

# **Determinants of Growth in Arab Countries**

## **1. Introduction**

Over the last fifteen years or so, growth performance of the Arab region as a whole has been disappointing and mixed relative to that of the rest of developing countries. In comparison with other regions in the world, growth rates in Arab countries have been remarkably volatile and at times lower than that of the poor-performing regions such as Sub-Saharan Africa (SSA).

This growth pattern is believed to be inextricably linked to several characteristics of most of the countries in the region notably, their heavy dependence on oil; weak economic base; high population growth and unemployment rates; low rates of returns on investment in physical and human capital; low level of integration in the world economy; under-development of market institutions and, with very few exceptions, the omnipresence of the state.

The relative better growth performance of Arab countries in the 1960's, 1970's and the first half of the 1980's is largely attributed to positive external environment in the form of high energy export prices.<sup>1</sup> This situation has been reversed in the second half of the 1980's and early 1990's resulting in sharp declines in domestic investment, savings and growth. Although oil is justifiably perceived by many as the most important source of growth in the Arab countries, other factors have also played an important role in shaping the growth picture of the region.<sup>2</sup>

There is hardly any disagreement about the necessity for Arab countries to rely on less volatile sources of growth that would insulate the region from adverse external developments. The external environment is not likely to be as favorable as it had been since the early 1970's and until the mid 1980's. Analyzing what have

---

<sup>1</sup> Unless otherwise mentioned, Arab countries include: Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates and Yemen. On the other hand, Arab oil-exporting countries are: Algeria, Bahrain, Iraq, Kuwait, Libya, Oman, Qatar, Saudi Arabia and United Arab Emirates.

<sup>2</sup> Arab countries currently sit on 62% of proven world oil reserves and account for almost 30% of actual world production. In addition, oil represents more than two thirds of total Arab exports.

been the main determinants of the recent growth performance is a first step toward identifying what needs to be done to make growth more sustainable.

The recent empirical growth literature has suggested a wide range of growth correlates. The list includes among others, initial conditions, macroeconomic performance, trade openness, government size, income distribution, financial market development, natural resource abundance, institutions, politics and physical geography. These ultimate sources of growth have been shown to be as important as the proximate factors of growth namely, physical capital, labor and the efficiency with which these factors are combined.

This paper will attempt to use the broader framework provided by the recent empirical growth literature to measure the relative contribution of the main sources of growth in the Arab countries. It will also address the issue of whether Arab growth pattern is unique or could be fully explained by means of a global framework. First, the recent growth pattern of the Arab region is analyzed within an international perspective, using other groups of developing countries as a basis for comparison. Then, we will proceed to analyze the relative growth performance within the Arab region.

By identifying the principal aggregate agents of growth and disentangling the regional from the global characteristics, we hope to map out the micro-growth issues that need to be addressed by further studies at individual-country level.

Section 2 gives an overview of the growth performance of the countries of the region during the period 1960-1998. Using an empirical model based on large cross-country data sets, section 3 provides an account for the proximate and ultimate sources of growth in the Arab region. Section 4 analyzes the growth performance of the Arab countries from a regional perspective. Section 5 concludes.

## **2. Growth Record of the Arab Region**

Over the period 1960-1998, Arab growth has followed the growth pattern of the World economy. After a period of relatively high growth rates during the 1960's and 1970's, growth has slowed down during the 1980's and 1990's. However, the impact of the worldwide recession in the early 1980's has been more

pronounced for Arab countries whose growth performance has not only been below world average but also at times weaker than that of the low-performing SSA.

Table 1 shows clearly that per capita real GDP in the Arab region has even declined during the 1980's and grew annually by a mere 1 percent during the most part of the 1990's. In addition, Arab non-oil exporting countries have generally fared better than oil-exporting countries in terms of per capita GDP growth.

Another salient feature of recent growth performance of Arab countries is its extreme volatility. Figure 1 shows that during the period 1960-1998, the average per capita GDP growth rate of Arab countries has been characterized by a high variability in comparison with world average. Starting from the second half of 1980's, variability of growth rates has declined somewhat but remained higher than that of the average world growth rate. Over the entire period 1960-1998, the variance of the average growth rate of per capita GDP for the Arab region is twice as high as that of the average world growth rate.

This pattern is closely linked to the fluctuation in the terms of trade in general and world energy prices in particular. Figure 2 shows that the average growth rate of Arab oil-exporting countries is much more volatile than their non-oil counterparts. In comparing terms of trade fluctuations across a number of regions for the period 1980-1995, Gamo et al. (1997, p. 14) have found that Arab oil-exporting countries have the highest terms of trade variability, and that terms of trade variability of Arab non-oil exporting countries, has been higher than that of developing countries as a group.

All Arab countries have been affected by oil price fluctuations. Naturally, oil-exporting countries are extremely vulnerable to price variation given the relative importance of the oil sector in production and exports. On the other hand, Arab non-oil countries are indirectly affected by oil price fluctuation through workers' remittances and other financial flows stemming from oil exporting countries.

The patterns of investment and savings in the Arab countries, have also followed the growth pattern described above. Table 2 shows that during the oil-boom period 1974-1985 the average investment ratio in Arab countries was very

close to the average investment ratio of the high performing East Asian countries. The average national saving ratio for oil countries in the same period has reached the level of 50 percent of GDP, while that of non-oil Arab countries was at 15 percent.

During the subsequent period 1986-1997 corresponding to the decline in world oil prices, both investment and saving ratios have decreased sharply in Arab countries. Arab oil-exporting countries have borne the brunt of the adjustment cost with, an 8 percentage points decline in investment and a sharp 21 percentage points decline in saving ratios. The average investment ratio in non-oil Arab countries has declined by 6 percentage points, while the average national saving ratio remained the same between the two periods. Unlike their oil-exporting counterparts, non-oil Arab countries have maintained investment levels above national savings. This has resulted into chronic current account deficits and increased indebtedness.

To sum up, recent Arab growth has experienced an overall upward trend followed by an overall downward trend.<sup>3</sup> After a high growth/high investment period running from the 1960's until the mid-1980's associated with two major oil-price booms, Arab countries have witnessed a low growth/low investment period that runs through 1998. At *prima facie*, the presented evidence shows that this growth pattern is associated with fluctuations in world oil prices and hence with the nature of the factor endowments of the Arab countries.

In addition, Arab growth has been characterized by a remarkable volatility. This again stems from the excessive reliance of Arab countries on volatile oil receipts accounting for more than two thirds of their total export receipts. Even non-oil Arab countries are subject to fluctuation in their own terms of trade, being primary factor exporters themselves. Oil price fluctuation also indirectly affects them through its impact on the flows of workers' remittances, investment and financial assistance flows from oil-exporting Arab countries. All these factors combined make the Arab region one of the most vulnerable groups to external shocks.

---

<sup>3</sup> This finding has also been reported in Page(1998) and Bisat et al.(1997).

### **3. Arab Economic Growth in a Global Context**

In this section we will use a cross-country regression framework to put Arab region's economic growth in international perspective. We will try to identify a small set of regressors that would account for most of the variation of cross-country per capita GDP growth. The absence of guidance from growth theory as to which variable to include, makes the choice among the great number of possible correlates of growth a difficult one. However, our selection will be guided by variables that proved more "robust" than others in recent literature.<sup>4</sup>

In addition, we will favor variables that are believed to have shaped Arab region's recent growth performance. We will not focus here on the problems of causation, endogeneity or the possible correlation between growth correlates.

#### **Variables to be Used in the Analysis**

The first type of variables included are those pertaining to initial conditions. Recent empirical growth literature provides ample evidence of the existence of conditional income convergence across countries. Under the assumption of diminishing marginal returns to capital, the lower the initial level of income the greater the opportunity of catching up through higher rates of capital accumulation and diffusion of technology.

This convergence is evidenced by the negative relationship between growth rate of per capita GDP and the initial level of GDP per capita after controlling for other relevant variables such as measures of government policies, institutions, politics and variables related to the character of national population. We will take the 1960 level of real GDP per capita, Y60, as a measure of initial income.

Countries with higher stock of human capital and knowledge have also been found to be able to forge ahead through higher growth rates. The simple inclusion of a measure of human capital in a Barro-type regression equation, however, overlooks the dual role played by the latter. Human capital not only affects growth as an additional factor of production, together with physical capital and labor, but also the efficiency with which these factors are combined.

---

<sup>4</sup> We believe on our side that there is a lot a spuriousness associated with the Barro-type cross-country regression framework. However, until we come up with a better framework to analyze cross-country growth performance, we will continue to use it as a suggestive tool to measure the relative contribution of the many sources of growth across countries and regions.

Ben Habib and Spiegel (1994), have found evidence that human capital affected Total Factor Productivity Growth (TFPG) through its impact on the capacity of a country to innovate and the capability of using and adapting foreign technology. Arguably, human capital also encourages the accumulation of other factors of production.

In our analysis, a measure of human capital will be used to explain both growth as well as TFPG. As a proxy for the level of human capital, we will take the logarithm of the years of secondary education in the population, KLLSEC, for the period 1970-1989. This variable is taken from Sachs and Warner (1997).

Higher investment ratios, INVY, are generally found to be associated with higher growth rates. We include this variable as a regressor without reference to issues of causality and endogeneity. We also include the percentage change in the terms of trade, GTOT, as a proxy for exogenous shocks. It is conventionally assumed that positive terms of trade shocks are associated with higher growth and vice versa.

Another important source of growth highlighted by the new empirical growth literature is institutions. Institutions can be defined as the regular and patterned forms of social behavior and interaction among human beings established by formal and informal rules.

Institutions matter for growth because they affect incentives of actors. For they affect the behavior of people in a society and very often lock their behavior within a regularized pattern, institutions produce path dependence that could explain prolonged periods of poor economic performance and hence the inability of poor countries to catch up.

In order to take into account the role of institutional environment in growth, we will use the institutional indicators developed by international investment risk services and introduced in the literature by the work of Knack and Keefer (1995). Our measure of institutions, ICRG, is a composite of four indicators (a) Government repudiation of contracts, (b) Risk of Expropriation, (c) Rule of Law and (d) Bureaucratic quality.<sup>5</sup> This measure is computed for the decade of the 1980's and is borrowed from Easterly and Levine (1996).

---

<sup>5</sup> See Knack and Keefer (1995) for a full description of these variables.

Macroeconomic performance plays an important role for growth sustainability. Fisher (1993) has shown that growth is negatively associated with inflation, large budget deficits and distorted foreign exchange markets. Among the three measures, we favor inflation. For one, internationally comparable data on budget deficits are scattered and not available for a large number of Arab countries. On the other, the widely used black market premium (BMP) rate as a measure distortion in foreign exchange market is neither a good proxy for the level of distortions in the economy nor an appropriate measure of the adequacy of macroeconomic policies.

Low BMP rates in Egypt or the Arabian Gulf countries reflect more the abundance of foreign exchange more than the absence of distortions in the economy or the presence of stable macroeconomic environment. In addition, the high BMP in Iraq reflects the impact of the Iran-Iraq war and the aftermath of the Iraqi invasion of Kuwait. In order to approximate the level of distortions in the economy we will use a the share of Government consumption in GDP, GCY.

Openness has been used extensively in the literature as a major determinant of growth performance. Openness affects growth positively in as much it magnifies the benefits of international knowledge spillover and technological diffusion as well as enforces cost discipline through import competition and the drive to export.

Openness measured by the ratio of trade to GDP is simply not appropriate for the case of Arab countries. Most Arab countries have high trade ratios reflecting partly the nature of their factor endowment.

Following the work of Sachs and Warner (1995), we adopt the definition of openness, SOPEN, reported in Sachs and Warner (1997). Openness purports to the fraction of years during the period 1970-1990 in which the country is rated as open according to the following criteria: (a) Non-tariff barriers covering less than 40 percent or more of traded goods, (b) average tariff rates below 40 percent, (c) a BMP of less than 20 percent, (d) no extreme controls in the form of taxes, quotas or state monopolies on exports and (e) the country is not considered a socialist country. A value of SOPEN=1 means the country has remained open to trade during the entire period, while a value SOPEN=0 means the country remained completely closed.

Among the recently introduced variables into the empirical literature is natural resource abundance.<sup>6</sup> Sachs and Warner (1997), for instance, have found compelling evidence that countries with high initial ratio of natural resource exports tend to grow slowly in subsequent periods. Earlier findings of development literature about the disappointing performance of resource-abundant countries have motivated their study on the link between natural resources and economic growth.

Natural resource abundance negatively affects growth through several channels. Natural-resource abundant countries tend to exhibit the Dutch-disease syndrome in terms of overvalued exchange rates, and hence the difficulty to develop a profitable export-oriented or import-competing manufacturing sector.<sup>7</sup> Resource-rich countries are also associated with wasteful consumption and public investment behavior, and provide incentives for rent-seeking and other unproductive activities. In addition, it is widely observed that natural resource availability forestalls reform. Finally, the secular decline of world prices of natural resources and their high volatility translate into high uncertainty which, in turn, impacts negatively growth.

The idea of incorporating natural resource abundance as a correlate of economic growth is of great appeal given the high endowment of Arab countries in natural resources notably, oil. Most of the arguments presented to explain the negative link between natural resource abundance and growth performance apply in the context of Arab countries, although undeniably, oil export revenues have contributed to the improvement of their welfare and helped finance investment in infrastructure and in human capital. In fact, four of the Arab oil-producing countries namely, Kuwait, Bahrain, Qatar and the United Arab Emirates, are ranked by the 1999 Human Development Report, among the top 45 countries in the world in terms of the United Nations' Human Development Index.

The share of exports of primary products in GNP, SXP, will be used to measure natural resource abundance. This variable is measured for the year 1970 and is borrowed from Sachs and Warner (1997).

---

<sup>6</sup> Natural resources are defined as primary agriculture, fuels and minerals.

<sup>7</sup> Radelet et al. (1997), p. 8.



A final growth agent that is not very frequently used in the recent empirical growth literature, is the role of population variables. High population growth , GPOP, affects negatively economic growth mainly through its impact on the quality of human capital and capacity to fulfill basic needs such as access to basic health care, education and clean environment.

Inclusion of this variable is justified on the ground that Arab countries have one of the highest population growth rates in the world with an average of over 2.5 percent a year.

### Regression Results

In order to give an order of magnitude to the contribution of the above agents of growth, we regress the average growth rate of real per capita GDP on several subsets of the variables described above. All variables, except when it is otherwise mentioned, are averaged over the period 1960-1998 or any sub-period within it, in case of unavailable data. The sample data is made of the 212 countries included in the World Bank database prepared for the Global Research Project (GRP) dealing with the sources of growth in the world. Not all the countries in the sample were used in the analysis since some of them did not have complete data on all the variables pertaining to our analysis.

Table 3 reports the regression results of our model(s). With respect to the recent empirical literature, our results confirm the relative importance of the investment ratio (INVY), quality of institutions (ICRG), macroeconomic performance (INFLATION), initial level of income (Y60), human capital (KLLSEC) and the degree of openness (SOPEN) in affecting long-term growth performance. The respective coefficients of these variables were found to have the expected signs and statistically significant at reasonable levels of significance.

In contrast, some of the variables such as terms of trade growth (GTOT) and population growth (GPOP) were found to be insignificant. The ambiguous impact of population on growth can be theoretically rationalized. Population can, in principle, affect positively growth through its impact on market size. In addition to this scale effect, population growth, if associated with an expansion of better quality labor force, could be conducive to growth. The potential positive impact of

these two factors work in opposite direction against the “Malthusian” impact resulting from the excessive call on the available quantity and quality of resources.

The ambiguous impact of terms of trade on long-term growth has been reported in several instances in the literature.<sup>8</sup> There are several plausible explanations for that. The terms of trade variable has been obtained, given the requirements of our cross-country analysis, by computing its average growth over the entire period 1960-1998. Therefore, the impact of terms of trade as an exogenous shock could be diluted owing to the operated smoothing. In order to take this shortcoming into account, we have used the standard deviation of the terms of trade of each country over the entire period as an alternative. The new variable turned out to be insignificant as well.

The impact of terms of trade on economic growth could be proportional to the dependence of any country on a limited number of exported commodities. In other words, a diversified economy is less likely to be affected by terms of trade decline given that the impact will be limited to a relatively small number of sectors. In contrast, a deterioration in the terms of trade will be felt throughout the economy in case of high export concentration or excessive dependence on a limited number of export commodities such as oil.

Finally, the ambiguous effect of terms of trade on growth could be due to the asymmetry of this effect. A persistent improvement in terms of trade might lead to an improvement in income and expenditure, while a deterioration does not necessarily lead to a proportional reduction in these variables. The recent World Bank report on Global Economic Prospects (2000), reports several cases in point from the Arab region.<sup>9</sup> For instance, following the 1998 slump in oil prices, Bahrain, Oman and Saudi Arabia used foreign reserves and accumulated foreign assets to alleviate the pressure on fiscal deficits and trade balances. In contrast, other oil exporters such as Algeria and Yemen with more binding financial constraints had to adjust through expenditure cuts and exchange rate devaluation.

---

<sup>8</sup> For instance, Gamo et al. (1997, p. 27) reported a similar result for the case of several Arab countries.  
<sup>9</sup> World Bank (2000, pp. 142-143).

## Explaining Arab Growth Differential Relative to Other Regions

In order to put growth in the Arab region into an international context, we use previous regression results to analyze the variables that account for most of the difference in its growth performance with respect to a group of reference regions.

To perform the analysis, we adopt specification (1) in table 3. This specification is parsimonious and includes the most relevant variables found in the literature to affect long-term economic growth.

Table 4 gives the relative contribution of the relevant variables to the growth differential of Arab countries relative to three regional groups.<sup>10</sup> These groups are EASIA including 6 high performing East Asian countries; SSA including 15 countries from Sub-Saharan Africa and LATIN including 17 countries from Latin America.

The included variables explain most of the expected difference in growth performance of Arab countries with respect to the rest of the groups. Table 4 shows that the quality of institutions and factor endowments, negatively affect the relative performance of Arab countries with respect to all the reference groups. In particular, the quality of institutions accounts for most of the growth differential of Arab countries with respect to the high performing East Asian countries.

Investment ratio is the next important variable accounting for most of the growth differential of Arab countries with respect to the rest of the groups. Investment accounts for as much as 17 percent of the growth differential between Arab countries and the high performing East Asian countries. This result is, at prima facie, at odd with the fact that Arab countries have maintained an investment ratio close to that of East Asia and higher than that of other regions in the world. This might be attributable to the endemic problem of capital inefficiency in the Arab countries.

Many have presented plausible explanations for the low efficiency of capital in the Arab region. Page (1998) suggested that this low efficiency of capital is due to the dominant role of the state and the nature of capital inflows in the region destined mainly to finance public investments and low-productivity projects in the

---

<sup>10</sup> For lack of relevant data only 8 Arab countries were included in the analysis: Algeria, Egypt, Mauritania, Morocco, Saudi Arabia, Sudan, Syria and Tunisia.

non-tradable sector such as housing. He also pointed out that protectionism and lack of integration in world economy precluded these countries from boosting their efficiency and competitiveness.

Others, such as El-Badawi (1999), argue that Arab countries as a group, provide an inadequate institutional support for investment and private sector development.

Openness does not seem to explain the difference of Arab growth performance with respect to Sub-Saharan Africa and Latin America. However, openness explains around 12 percent of the growth differential with respect to East Asian countries. The average index of openness over the period 1960-1998, for the East Asian group is 5 times that of the Arab countries' group included in the analysis.

Part of the explanation in this regard lies in the stunning success of the export-led strategy pursued by East Asian countries. Openness was simply a byproduct of that strategy. In contrast, the relative lack of openness of the Arab countries is due to the inward-looking strategy based on import-substitution, followed by many countries of the region during the 1960's and 1970's. The average unweighted tariff rate in Arab countries is high relative to many regions of the world. Arab Gulf states maintain lower average tariff rates than the rest of the Arab countries. However, average unweighted tariff rates in non-oil exporting countries are high and exceeding 20 percent in the case of Egypt, Jordan, Morocco and Tunisia. With the recent efforts at reforming external trade and the adherence of the majority of Arab countries to the World Trade Organization (WTO), this situation might change in the near future.

Table 4 also shows that human capital, as approximated by education attainment, accounts for the Arab region's growth under-performance with respect to East Asia and Latin America. The relative weak contribution of education to economic growth in Arab countries is at odd with what is commonly believed. Arab countries have spent more on education than many developing countries.

Table 5 shows clearly that Arab countries as a whole fair much better than the average developing country in terms of spending on education. In addition, as shown in table 5, there is a net improvement in several education measures such as

enrollment rates and literacy. However, Arab countries are still lagging behind developing countries. In 1995, more than 43 percent of adults above 15 years of age are illiterate compared to only 30 percent in the group of developing countries. These statistics are more alarming given the gender gap in terms of literacy. Illiteracy rates among females, 55.8 percent, are much higher than those of males, estimated at 31.6 percent.<sup>11</sup> Illiteracy among women is linked to poor health and low education attainment among children, and hence the low quality of human capital.

Using a six-Arab-country panel data, El-Erian et al. (1998, p. 11) have found that the rapid expansion in education did not result in higher productivity or more rapid economic growth.<sup>12</sup> Aside from measurement problems that might have affected their results, they argue that the weak link they have found between education and growth is attributable to the low quality in the delivery of educational services and labor markets distorted educational choices in Arab countries.

They argue that education systems in Arab countries focus more on repetition of definitions, knowledge of facts and concepts and less so on developing critical thinking and problem-solving capacity. On the other hand, the higher wages prevailing in the public sector are set without consideration for alternative employment opportunities in other sectors.<sup>13</sup> This has led to an education system that is focused on preparing students for public employment.

A close line of argument is presented by Ridha (1998) who argues that, the quality of education in Arab countries is low because education systems are over-politicized to the extent that they deviate from the objectives they are supposed to achieve. He asserts that, the educational systems in Arab countries are manipulated to reach political ends. His argument is best summarized by the following excerpts:

“Indoctrination replaced free and critical thinking, and authoritarian values permeated every educational tool and practice: the curriculum, the textbooks, and the methodology of teaching.”

---

<sup>11</sup> UNESCO Statistical Yearbook (1997).

<sup>12</sup> The countries included are: Algeria, Egypt, Jordan, Kuwait, Syria and Tunisia.

<sup>13</sup> Arab countries are believed to have the best paid civil service in the world with about 10 % of GDP devoted to public wages and salaries.

Ridha (1998, pp. 3-4).

Another argument advanced by Pritchett (1996) can possibly explain the weak link between education and growth in the Arab countries. He argues that in a perverse institutional environment, education and accumulated capital could be used in wasteful and counterproductive activities.

High levels of distortions and state interventions have notoriously characterized Arab countries. In addition, the fact that most of these countries are resource-abundant provides incentives for rent seeking. This has led to the proliferation of rent-seeking activities and the swelling of bureaucracy that although might have contributed to the employment of educated labor, have done less so, if any, to economic growth.

Starting from a relatively high per capita income relative to the rest of the groups in the early 1960's, did not provide a high potential for rapid growth in Arab countries. Finally, inflation did not also contribute in any significant way to the growth differential with respect to other regions except the inflation-prone Latin America.

### Growth Accounting in International Perspective

To further put growth performance in international perspective, we use the growth accounting framework to see whether factor accumulation or factor productivity have accounted for most of the growth differential of the Arab relative to other regions.

Growth can be the result of the growth of inputs such as capital and labor, or their productivity. The debate over the share of inputs as compared to that of their total productivity is still very lively. The empirical evidence is mixed. Many such as Mankiw et al. (1992), argue that the share of physical and human capital together with population growth account for as much as 80 percent of international variation in per capita income. Young (1995) on the other hand, argues that what is often labeled as the "Asian miracle," is the outcome of a temporary rapid factor accumulation. Those holding a different view claim that TFP is the key to economic growth and that factor accumulation plays only a less important role.<sup>14</sup>

---

<sup>14</sup> See for instance, Klenow and Clare (1997).

In order to carry out the accounting exercise, we have used a two-factor, homogeneous of degree one, Cobb-Douglas production function in per capita form. Capital shares required to measure the relative contribution of factor accumulation and productivity were estimated using the following regression equation:

$$\Delta \text{Log}(Y_{it} / L_{it}) = \mathbf{1}_i + \mathbf{a}_i \Delta \text{Log}(K_{it} / L_{it}) + \mathbf{e}_{it}$$

The slope coefficient in the above equation represents the capital share in output, Y represents real output, K the capital stock and L labor. Y is measured by real GDP and is obtained from World Bank database. The capital stock data are taken from Nehru and Dhareshwar (1994), and L is approximated by total labor force and taken from the World Bank world development indicators. Real GDP and capital stock series are based on 1987 constant prices.

The sample we used comprises 92 countries and data cover the period 1960-1997. The list of countries included in our sample was determined on the basis of the availability of capital stock data in Nehru and Dhareshwar (1994).<sup>15</sup> It should be mentioned that since their capital series stop at the year 1990, we have used fixed investment figures from World Bank database to complete the capital series from 1991 until 1997.

In order to account for the possible impact of the noise generated by the high variability of yearly data, we have estimated two versions of the above equation.<sup>16</sup> A short-term version using original data for the output per worker and capital per worker, and a long-term version using three-year moving averages of the same variables.

Table 6 provides the regional averages of capital shares using the two specifications indicated above. Looking at table 6, several remarks are in order. First, our estimates of the world average capital share was found to be above the commonly assumed value of 0.3 or 0.4. This finding is in line with recent results provided in Senhadji (1999). Bisat et al. (1997) have previously found that the

<sup>15</sup> The Arab countries included in the sample are: Algeria, Egypt, Iraq, Jordan, Kuwait, Libya, Morocco, Sudan and Tunisia.

<sup>16</sup> An attempt at using cointegration analysis for the two versions have led to the rejection of the existence of cointegration relationships for most of the countries in the sample. We do not include the results of this tests for space considerations.

average capital share in Arab countries is well above 0.5 and about 0.7 for Arab oil-producing countries.

Secondly, high-performing East Asian countries hold the lowest capital share in the group. And thirdly, Latin American and industrialized countries have the highest capital shares.

These findings have an implication for the computation of TFPG. Given the difference in regional capital shares, applying the same share for all the countries to compute TFPG could be very misleading.

Table 7 provides estimates of the relative contribution of capital, labor and TFPG to economic growth of the countries included in the sample. Overall, the results show the predominance of capital contribution over that of labor and TFPG, in growth performance during the period 1960-1997. This remark holds true for the high performing East Asian countries such as Korea, Malaysia and Thailand. The only exception was Singapore where TFPG contribution exceeded that of capital

For the 9 Arab countries included in the sample, only Egypt, Morocco and Tunisia managed to have positive TFPG. Out of the 6 remaining Arab countries in the sample that had negative TFPG, 4 were oil-exporting countries.

TFPG has contributed positively to the economic growth of the East Asian group in the sample. The only exception was the Philippines.

In order to assess the relative contribution of the variables accounting for inter-regional TFPG performance, we have regressed TFPG on relevant variables based on recently established results in the literature.<sup>17</sup> We conducted these regressions using values for capital shares ranging from 0.3 to 0.7. Each hypothetical value for capital share was applied uniformly over the different countries in the sample. This was done to see whether different values of the capital share affect the impact of the regressors on TFPG.

The included regressors were the quality of institutions, ICRG; inflation rate, INFL; the initial income, Y60; the initial enrollment rate in primary school, PRIM60, and the adopted measure of natural resource abundance, SXP. Other

---

<sup>17</sup> Only 6 Arab countries were included in the analysis given the lack of data. They are: Algeria, Egypt, Jordan, Morocco, Sudan and Tunisia.



conventional variables such as openness, growth in terms of trade and political stability have been tried but were dropped for lack of statistical significance.

Table 8 reveals that for lower values for capital share, the parameter estimates tend to be significant and of the expected signs. Institutions and the stock of human capital, as approximated by the initial enrollment rate, affect positively TFPG. The negative sign attached to the initial income, points to the existence of catching up effect at the TFPG level. Inflation was also found to affect negatively TFPG. Finally, the natural resource curse was found to apply at the productivity level too. Natural resource abundance affects negatively TFPG.

At higher values of the capital share, the explanatory power of the model drops. This is due to the fact that at higher values of the capital share, capital accounts for a higher portion of overall economic growth as well as TFPG. Hence, the other variables become less relevant. However, it should be mentioned that the only two variables that remained significant for different values of the capital share, are initial income and human capital. This finding is widely in line with the recent literature on TFPG.<sup>18</sup>

In order to put Arab countries' TFPG performance into global perspective, we have computed the contribution to TFPG of the relevant variables for different values of the capital share. Table 9 reports the results after applying uniformly to all countries each of the hypothetical values for the capital share between 0.3 and 0.7. Table 10, reports the results of the same exercise after applying different regional values for the capital share.

Based on our estimation, we have applied the value of 0.5 to the Arab and Sub-Saharan regions as well as the whole sample. The values applied for other regions are respectively, 0.4 for East Asia and 0.7 for Latin America.

Overall, the results exhibited in tables 9 and 10, point to the overriding importance of the quality of institutions and the stock of human capital in explaining the lower growth and productivity performance of the Arab countries in comparison with the high performing East Asian countries and with the rest of the world in general.

---

<sup>18</sup> See for instance the findings of Senhadji (1999).

#### **4. Explaining Intra-Regional Arab Growth Performance**

In the previous section, Arab countries' growth performance has been compared with other reference regions. In this section, we will dwell on the relative performance of individual countries with respect to the Arab region's average performance.

There is a considerable variation in the growth performance of Arab countries. It was shown earlier that growth in oil-exporting countries is subject to a higher variability than that of non-oil exporting countries. In addition, the average growth performance of the oil exporting countries over the period 1960-1998, has been below that of non-oil exporting countries. Table 11, shows that the countries which were able to achieve an average real GDP growth rate over 2 percent a year, during the period 1960-1998 were, except for Oman, non-oil exporting countries. The best growth performers were Egypt, Jordan, Morocco, Oman, Syria and Tunisia. Oman's average growth rate was the highest followed by Egypt and Tunisia.

In order to assess the relative performance of each Arab country with respect to the average performance of the Arab group, we have first computed for each country a yearly z-score defined as the distance of its growth rate of GDP per capita with respect to the average per capita growth rate of the whole sample of Arab countries, divided by the standard deviation of this growth rate over the same year. The better achievers have then been defined as those countries whose average z-scores over the entire sample period, were positive.

After excluding countries for which ample data were not available, the over-achievers were: Oman (0.40), Egypt (0.30), Tunisia (0.27), Jordan (0.24), Syria (0.11) and Morocco (0.08). All Arab oil-exporting countries, except Oman had negative average z-scores.

Interestingly enough, according to our own estimates and those of Bisat et al. (1997), these countries except for Jordan, were the only Arab countries whose TFP have contributed positively to output growth during the last 3 decades or so. Oman and Egypt have also taken the lead in this respect. In addition, the over-achievers had in general the lowest growth variability among the sample group

except, Oman. The higher variability of the latter is attributable to the fact that it is an oil-exporter and therefore subject to the effect of oil price fluctuation.

Available data do not permit to establish systematic links between growth performance in all Arab countries on the one hand and their country-specific characteristics (structural, policy, initial conditions, institutional, political, other internal and external factors) on the other. Preliminary analysis indicates, however, that the better achievers tend to have, except for Syria, above average indicators for integration in the world economy (be it through the crude measure of openness, share of FDI in GDP, or share of manufactured exports in total commodity exports). They also tend to be more diversified and have enunciated, except for Syria, economic reform earlier than other countries.

Table 12. exhibits the sectoral distribution of production of the better growth achievers Egypt, Jordan, Morocco, Syria and Tunisia, with respect to the sample average. The numbers show clearly that these countries have more diversified economies than the average. The contrast is more stark if we compare this group with the group of oil-exporting countries.

Using the normalized Hirshman export concentration index, we found that Arab growth over-performers have the lowest values of this index compared to other Arab countries. For 1995, these indexes were: 0.172 for Morocco; 0.211 for Tunisia; 0.244 for Egypt; 0.270 for Jordan and 0.533 for Syria.<sup>19</sup> These rates compare favorably with 0.940 for Kuwait; 0.765 for Iraq and 0.765 for Oman.

Oman is the only Arab oil-country ranked as an over-achiever. The Omani economy is not diversified and is not considered an exception with regard to other relevant variables such as institutions, openness and human capital. Oman's growth over-performance with respect to the other oil countries could be attributable to the catching up effect alone.

Having started in the 1960 by a very modest income per capita that was lower than that of Somalia, one of the least developed Arab countries, Oman had the potential of catching up. The presence of oil has allowed it to catch up rather quickly.

---

<sup>19</sup> These rates are taken from UNCTAD (1999). They were computed based on the 3-digit SITC classification, revision 2. A value of the index closer to zero means more export diversification and vice versa.

In order to account for the relative growth performance within the Arab region, we have used a cross-country regression framework applied to a panel data of 14 Arab countries and spanning the period 1970-1995. For the sake of increasing sample variation, we have used for each country 5 five-year period averages for 1970-1975, 1975-1980, 1980-1985, 1985-1990, 1990-1995.

An attempt at using the same cross-country regression framework we have used previously for the Arab region, was not successful. All the relevant variables turned out to be insignificant. This could be explained by the fact that cross-country variation in the data is much higher than time variation.

We have used instead an alternative model in which the growth rate of per capita GDP is determined by the domestic saving ratio, SAVY; the debt-service ratio, DEBTS; the share of manufactures in total merchandise exports, MANUF; and the level of initial income per capita, YINI.

The model was estimated using the fixed-effect panel regression method.<sup>20</sup> The estimation results reported in table 13, show that the parameters of all the variables considered were significant and of the expected sign.

Since data were not available for all the countries and for all the years, only a limited number of countries in the sample was used for comparative purposes. Table 14 shows that high saving ratios have contributed significantly to the relative better growth performance of the oil-exporting countries such as Algeria and Saudi Arabia. On the other hand, export diversification explains the relative better performance of countries such as Egypt, morocco and Tunisia. Debt overhang also explains the lower growth performance of countries like Algeria and Morocco.

These results notwithstanding, the country-specific growth determinants or the unexplained growth, remain relatively high. The high variation in individual intercepts in our regression point to that effect. These individual factors should be tackled at a more disaggregated country-specific level.

## **5. Concluding Remarks**

(1) The overall growth performance of the Arab countries has been both mixed

---

<sup>20</sup> Hausman's specification statistic for the test of fixed versus random effect model was (1.09 at 4 degrees of freedom) in favor of the former.

and characterized by a higher degree of volatility compared to other regions of the world. We believe that the factors responsible for this volatility include, among others, fluctuations in world oil prices, droughts, workers' remittances, foreign aid and debt, not to mention political factors such as civil and regional wars.

- (2) Using cross-country regressions, we found that the quality of institutions and factor endowment tended to affect negatively the relative growth performance of the Arab countries in comparison with three comparator regions. More specifically, the investment ratio, openness and human capital explain the low growth performance of the Arab countries relative to the high performing East Asian group. Human capital, on the other hand, is the factor that explains the lower performance of the Arab countries with respect to Latin America.
- (3) It is the quality of physical and human capital rather than their quantity that explains the relatively lower Arab growth performance. This may partly be attributed to the dominant role of the State in these countries, with its ensuing distortions in the economy.
- (4) Our examination of the relative contribution of factor accumulation and total factor productivity to economic growth for a sample of 92 countries indicates that factor accumulation accounts for most of the growth performance for the period 1960-1997. While TFPG contributed positively to the growth performance of the East Asian countries, it was not an important source of growth in the Arab region. Among the Arab countries included in the sample, only Egypt, Morocco and Tunisia had positive TFPG. The quality of institutions and human capital accounted for the lower performance of the Arab countries in terms of TFPG and in comparison with the other regions of the world.
- (5) The degree of exposure to external shocks and the extent of economic diversification were relevant factors in explaining variations in growth performance within the Arab World.

In view of the aggregate nature of our study and in light of the above findings, several relevant policy issues deserve further analysis in conjunction with

country specific studies:

- To achieve sustainable growth in the future, Arab countries must take policy measures that should substantially enlarge and diversify their economic base. This should go in tandem with measures needed to enhance their capacity to withstand adverse domestic and external shocks and lessen their exposure to the volatility that the region as a whole has experienced. Political factors apart, far reaching economic and institutional reforms have to be put in place.
- The dominance of the State has given rise to distorted labor market signals that have encouraged employment in the public and other low productivity sectors. As the roles of the State and the public sector are changing, including that of employers of last resort, Arab educational system should be reformed so as to be able to dispense the type of education and knowledge that is more in line with the requirements of modern market-based and open economies rather than one that prepares graduates for employment in the public sector. Furthermore, closing the wide educational gender gap and reducing illiteracy among women in Arab countries, should also be a high priority on the agenda of policy makers.
- Policies of greater openness and integration in the world economy should be vigorously pursued simultaneously with appropriate domestic economic and institutional reforms at home. These policies, as attested by the experiences of the Arab and other regions, would contribute positively to growth performance. Experience has also shown that countries endowed with abundant natural resources may tend to delay reform and fail to develop a competitive manufacturing sector and a more diversified economy. The outcome would ineluctably be poorer long-term growth prospects, unless appropriate reforms are implemented.

The country specific studies will no doubt shed important additional light on the determinants of growth in each of the countries concerned. These studies should enable us to explain, for example, the within regional variation in the role of human and physical capital, the influence of the State and institutions and the relative impact of external and internal shocks as they relate to economic growth. It is equally useful to analyze the way ultimate and proximate determinants of growth

interact in each country. It would be an addition to our understanding of the growth process in Arab countries, to show, for instance, how economic policy, institutions, politics and other country characteristics affect the way factors of productions are used and combined.

Finally, it would be desirable to operate a sectoral decomposition of growth in Arab countries. Such a decomposition is useful for identifying the sectors that have been successful in achieving better growth performance, expanding investment and employment and raising productivity and earnings. This decomposition should also help explain why certain sectors have been more successful than others.

## References

**Barro R. (1991)**, “Economic Growth in a Cross-Section of Countries,” Quarterly Journal of Economics, 104: 407-433.

**Benhabib, J. and M. Spiegel (1994)**, “The Role of Human Capital in Economic Development: Evidence from Aggregate Cross-Country Data,” Journal of Monetary Economics 34: 143-173.

**Bisat A. El-Erian M.A. and T. Helbling (1997)**, “Growth Investment, and Saving in the Arab Economies,” IMF working paper WP/97/85.

**Easterly W. and R. Levine (1996)**, “Africa’s Growth Tragedy: Policies and Ethnic Divisions,” The World Bank.

**El Badawi Ibrahim (1999)**, “Can Reforming Countries Perform an Asian Miracle?: Role of Institutions and Governance on Private Investment,” in Limam I. (ed) “Institutional Reform and Development in the MENA Region,” published by Arab Planning Institute and Economic Research Forum for the Arab Countries, Iran and Turkey.

**El-Erian, Helbling T. and J. Page (1998)**, “Education, Human Capital Development and Growth in the Arab Economies,” paper presented in the Joint Arab Monetary Fund, Arab Fund for Economic and Social Development Seminar on “Human Resource Development and Economic Growth”, Abu Dhabi, United Arab Emirates, 17-18 May, 1998.

**Fischer S. (1993)**, “The Role of Macroeconomic Factors in Growth,” Journal of Monetary Economics 32 (3): 485-512.

**Gamo P.A. Fedelino A. and S.P. Horvitz (1997)**, “Globalization and Growth Prospects in Arab Countries,” IMF working paper WP/79/127.

**Klenow P. J. and A. R. Clare (1997)**, “The Neoclassical Revival in Growth Economics: Has it Gone Too Far?” In NBER: Macroeconomics Annual 1997, MIT Press.



**Knack S. and P. Keefer (1995)**, “Institutions and Economic Performance: Cross-Country Test Using Alternative Institutional Measures” *Economies and Politics* 7(3): 207-227.

**Mankiw, N. G., Romer D., and D. N. Weil (1992)**, “A Contribution to the Empirics of Economic Growth,” *Quarterly Journal of Economics* 107 (2): 407-437.

**Nehra V. and Dhareshwar A. (1994)**, “New Estimates of Total Factor Productivity Growth for Developing and Industrial Countries,” Policy Research Working Paper # 1313, the World Bank.

**Page J. (1998)**, From Boom to Bust- and Back? The Crisis of Growth in the Middle East and North Africa, in Nemat Shafik (ed), “Prospects for Middle Eastern and North African Economies: From Boom to Bust and Back?” Published by the Economic Research Forum for Arab Countries, Iran and Turkey.

**Pritchett L. (1996)**, “Where Has All the education Gone?” World Bank Policy Research working paper # 1581.

**Radelet S., J. Sachs and Lee J.W. (1997)**, Economic Growth in Asia, Harvard Institute for International Development.

**Ridha M. J. (1998)**, “Charting the Future Education and Change in the Arab Countries: A platform for the 21st Century,” paper presented in the Joint Arab Monetary Fund, Arab Fund for Economic and Social Development Seminar on “Human Resource Development and Economic Growth,” Abu Dhabi, United Arab Emirates, 17-18 May, 1998.

**Sachs, J.D. and A. M. Warner (1997)**, “Natural Resource Abundance and Economic Growth,” Center for International Development and Harvard Institute for International Development.

**Sachs J. D. and A. M. Warner (1996)**, “Sources of Slow Growth in African Economies,” Development Discussion paper no. 545 Harvard Institute for International Development.

**Sachs, J.D. and A. M. Warner (1995)**, “Economic Reform and the Process of Global Integration,” Brookings papers on Economic Activity, 10-1-118.

**Senhadji A. (1999)**, “Sources of Economic Growth: An Extensive Growth Accounting Exercise,” IMF Working Paper WP/99/77.

**UNCTAD (1999)**, Handbook of International Trade and Development Statistics 1996-1997.

**UNESCO (1996)**, Statistical Yearbook.

**UNESCO (1997)**, Statistical Yearbook.

**United Nations**, Macroeconomic Data System.

**United Nations (1999)**, Human Development Report 1999.

**World Bank (2000)**, Global Economic Prospects and the Developing Countries 2000, World Bank Publication.

**World Bank:** Global Research Project Database.

**Young A. (1995)**, “The Tyranny of Numbers: Confronting the statistical Realities of the East Asian Growth Experience,” Quarterly Journal of Economics 110 (3): 641-680.