efficiency and profitability norms prevailing in the private sector; iii) means of its financing do not hinder economic actors' activities, including those of private investors.*

*As soon as current public consumption is concerned, our empirical results reveal that it acts negatively on economic growth in the three countries. However, its*

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*impact turns to be exerted in the short as well as long run in Morocco and Tunisia while the impact holds only in the short run in Egypt. This negative impact would be probably due to the predominance of the effects on demand and supply-side impacts resulting from increasing public consumption, of certain factors such as the substitution relationship between public and private components of consumption, the over-invoicing associated with certain current public expenditures, corruption and capital flights.*

*Our study reveals that decisionmakers in the three countries should not heavily rely on the reduction of public investment spending to adjust the public sector budget because such spending exerts a positive impact on economic growth. The budget adjustment should focus on reducing wasting expenditures, including a major part of current public spending, which hinders economic growth in the three countries. Efforts on the public investment front should center on physical and social infrastructure, which is seen to crowd-in private investment instead of crowding it out. Unfortunately, budget adjustment has heavily relied on cutting public investment. By doing so, decisionmakers in the three countries, would hinder the process of growth for the three economies.*

**Abstract in French:**

**Politique budgétaire et croissance économique: comparaison  
entre l’Egypte, le Maroc et la Tunisie**

**Dr. Brahim MANSOURI**

*Les économistes ont accordé un grand intérêt à la problématique de la croissance économique. Les études classiques estiment que le processus de la croissance économique est largement dû aux facteurs travail et capital. Les études modernes montrent cependant que les différences en matière de croissance économique à travers les pays peuvent s’expliquer par des facteurs supplémentaires. Ce papier va dans cette direction en essayant d’analyser l’impact de la politique budgétaire sur la croissance économique à court et à long termes dans les cas marocain, tunisien et égyptien en utilisant les techniques d’analyse les plus récentes en matière de séries temporelles.*

*Après un survol des principaux fondements théoriques et empiriques de l’impact de la politique budgétaire sur la croissance économique, nous avons construit un modèle économétrique en vue d’estimer l’ampleur de l’effet de l’investissement dans les secteurs public et privé ainsi que la dépense publique courante et la force de travail sur la croissance économique dans les trois pays.*

*En plus de l’effet positif de l’accumulation du capital et de la force de travail, nos résultats empiriques basés sur les modèles à correction d’erreur révèlent que l’investissement public a un effet d’entraînement sur la croissance économique au*

*Maroc, en Tunisie et en Egypte. Néanmoins, l'investissement public n'affecte positivement la croissance économique en Egypte et en Tunisie qu'à long terme. En revanche, dans le cas du Maroc, l'impact est observé aussi bien à court qu'à long termes. Nos résultats empiriques indiquent que l'investissement public complète au lieu d'évincer l'accumulation du capital privé, qu'il se conforme aux normes d'efficacité et de rentabilité prévalant au sein du secteur privé et que ses moyens de financement n'entravent pas les activités des opérateurs économiques, y compris les investisseurs privés.*

*En ce qui concerne la consommation publique courante, il s'avère qu'elle agit négativement sur la croissance économique dans les trois pays. Cependant, son effet s'exerce aussi bien à court qu'à long termes au Maroc et en Tunisie alors qu'un tel impact ne se fait sentir qu'à court terme dans le cas égyptien. Il serait probable que cet effet négatif résulte de la prédominance de l'impact de certains facteurs comme la relation de substitution entre les composantes publique et privée de la consommation, la surfacturation associée à certaines dépenses publiques de fonctionnement, la corruption et la fuite des capitaux sur les effets "demande et offre" résultant de l'augmentation de la consommation publique courante.*

*On déduit de cette étude que les décideurs économiques et politiques dans les trois pays ne devraient pas compter sur la réduction des dépenses publiques d'investissement en vue d'ajuster le budget du secteur public parce que de telles dépenses exercent un effet positif sur la croissance économique. L'ajustement budgétaire doit reposer sur la réduction des dépenses de gaspillage, y compris une grande partie de la dépense publique courante qui entrave la croissance économique dans les trois pays. Les efforts en matière d'investissement public doivent se concentrer sur l'infrastructure physique et sociale qui complète l'investissement privé au lieu de l'évincer. Malheureusement, l'ajustement budgétaire a lourdement compté sur la réduction des dépenses d'investissement. Les décideurs économiques et politiques dans les trois pays, en adoptant une telle politique inefficace, entraveront inéluctablement le processus de croissance économique de leurs pays.*

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## **I- Introductory Remarks**

Economic growth has received much attention among economists. Classical studies estimate that economic growth is largely linked to labor and capital as factors of production. The emergence of the endogenous growth theory has encouraged specialists to question the role of other factors in explaining the economic growth phenomenon. In particular, public spending is considered as an important variable which may determine changes in national income in developed as well as developing countries ( see Barro, 1990 ; Barro and Sala-i-Martin, 1995 ; Aschauer and Lächler ; 1998).

This paper aims at exploring the impact of public spending on economic growth in Morocco, Tunisia and Egypt. It centers on the effect of public spending in investment in comparison with the impact of capital accumulation in the private sector. In addition to the problem of data availability, the three countries have been selected because of their involvement in wide programs of fiscal adjustment, inducing a sharp decline in public investment in proportion to GDP. If public investment stimulates long run economic growth, any fiscal adjustment that is biased against this kind of spending would likely impact costly on economic growth and, therefore, on the people's standards of life in the three countries.

While most studies have analyzed the impact of capital and labor on economic growth, our research paper extends the analysis using the decomposition of capital into its two private and public main components, and by introducing current public consumption, as an additional explanatory variable, in an econometric model. The remainder of this paper is divided into four sections. Section II presents a critical revue of the literature in this research area. Section III outlines the conceptual and methodological framework of our research. Finally, section IV exhibits our empirical results and section V formulates policy implications and concludes.

## **II- A Critical Survey of the Literature**

In addition to the private capital stock and labor, the structure of public spending may affect the opportunities for economic and social development (see for example, Gupta et al, 2002). In spite of this important relationship, most of the existing analytical and empirical studies tend often to center on the impact of aggregate public expenditures (see for instance, Rodrigùez, 1994 ; Boussetta, 1995) and the impact of fiscal deficits which constitute themselves a measure of aggregated fiscal variables ( see Boussetta, 1995 ; Eken et al, 1997).

Recent studies argue that components of public spending have not the same effects on the economy. Nevertheless, they often center on the impact of public investment on the capital accumulation in the private sector as well as on economic growth, neglecting thereby the impact of other public spending components, especially current public consumption (see Blejer and Khan, 1984; Khan and Reinhart, 1990; Greene and Wellanueva, 1991; Haque and Montiel, 1994; Islam and Wetzal, 1994; Aschauer and Lächler, 1998). While an empirical analysis of the impact of public investment is highly important, current public consumption, which permits to estimate the magnitude of wasting expenditures in the public sector, deserves particular investigation efforts. Taking this observation as a starting point, our paper project aims at better understanding the

impact of public spending structure on short and long-run economic growth in Morocco, Tunisia and Egypt.

Public consumption and investment form what can be termed ‘aggregate public spending’ and, therefore, they may have demand effects on aggregate production. Nonetheless, these effects remain ambiguous, especially because:

- Current public consumption may accelerate economic growth if its demand-effect boosts the level of aggregate income. However, in a context of increasing current public consumption, over-invoicing, corruption, capital flight and decreasing private consumption, due to such exploding public consumption, may lead to regressing aggregate income (see Mansouri, 2004a, 2004b, 2004c ; Mansouri et al, 2006).
- Since Keynes (1936), public spending on investment may have a crowding-in impact on private investment thanks to the multiplier effect. Nevertheless, formulation of additional hypotheses would create doubts about the assumed positive impact of public investment on economic growth:
  - The public and private capital should be perfect substitutes;
  - Public spending on investment should comply with the efficiency and profitability norms prevailing in the private sector;
  - When investing, the public sector should foresee the impact which it would have on private investment depending on the means of financing (taxes against borrowing) of the investment;
  - Public investment should positively affect the growth rate of productivity and, consequently, the rate of economic growth. Since public investment on physical and social infrastructure completes private investment activity, increasing public investment would not only attract more private investment and, thereby, would boost capital accumulation in the private sector, but it would also make private investment more profitable. Such a positive impact would not hold in an environment characterized by the existence of a substitution relationship between public and private investment<sup>1</sup>. Public

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<sup>1</sup>- Easterly (1994) argued that the share of private investment in national income falls as soon as public capital increases if the elasticity of substitution between the two components of capital is more than one. Any decline in the share of public capital would lead to a fall in the share of private capital in the national income for any given profitability rate of investment.

investment would reduce the aggregate productivity if public spending on capital does not comply with the rationality norms prevailing in the private sector. More precisely, each additional monetary unity spent by the public sector would not permit to obtain the same quantity of investment goods with the same quality in comparison to the same monetary unity spent by the private sector.

Given the ambiguity of the relationship between the public spending components and economic growth, our research questions cannot be answered without resorting to empirical investigations. This is the main contribution of our research paper.

### **III- The Conceptual and Methodological Framework**

The starting point is the traditional production function which may be written as follows:

$$Y_t = f(K_t, L_t) \quad (1)$$

where  $Y$  is real GDP,  $K$  is capital stock,  $L$  is labor, and  $t$  is time.

In line with the endogenous growth theory, one may introduce the aggregate public spending ( $G$ ) as an explanatory variable of economic growth, to yield:

$$Y_t = g(K_t, L_t, G_t) \quad (2)$$

Since public investment ( $Ig$ ) is a part of aggregate public spending ( $G$ ) and of aggregate investment ( $I$ ), it is possible to deduce  $Ig$  from  $G$  to obtain current public consumption ( $Cg$ ). The task will be then to measure  $Ig$  in stock and to deduce it from  $K$  to finally obtain the public ( $Kg$ ) and private ( $Kp$ )

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The profitability rate of private investment regresses as soon as the values of certain public investment projects increase if public investment constitutes perfect substitutes of private investment. It's also interesting to note that public investment would negatively affect private investment because of the crowding-out effect channeled through financial system, especially when the interest rate does not adequately reflect the cost of financial resources, notably because of financial repression and credit rationing.

components of the aggregate capital stock ( $K$ ). These developments will yield the following ‘augmented’ production function:

$$\text{Log}(Y_t) = g(Kg_t, Kp_t, L_t, Cg_t) \quad (3)$$

Since there are no precise data on capital stock for the three economies, we have estimated this variable for the private and public sectors through the ratios ( $ip$  and  $ig$ ) to GDP of private and public investment respectively. This methodology has been used in several recent studies (see for example, Balasubramanyam et al, 1996; Barro, 1999).

To take the specificities of the three economies into consideration, we have assumed that drought cycles affect economic growth, especially in the Moroccan case and, in less extent, in the Tunisian case. This factor has been estimated using the inverse of the cereal yield per hectare as a proxy for drought ( $DR$ )<sup>2</sup>. This measurement methodology seems to be good because of the fact that cereal production is usually concentrated in non-irrigated areas and this would render it very sensitive to rain falls. Accordingly, the econometric model to be estimated for each of the three economies may be written as follows:

$$\text{Log}(Y_t) = a_0 + a_1.ig_t + a_2.ip_t + a_3.\text{Log}(L_t) + a_4.cg_t + a_5.\text{Log}(DR_t) + \eta_t \quad (4)$$

( ?)    (+)    (+)            ( ?)    (-)

where  $cg$  is the ratio to GDP of current public consumption ( $Cg$ ),  $\eta$  is an error term, and the other variables are as already defined. The expected sign are reported below each parameter in equation (4).

In equation (4), the variable  $Y$  is measured as GDP in constant prices, that is GDP in current prices divided by the GDP deflator. As for the variable  $L$ , it is estimated as the volume of the labor force in the three economies. The used time series have been constructed on the basis of raw data from the World Bank (World Development Indicators, CD-ROM, 2002) and the Arab Monetary Fund (The Joint Arab Report, 2004). We have used the same data sources in order to

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<sup>2</sup>- Alternatively, the impact of drought may be estimated through the construction of a dummy variable which can take, for instance, values from 0 to 5, depending on the evolution over time of the cereal yield per hectare (see Mansouri, 2003).

obtain comparable data across the three countries. The constructed time series cover the periods 1970-2002 for Morocco, 1972-2002 for Tunisia and 1975-2002 for Egypt. Estimates and tests have been conducted using modern time-series analysis (unit root tests, cointegration tests, error correction models, short and long run causality tests, etc.). We have used the recent techniques of time-series analysis given the fact that most of macroeconomic time-series are often nonstationary and that these techniques permit to distinguish between long-run and short-run effects (see Granger and Newbold, 1974 ; Dickey and Fuller, 1981 ; Johansen, 1988, 1991 ; Johansen and Juselius, 1990 ; Engle and Granger, 1991 ; Gonzalo, 1994).

#### **IV- Estimating the Relationship between Fiscal Policy and Economic Growth in Egypt, Morocco and Tunisia: Empirical Results**

First of all, we conduct unit root tests on variables introduced in equation (4). The test results reported in Tables (1), (2) and (3) reveal that:

- in the Moroccan case, variables  $cg$ ,  $ip$ ,  $ig$  and  $Log(Y)$  are nonstationary in level while  $Log(L)$  and  $Log(DR)$  are seen to be relatively stationary.
- In the Tunisian case, variables  $ip$ ,  $ig$  and  $Log(DR)$  are relatively stationary while the other variables are integrated of order 1.

In the Egyptian case, only the variable  $ig$  turns to be relatively stationary in level while the other variables are nonstationary.

In the three cases, variables which are nonstationary in levels are seen to be stationary in first differences.

<b><u>Table 1: Unit Root Tests for Morocco</u></b>				
Variables	Nb. of Lags	t-statistic	MacKinnon CV (1%)	MacKinnon CV (5%)
$Log(Y)$	1 <sup>(*)</sup>	-2.98	-4.32	-3.58
$ig$	1 <sup>(**)</sup>	-3.17	-4.28	-3.56
$ip$	1 <sup>(**)</sup>	-2.56	-4.28	-3.56
$Log(L)$	1 <sup>(*)</sup>	-4.96	-4.35	-3.59
$cg$	1 <sup>(*)</sup>	-2.28	-3.64	-2.95
$Log(DR)$	0 <sup>(**)</sup>	-6.13	-3.68	-2.97

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**Remarks:** (\*) and (\*\*) indicate respectively that the linear trend and the intercept are statistically significant and that only the intercept is statistically significant in the ADF equation.

**Table 2: Unit Root Tests for Tunisia**

Variables	Nb. of Lags	t-statistic	MacKinnon CV (1%)	MacKinnon CV (5%)
<i>Log(Y)</i>	1 <sup>(*)</sup>	-2.10	-3.66	-2.96
<i>ig</i>	1 <sup>(**)</sup>	-3.70	-4.30	-3.57
<i>ip</i>	2 <sup>(*)</sup>	-4.54	-3.68	-2.97
<i>Log(L)</i>	1 <sup>(*)</sup>	-2.31	-3.65	-2.96
<i>cg</i>	0 <sup>(*)</sup>	-2.37	-3.66	-2.96
<i>Log(DR)</i>	0 <sup>(**)</sup>	-4.47	-4.32	-3.58

**Remarks:** (\*) and (\*\*) indicate respectively that the linear trend and the intercept are statistically significant and that only the intercept is statistically significant in the ADF equation.

**Table 3: Unit Root Tests for Egypt**

Variables	Nb. of Lags	t-statistic	MacKinnon CV (1%)	MacKinnon CV (5%)
<i>Log(Y)</i>	2 <sup>(***)</sup>	-3.40	-4.32	-3.58
<i>ig</i>	0 <sup>(***)</sup>	-4.20	-4.34	-3.59
<i>ip</i>	0 <sup>(**)</sup>	-2.54	-3.69	-2.97
<i>Log(L)</i>	1 <sup>(**)</sup>	1.72	-3.68	-2.97
<i>cg</i>	0 <sup>(***)</sup>	-2.85	-4.32	-3.58
<i>Log(DR)</i>	2 <sup>(***)</sup>	-2.40	-4.35	-3.59

**Remarks:** (\*), (\*\*) and (\*\*\*) indicate respectively that the linear trend and the intercept are statistically significant, only the intercept is statistically significant, and neither the intercept nor the trend are statistically significant in the ADF equation.

<b>Table 4 : Cointegration Tests for Morocco</b>				
Eigen Value	Likelihood Ratio	CV (5%)	CV (10%)	noitargetnioC?
0.65	65.70	53.12	60.16	Yes
0.44	33.08	34.91	41.07	No
0.25	15.15	19.96	24.60	No
0.18	6.33	9.24	12.97	No

**Remarks:** the intercept is introduced in the cointegrating equation and dropped from the VAR.

<b>Table 5 : Cointegration Tests for Tunisia</b>				
Eigen Value	Likelihood Ratio	CV (5%)	CV (10%)	noitargetnioC?
0.44	34.30	32.90	41.07	Yes
0.24	14.60	19.96	24.60	No
0.18	6.28	9.24	12.97	No

**Remarks:** the intercept is introduced in the cointegrating equation and dropped from the VAR.

<b>Table 6 : Cointegration Tests for Egypt</b>				
Eigen Value	Likelihood Ratio	CV (5%)	CV (1%)	noitargetnioC?
0.79	90.07	68.52	76.07	Yes
0.54	49.79	47.21	54.46	Yes
0.38	29.34	29.68	35.65	No
0.35	14.78	15.41	20.04	No

0.19	3.42	3.76	6.65	No
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**Remarks:** the intercept is introduced in the cointegrating equation and dropped from the VAR.

On the basis of our unit root tests reported in tables (1), (2) and (3), we have conducted cointegration tests on nonstationary variables. Tables (4), (5) and (6) present our cointegration tests for Morocco, Tunisia and Egypt. In all cases, nonstationary variables are seen to be cointegrated, suggesting that these variables maintain long-run equilibrium relationships. Thus, our econometric estimates have been undertaken on the basis of error correction models where the lagged values of the dependent variable stand for the error correction terms for each country. Therefore, our error correction models may be written as follows:

- **The Case of Morocco**

$$\begin{aligned}
 \Delta \log(Y) = & 0.76 + 0.77 \Delta ig_t + 0.78 ig_{t-1} + 0.44 ip_{t-1} + 0.90 \log(L_t) \\
 & (2.26) \quad (3.94) \quad (6.07) \quad (2.88) \quad (8.71) \\
 & - 0.84 \Delta cg_t - 0.32 cg_{t-2} - 0.10 \log(DR_t) - 0.62 \log(Y_{t-1}) \\
 & (-2.90) \quad (-1.77) \quad (-9.94) \quad (-8.63)
 \end{aligned} \tag{5}$$

**R<sup>2</sup> = 0.92; adjusted R<sup>2</sup> = 0.87; F-Statistic = 31.28 (prob. = 0.0000); Durbin-Watson Statistic = 2.27; White Heteroskedasticity Test: F-Statistic = 0.60 (prob. = 0.83); Number of Observations X R<sup>2</sup> = 11.57 (prob. = 0.71); Residual Normality Test: Jarque-Bera = 1.04 (prob. = 0.60); Chow Forecast Test (for 2002): F-Statistic = 1.03 (prob. = 0.33), Log Likelihood Ratio = 1.47 (prob. = 0.23). The t-statistics are between parentheses.**

- **The Case of Tunisia:**

$$\begin{aligned} \Delta \log(Y) = & 0.82 + 1.15ig_t + 0.24ip_t + 1.42\text{Log}(L_{t-1}) \\ & (2.97) \quad (2.68) \quad (1.96) \quad (4.06) \\ & - 3.04 \Delta cg_t - 2.11cg_{t-1} - 0.68\text{Log}(Y_{t-1}) - 0.27 \text{Log}(Y_{t-2}) \\ & (-4.72) \quad (-3.55) \quad (-3.71) \quad (-1.63) \end{aligned} \quad (6)$$

$R^2 = 0.74$ ; adjusted  $R^2 = 0.65$ ; F-Statistic = 8.96 (prob. = 0.0000); Durbin-Watson Statistic = 1.84; White Heteroskedasticity Test: F-Statistic = 1.55 (prob. = 0.20); Number of Observations X  $R^2 = 15.76$  (prob. = 0.21); Residual Normality Test: Jarque-Bera = 1.51 (prob. = 0.47); Chow Forecast Test (for 2002): F-Statistic = 0.42 (prob. = 0.53), Log Likelihood Ratio = 0.59 (prob. = 0.45). The t-statistics are between parentheses.

- **The Case of Egypt**

$$\begin{aligned} \Delta \log(Y) = & 0.56ig_t + 0.14\Delta ip_t + 0.10ip_{t-1} + 0.15\text{Log}(L_{t-1}) \\ & (2.58) \quad (1.76) \quad (1.80) \quad (2.59) \\ & - 0.46 \Delta cg_t - 0.27\text{Log}(Y_{t-2}) + 0.17\text{Log}(Y_{t-3}) \\ & (-2.25) \quad (-2.03) \quad (1.70) \end{aligned} \quad (7)$$

$R^2 = 0.78$ ; adjusted  $R^2 = 0.72$ ; F-Statistic = 12.08 (prob. = 0.00001); Durbin-Watson Statistic = 1.90; White Heteroskedasticity Test: F-Statistic = 5.96 (prob. = 0.13); Number of Observations X  $R^2 = 24.57$  (prob. = 0.16); Residual Normality Test: Jarque-Bera = 1.40 (prob. = 0.50); Chow Forecast Test (for 2002): F-Statistic = 0.08 (prob. = 0.77), Log Likelihood Ratio = 0.12 (prob. = 0.73). The t-statistics are between parentheses.

Our empirical results based on error correction models (equations 5, 6 and 7) indicate that the private capital and the volume of labor positively affect economic growth in the three countries in line with the traditional classical function of production. Our tests reveal that private capital positively affects real GDP in the short as well as long run in Egypt while its effect is observed only in the long run in Morocco and Tunisia. Following our estimates, one percentage point of GDP increase in private investment would induce in the long run about 1 percent increase in GDP (or 0.14 percent in the short term) in Egypt against 0.71 and 0.24 in Morocco and Tunisia respectively. The volume of labor is also seen to positively affect economic growth in the three countries, especially in the long run. According to our estimates, 1 percent increase in the volume of labor force would lead in the long run to 0.90 percent increase in real GDP in Morocco against 1.5 percent in Tunisia and Egypt.

Our most important empirical results consist of the fact that public spending on investment positively affects economic growth in the short as well as long run in Morocco and only in the long run in Tunisia and Egypt. Our estimates (equations 5, 6 and 7) reveal that any percentage point of GDP improvement in public investment would induce in the long run 1.26 percent increase in real GDP in Morocco (or 0.77 percent in the short run) against 1.15 percent in Tunisia and 0.56 percent in Egypt. These results suggest that: i) public investments crowds in private capital accumulation instead of crowding it out ; ii) it conforms generally to the efficiency and profitability norms prevailing in the private sector ; iii) its means of financing do not hinder economic actors' activities, including those of private investors.

As far as current public consumption is concerned, our estimates and tests reveal that it negatively affects economic growth in the short as well as long run in Morocco and Tunisia and only in the short run in Egypt. According to our results, 1 percentage point of GDP increase in current public consumption would lead in the short run to 0.84 percent decrease in real GDP in Morocco against 2.73 percent in Tunisia and 0.46 percent in Egypt. In the long run, the proportions are estimated to be around 0.52 percent in Morocco and 2.12 percent in Tunisia. This negative effect would be likely due to the predominance of some factors such as the substitution relationship between the public and private components of consumption, over-invoicing associated with some consumption expenditures, corruption and capital flight over the 'demand and supply' effects resulting from increasing current public consumption.

As for drought cycles, their impact has been seen to be negative in the three countries but, as expected, the effect is statistically significant only in Morocco where, in line with our estimates and tests, 50 percent decrease in the cereal yield per hectare (like in 1997) would result in 5 percentage points decrease in the real growth rate, suggesting that rain fall fluctuations dramatically affect economic growth in this country.

## **V- Some Policy Implications and Conclusions**

Our investigations reveal that decisionmakers in Morocco, Tunisia and Egypt should not rely heavily on cutting public spending on investment to adjust the public sector budget because such kind of spending exert a positive impact on economic growth.

Fiscal adjustment should normally rely on reducing wasting expenditures, including a major part of current expenditures which are seen to hinder economic growth in the three countries. Public efforts in public investment

should center on physical and social infrastructure which completes rather than crowd-out private investment. Unfortunately, fiscal adjustment has heavily relied on cutting public investment expenditures. Adopting this inefficient fiscal policy, decisionmakers would hinder the process of economic growth in the three countries.

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