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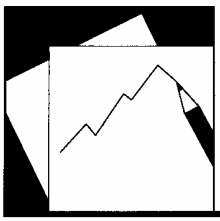

IMF Working Paper

Growth in the Middle East and North Africa

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Growth in the Middle East and North Africa

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Abstract

This paper analyzes the weak growth performance in the Middle East and North Africa (MENA) region during 1980–2000 using an empirical model of long-run growth. The relative importance of the factors affecting growth is shown to vary across 16 MENA countries. In GCC countries, where oil revenues are significant, large governments appear to have been a key factor stifling private-sector growth and impeding diversification. In other MENA countries poor institutional quality has held back growth. Political instability is also shown to have played a role. While the MENA region's growth differential with east Asia is explained well in the 1980s, this is less so in the 1990s.

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I. INTRODUCTION

Over the last two decades economic growth in the Middle East and North Africa (MENA) region has been weak. Between 1980 and 2000, real per capita GDP in the MENA region stagnated, compared to average annual growth of 4.1 percent in east Asia and 0.3 percent in all other developing countries over the same period. The MENA region's poor growth performance during the 1980s and 1990s also contrasts sharply with the 1970s, when annual per capita GDP growth averaged 2.3 percent, exceeding that of other developing countries (excluding east Asia) by nearly two-thirds of a percentage point. The lack of growth has been a cause of concern to policymakers because it exacerbates the problems posed by the generally high unemployment rates and the relatively strong labor force growth in the region.

Drawing on the evidence in the empirical growth literature, recent studies have identified a diverse set of potential structural causes behind the poor growth performance in the MENA region.[2] Dasgupta, Keller, and Srinivasan (2002) suggest that the MENA region lags behind other regions in macroeconomic and trade reforms. Sala-i-Martin and Artadi (2002) argue that while the level of investment in the region has remained high by international and historical standards, too large a fraction of this overall investment has been unproductive public investment. In addition, they assert that private investment has been held back by political instability, excessive government intervention, protection and regulation, and inadequate human capital. Abed (2003) attributes the region's weak growth to five key structural factors: weak institutions, dominance of the public sector, underdeveloped financial markets, highly restrictive trade regimes, and inappropriate exchange rate regimes.

This paper makes four contributions to explaining the MENA region's weak growth performance and providing insights on how economic growth can be accelerated.

- Unlike earlier studies, which are of a more descriptive nature, the paper uses an empirical model of long-run growth to explain the region's weak performance.
- The paper takes into account the diversity of the economies in the MENA region by separately analyzing the growth performance of subgroups of countries with common features.
- The paper combines the growth accounting and growth regression approaches to examine the channels through which the various determinants of growth have influenced the growth differentials between subgroups of MENA countries and east Asia.
- The paper includes a range of MENA countries which hitherto have not been the subject of systematic growth analysis.

[2] Earlier studies include IMF (1996), Alonso-Gamo, Fedelino, and Paris Horvitz (1997), and Page (1998).

First, the use of an empirical model allows a more rigorous evaluation of the extent to which the determinants of growth identified in earlier studies explain the region's weak performance. This also bears on the policy prescription to accelerate growth in the region. For instance, an empirical analysis can help to determine if it is more important for the MENA countries to rationalize government spending or to improve public sector governance. The factors examined in this paper include indicators of macroeconomic policy, institutional quality (including political instability), trade openness, terms of trade volatility, initial level of secondary school enrollment, demographics, and initial level of income. The earlier studies of growth in the MENA region have generally focused on one or a limited number of determinants of growth. Also, those studies which have looked at a broader range of factors could not derive conclusions about the relative importance of the factors because their analysis relied mainly on comparisons across regions of factors identified in the literature as affecting growth. Only Makdisi, Fattah, and Limam (2000) have attempted to undertake an empirical analysis of the determinants of the region's growth. However, that study examines the role of a much narrower set of factors and, in particular, omits from its analysis a variable to capture the size of governments which this paper finds to be a key factor affecting the growth performance of the MENA countries.

Second, the paper examines whether the importance of the growth determinants varies across subgroups of MENA countries. There are fundamental differences in the structure of the countries in the region, including because of the abundance of oil in some of the countries. Thus, the paper divides the countries in the MENA region into oil and non-oil exporting countries which are referred to as the oil and non-oil MENA countries. The oil exporting countries are further divided into members of the Cooperation Council of the Arab States of the Gulf (GCC countries) and other MENA oil countries.[3] The existing studies on MENA have not sufficiently taken into account the diversity of the economies in the region and that some factors may have played a more important role than others for explaining the weak performance in subgroups of MENA observed in the last two decades.

Third, growth accounting decomposes the growth of real per capita output into the contributions from the growth of factor inputs (physical and human capital per worker) and a residual which is assumed to represent the growth of total factor productivity (TFP).[4] The paper examines through which channels the various determinants of growth have worked, i.e. by influencing either the accumulation of physical or human capital or TFP growth.

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[3] The paper defines the MENA region as including: Algeria, Bahrain, Egypt, the Islamic Republic of Iran, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, the United Arab Emirates, and Yemen. See Data Appendix for the definitions of the GCC, other oil, and non-oil MENA country groups.

[4] TFP growth captures the efficiency with which factors of production are used. It can also include the effects of other factors such as war, political turmoil, external shocks and policy changes if they are not fully accounted for by their effects on increases in factor inputs.

Fourth, so far, the empirical growth literature has mainly focused on explaining the growth performance of east Asia (see e.g. Collins and Bosworth (1996) and Rodrik (1998)) and sub-Saharan African (see e.g. Sachs and Warner (1997) and Easterly and Levine (1997)). Other empirical growth studies, including the non-region specific studies such as Barro (1991) and Barro and Sala-i-Martin (1995), have typically included only a handful of MENA countries in their sample, and have excluded the GCC countries altogether. Because they derive a significant share of their income from oil, the economies of the GCC are different from other countries in the region as well as oil exporting countries outside the region which makes it all the more interesting to study their growth performance.[5]

The paper shows that the relative importance of factors affecting growth varies across the MENA countries. A key finding is that in GCC countries, where oil revenues are significant, large governments which adversely affected the incentives to accumulate capital per worker appear to have stifled private-sector growth and impeded the diversification of production. In other MENA oil countries, where oil revenues are significant but comprise a less dominant share of GDP, institutional quality has been a key factor hampering productivity and growth. In non-oil MENA countries, poor institutions combined with large governments have been the main impediments to growth. Moreover, political instability is also shown to have played a role in holding back growth in the region.

The paper is organized as follows. Section II compares the growth performance of subgroups of MENA countries with that of other developing country regions. It also pinpoints differences in key growth-promoting factors between the MENA subgroups and other developing country groups. Section III presents and discusses the results of an empirical investigation into the relative importance of the various factors for explaining growth in a large sample of countries. It then uses the empirical findings to quantify the potential impact of improvements in growth-promoting factors for the MENA subgroups. The implications of the results for the channels through which the abundance of oil has affected growth among the region's oil exporters is also discussed. The role of conflicts on the region's growth is also analyzed. Section IV identifies the channels through which key determinants of growth have affected the economic performance of the MENA. This is done by regressing the accumulation of capital per worker and TFP growth (dependent variables) on the determinants of growth (independent variables). The final section of the paper presents conclusions and policy implications.

II. A Comparison Across Regions of Growth and Growth Determinants

The MENA region's overall weak growth during the 1980s and 1990s primarily reflects the poor performance of the oil-exporting countries. The GCC countries experienced a contraction of real per capita GDP by 1.1 percent per year on average between 1980 and

[5] The value of oil exports averaged 38 percent of GDP in the GCC countries over the 1980–2000 period, compared with an average of 25 percent in other MENA oil countries and 27.5 percent in major oil exporting countries outside the region.

2000 (Table 1). In the other MENA oil countries the decline averaged 1.2 percent per annum over the same period. By contrast, in the non-oil MENA countries per capita GDP increased on average by 1.4 percent per year. However, while growth in non-oil MENA countries exceeded that of other developing countries excluding east Asia, it fell well short of what was needed to avoid a sustained rise in unemployment given these countries' relatively strong growth of the labor force.[6]

There are also considerable differences among the groups of MENA countries identified in the paper with respect to the various determinants of growth put forward in the literature. Summary statistics on growth determinants for the three groups of MENA countries as well as for east Asia and developing countries excluding east Asia are depicted in Table 1. Table 2 highlights the theoretical mechanisms through which key variables, including macroeconomic, trade, and institutional quality variables affect growth.[7] With regard to each of these growth determinants the performance of the MENA countries can be summarized as follows:[8]

- The GCC countries score better than the other MENA subgroups and nearly match east Asia's scores for an index of institutional quality[9] that encompasses the quality of the bureaucracy, the rule of law, government stability, and the incidence of

[6] See, for example, Gardner (2003) and Keller and Nabli (2002). The latter study shows that, in the 1990s, in Jordan, Morocco, and Yemen the labor force grew faster than employment, resulting in the current high unemployment rates of about 20 percent on average in these three countries; and in Egypt and Tunisia, employment grew at about the same pace as the labor force, keeping the unemployment rates at about 13 percent on average. Keller and Nabli also show that the problem of labor force growth exceeding employment growth resulting in high unemployment rates is present in other MENA countries as well.

[7] Following Levine and Renelt (1992), investment is not considered as an explanatory variable. This is because several key variables affect growth through their effect on investment. This is also confirmed in Section IV of the paper which, for example, illustrates that government consumption has a significant negative effect on growth of capital per worker. If investment is included as an additional explanatory variable in the growth regression, the only channel through which the remaining variables can affect growth is through their effect on the efficiency of resource allocation.

[8] The main sources of the data are the IMF's *World Economic Outlook* (WEO) database and the World Bank's *World Development Indicators* (WDI). The Data Appendix provides further details.

[9] The data to construct the institutional quality index is derived from the *International Country Risk Guide* (see Data Appendix for more details). Knack and Keefer (1995), Barro (1996), Sachs and Warner (1997), and Hall and Jones (1999) use similarly constructed indicators of institutional quality.

corruption.[10] By contrast, the other oil and non-oil MENA countries score only marginally better than developing countries excluding east Asia. The MENA region scores high for stability of government. However, for other aspects of institutional quality, the scores are mixed and vary among subgroups of MENA countries. For instance, other MENA oil countries score worse than other developing countries (excluding east Asia) for quality of the bureaucracy, while GCC countries were the least successful in curbing corruption.

- Measured by the sum of imports and exports to GDP and a restrictiveness index compiled by the IMF, the GCC oil exporters stand out as being very open to trade compared with other developing country groups as well as other MENA subgroups.[11] By contrast, other MENA oil countries had the most restrictive regime in the region and compared with other developing countries. Non-oil MENA countries had, on average, an equally restrictive trade regime as other developing countries when measured by the trade to GDP ratio but a more restrictive regime when measured by the trade restrictiveness index.

- The MENA oil exporters experienced larger terms of trade volatility than any other region identified in this paper in the past two decades. This reflects the large fluctuations in oil prices and these countries' large share of oil in total exports.

- Inflation in the MENA countries over the past two decades was about the same as in the fast growing economies in east Asia. Moreover, it was generally below the threshold levels of 7-11 percent beyond which inflation has been shown to have a detrimental effect on economic growth (e.g. Khan and Senhadji, 2000).

- The other MENA oil countries have tended to have significantly overvalued exchange rates over the past two decades. This finding is consistent with the notion that having oil makes countries vulnerable to exchange rate overvaluation (the so-called "Dutch disease" phenomenon). GCC countries' real exchange rates were on average broadly in line with the equilibrium rate. In the non-oil MENA countries, exchange rate overvaluation was comparable to that of other developing countries.

- All three groups of MENA countries, and the GCC countries in particular, have relatively large governments. This may have contributed to their poor growth performance.

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[10] The relative standing of the MENA subgroups vis-à-vis other regions with regard to institutional quality is virtually identical if an alternative indicator of institutional quality developed by Kaufmann, Kraay, and Zoido-Lobatón (1999) is used.

[11] See Berg and Krueger (2003) for a discussion of how outcome-based measures of openness, such as the trade to GDP ratio, compare with policy-based measures, such as the IMF's trade restrictiveness index, when assessing the degree of trade openness.

- Other oil and non-oil MENA countries, like east Asia, experienced relatively rapid growth of the working-age population relative to total population growth which has been associated with higher growth. In GCC countries, much like in developing countries excluding east Asia, this phenomenon, was less pronounced during the period under study.

- Initial per capita income levels vary widely across the three groups of MENA countries identified in this paper. While per capita GDP in 1980 in non-oil MENA countries was broadly in line with that in east Asia and other developing countries, GCC countries and other MENA oil countries were, on average, at a much more advanced stage of development, presumably by virtue of these countries' oil wealth.

- The MENA subgroups fare relatively well in terms of the initial stock of human capital measured by the secondary school enrollment ratio in 1980. This suggests that it would be difficult to attribute the region's poor growth performance to a low initial stock of human capital.[12]

To summarize, the GCC countries stand out as being far more open to trade, having better-quality institutions, significantly larger governments, and less exchange rate overvaluation than the non-oil and other MENA oil subgroups. Also, while the MENA subgroups sometimes had mixed scores for the various determinants of growth relative to the group of developing countries outside east Asia, they scored worse than east Asia for nearly all of the factors (notable exceptions include the initial stock of human capital in the GCC and other MENA oil countries, relatively strong growth of the working-age population in the non-oil and other MENA oil groups, and inflation rates in the GCC countries). Sections III and IV report on a more formal empirical investigation into the relative importance of the factors for influencing the growth performance of the MENA subgroups.

[12] It should be noted, however, that this measure may not adequately capture differences across regions in the quality of education, which affects the productivity of human capital. For instance, Sala-i-Martin and Artadi (2002) argue that the education system in the Arab world does not prepare its students for a world of technical change. In addition, data from the WDI indicates that while female secondary school enrollment ratios are high in the MENA region compared with other developing country regions, female labor force participation ratios are relatively low implying that a substantial stock of human capital is prevented from having a positive effect on the economy. Moreover, UNDP (2002) emphasizes that the MENA region lags substantially behind other regions in female tertiary enrollment ratios.

III. An Empirical Analysis Of MENA's Growth Performance

A. Empirical Strategy

This section reports on the estimation results for a cross-section regression for a sample of 74 countries, including 21 advanced economies and 53 developing countries, of which 10 are MENA countries (5 non-oil MENA countries, 3 GCC countries, and 2 other MENA oil countries)). The basic regression takes the form:

$$Growth_{1980-2000} = \alpha + \beta Macroeconomicpolicy_i + \theta Institutionalquality_i + \gamma Tradeopenness_i + \mu Termsoftradevolatilty_i + \lambda Demographics_i + \chi Initialconditions_i + OPEC_i + \varepsilon \quad (1)$$

where the dependent variable, Growth is defined as average real per capita GDP growth over the 1980–2000 period.[13] The explanatory variables are averages over the 1980–2000 period[14] except for two variables capturing initial conditions, which are measured by their value in 1980. A key consideration of the empirical analysis is to include as many MENA countries in the sample as possible. Due to the limited availability of data for these countries, the sample is restricted to the 1980–2000 period. However, this should be sufficiently long to abstract from business cycle fluctuations and focus on the determinants of long-run growth. Since several of the MENA oil exporting countries are members of the Organization of the Petroleum Exporting Countries (OPEC), an OPEC dummy is included to control for the possible effect of OPEC membership on growth over the period.

An important specification issue that arises relates to the simultaneity of the institutional quality, trade openness and macroeconomic policy variables in the regression.[15] Following Hall and Jones (1999) and IMF (2003a), this paper uses the fraction of the population that is English speaking, the fraction of the population speaking one of the major languages of western Europe and a set of dummy variables that capture the origin of a country's legal system (British, French, or German) to instrument for the institutional quality variable. The predicted trade to GDP ratios as constructed by Frankel and Romer (1999) are used to instrument for trade openness. Given the difficulty to find good instruments for the macroeconomic policy variables, they are treated as exogenous. However, the paper also

[13] Following Sachs and Warner (1995) and Sala-i-Martin and Subramanian (2003), no distinction is made between the oil and non-oil components of GDP. The relevant data is only available for selected countries and the concepts used to calculate "oil GDP" differ from country to country. It should also be noted that Hall and Jones (1999) find that none of their empirical results are sensitive to excluding value added in mining (which includes oil and gas) from GDP.

[14] It is required that at least fifteen years of data are available to calculate the average of a variable, or the variable is set to missing.

[15] Acemoglu and others (2002) and Rodrik, Subramanian, and Trebbi (2002) include extensive discussions of the simultaneity issues related to equation (1).

reports the results of regressions that instrument for macroeconomic policy variables with their lagged values calculated as averages over the 1970–1979 period where the data is available. The use of initial period values of education and income and the initial period share of natural resource exports in total exports to weight the terms of trade volatility variable[16] is expected to lower the possibility of endogeneity of these variables. The demographic variable is assumed to be exogenous.

B. Growth Regression Results

Table 3 presents the results of estimating basic regression (1) using ordinary least squares (OLS). Robust standard errors are reported in parentheses. The results, which are broadly in line with those in the literature (e.g., Barro, 1991), confirm that higher real per capita growth rates are associated with low initial levels of income, stronger institutions, more open trade regimes, smaller governments, lower terms of trade volatility, higher growth of working-age population relative to total population growth, lower inflation, lower exchange rate overvaluation, and a higher initial level of secondary school enrollment. Also, the coefficient estimated for the OPEC dummy suggests that membership in OPEC had an overall positive but insignificant effect on real per capita growth over the 1980–2000 period. All of the explanatory variables are statistically significant at the 10 percent level except the inflation variable; the model, as typically found in growth regression models, explains 64 percent of the cross-country variation in growth rates. Given the endogeneity of several of the variables discussed above, column 2 shows the results from estimating the basic regression using the instrumental variables strategy which assumes the macroeconomic policy variables to be exogenous. The results from the instrumental variables regression are broadly consistent with the OLS results with most of the variables entering with the same sign and significance.[17] The trade openness,[18] and terms of trade volatility variables, however, lose significance suggesting that the OLS results may be driven by reverse causality.[19] [20] The third column shows that the instrumental variable results are robust to

[16] Countries can have a high share of natural resources exports in total exports because of slow growth (Sala-i-Martin and Subramanian, 2003). By weighting the terms of trade volatility variable by the share of natural resource exports in total exports in 1980, the regression also captures the effect on growth of the volatility of income flows that is associated with exports of natural resources.

[17] Interactions of the macroeconomic policy variables with the institutions variable (see, for example, Edison and others, 2002) were also included in the regressions to investigate whether there is a nonmonotonic relationship between institutions and growth. However, the interaction terms were not significant and are therefore not reported here. Also, the ratio of private sector credit to GDP, which proxies for financial market development, was included as an explanatory variable in the regression but was not found to be significant and so is not reported here.

[18] When the IMF's trade restrictiveness indicator for 1997 is substituted for the trade to GDP ratio, the estimated coefficient is also of the correct sign but insignificant.

(continued…)

excluding the GCC countries from the sample; the magnitude and significance of the estimated coefficients are broadly similar.

The results from using an alternative instrumental variables estimation strategy which instruments the macroeconomic policy variables using their lagged values are reported in column 4. Due to data constraints, a number of countries, including 4 MENA countries, are dropped from the sample. The significance of several of the variables weakens including that of the real exchange rate overvaluation and government consumption variables. Moreover, the inflation variable now takes the wrong sign. The magnitudes of the estimated coefficients with the key exceptions of the coefficients on the constant term and trade to GDP ratio, however, vary only slightly from those in the second regression. Since these results do not alter the basic conclusions of the paper, the remainder of this section uses the estimation results for the second column regression which is based on a larger number of MENA countries in the quantitative analysis to determine the relative importance of the variables for holding back growth in MENA.

To understand what the estimations imply for the MENA region's poor growth performance, the paper uses the growth model to analyze how much of the growth differential between the MENA region and a comparator region is accounted for by differences in the various growth determinants. This basically involves applying the regression coefficients to the difference in the average values for the explanatory variables between MENA (and its subgroups) and the comparator region. Like Easterly and Levine (1997), the paper uses the group of east Asian countries, whose strong growth performance policymakers in the MENA region would like to emulate, as the comparator region.

Figure 1 shows the fraction of the growth differentials between each MENA subgroup and east Asia that is explained by each variable. It should be noted that the calculations reported in Figure 1 use averages for each variable and for all countries in the relevant group for which the data are available and not only the countries included in the regression estimations. Since the rankings of the factors used to explain the growth differentials are

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[19] The insignificance of the trade and inflation variables is consistent with other recent studies that included a variable of institutional quality. Some have interpreted this as suggesting that institutional quality matters more for growth (e.g., Rodrik, Subramanian, and Trebbi, 2002, and Acemoglu and others, 2002).

[20] Other studies such as Easterly, Kremer, Pritchett and Summers (1993) and Barro and Sala-i-Martin (1995) have also included the change in the terms of trade variable in the regression to test the hypothesis that an improvement in a country's terms of trade positively affects growth if it stimulates an increase in production. However, the effects of changes in the terms of trade were not found to be significant, which may reflect the fact that most of the oil exporters in the sample (for whom movements in the terms of trade would mainly capture movements in the relative price of oil) have oil production quotas in the context of their membership in the OPEC.

broadly similar when the calculations are based on average values for the countries included in the regression (with the exception of the rankings for the other MENA oil countries, noted below) these results are not reported here. It is clear from Figure 1 that the fractions vary considerably across the MENA subgroups, suggesting that there are important differences across the subgroups of MENA with regard to which factors depressed their growth and that the comparisons made for the MENA group as a whole may be less informative. For instance, the variable that was found to explain about 25 percent of the growth differential between MENA and east Asian countries is the initial level of income. This suggests that high per capita income levels in the MENA region explain a large fraction of the growth differential, which is not surprising given that the GCC countries, and to a lesser extent the other MENA oil countries, had very high initial levels of per capita GDP and also experienced particularly low growth rates over the period examined. This, however, does not reflect the economic situation of most of the non-oil exporters.

What then are the implications of the regression analysis for each of the three subgroups of the MENA countries? For the GCC countries, the key factors hampering growth appear to be the relative high initial income and the high ratio of government consumption to GDP. According to the model estimates, the high initial level of income and the large size of government consumption account for 2.3 and 1.3 percentage points, respectively, of the observed 5.2 percent growth differential with east Asia. The terms of trade volatility variable, the population variable and the quality of institutions variable also contribute to explaining the growth differential albeit to a lesser extent.

The decomposition of the growth differential for the other MENA oil exporters reveals that after the initial level of income, the institutional quality variable explains the largest fraction of the growth differential, accounting for 1.1 percentage points of the 5.4 percent growth differential with east Asia. This is followed by real exchange rate overvaluation variable, terms of trade volatility, government consumption, and trade openness variables, respectively. When the calculations for decomposing the growth differentials are based only on the countries included in the regression estimations, institutional quality and real exchange rate overvaluation rank as more important variables explaining the growth differential of other MENA oil countries with east Asia than the initial level of income. In this scenario, however, only the fraction of the observed growth differential with east Asia that is explained by initial income is changed, not the fractions explained by the institutional quality and real exchange rate overvaluation variables.[21]

For the non-oil exporters the main variable explaining the growth differential is the institutional quality variable. According to the model estimates, institutional quality explains about 1 percentage point of the 2.7 percent growth differential with east Asian countries. This

[21] The change in the ranking of the factors for the other MENA oil countries suggests that the countries included in the group are less homogeneous than the other country groupings. This is also demonstrated by the significant decline in the size of the unexplained residual for the other MENA oil countries when the decomposition calculations for each variable are based only on the countries in the regression sample.

is followed by the government consumption variable which explains 0.5 percentage points of the growth differential. Real exchange rate overvaluation and trade openness variables also help explain the growth differential but to a lesser extent.

The robustness of the results for explaining the MENA subgroups' growth differentials with east Asia for the 1980s and 1990s is also examined. This is important to understand whether different factors explained the growth differentials in the 1980s versus in the 1990s. For instance, the high volatility of oil prices in the 1980s may account for the weak growth performance of the MENA oil exporters in the 1980s but not necessarily in the 1990s. The results from estimating the basic regressions for the 1980–89 and 1990–2000 subperiods are reported in Table 3 (columns 5 and 6). Initial income and the initial human capital stock are measured at the beginning of each subperiod. All the other variables are averages over each subperiod. The regression results are somewhat different for the two subperiods with those for the 1980–89 subperiod being closer to those reported for the full 20 year sample with the exception of the coefficients for the constant term, initial income and the OPEC membership dummy. Although most of the variables continue to have the expected signs, several variables that are significant in the regression for the 1980–1989 subperiod are insignificant in the regression for the 1990–2000 subperiod and vice versa. The magnitude of the some of the coefficients also varies across the regressions for the two subperiods. The differences in the magnitude and significance of the coefficient estimates across the two subperiods exemplify the difficulty of using cross-section regressions based on short periods of time to draw inferences about long-run growth performance. In light of this, it is not surprising that the regression R^2 is lower for the two subperiod regressions, particularly the 1990–2000 subperiod, than for the full sample regression. Nevertheless, we proceed with examining the decomposition of the growth differentials with east Asia implied by the estimated regression coefficients for the data of the 1980s and 1990s.

Figure 2 shows that population growth played a more important role in the 1980s than in the 1990s for explaining the growth differentials of the other oil and non-oil MENA countries. Also, consistent with the decline in oil prices in the 1980s, terms of trade volatility was a key factor in explaining the GCC countries' growth differential with east Asia in the 1980s. However, the relatively high level of government consumption continued to play an important role in explaining the GCC countries' growth differential, particularly in the 1990s. Also, institutional quality remained a key factor for explaining the other MENA oil countries growth shortfall, and institutional quality and government consumption were the key factors for explaining the non-oil MENA countries' growth differentials with east Asia in both subperiods.

C. Effects of Other Variables

Oil

Given that a large number of the MENA countries are among the world's main oil exporters, it is important to understand to what extent their dependence on oil has mattered

for their long-run growth performance.[22] Most studies which examine the effect of oil on growth have included a variable that measures a country's abundance of oil (the share of fuel exports in total exports or an oil dummy for countries that are major oil exporters) in the regressions. These are likely to be highly correlated with the OPEC membership dummy and so cannot be included simultaneously in the regressions. Substituting the OPEC membership dummy with alternative measures that capture countries' abundance of oil yields negative but similarly insignificant coefficients.[23] [24]

The paper, therefore, builds on the arguments put forward in the theoretical literature that the effects of oil on growth are captured by several of the variables included in the regression specification.[25] First, the findings in Figure 1 suggest that the main channel through which oil affected growth in the MENA oil exporting countries is by raising their initial levels of per capita income. This suggests that the soaring oil revenues in the 1970s not only raised income and consumption but also led to a surge in investment spending and a substantial increase in the capital stock, which can be interpreted as reflecting an accelerated catching-up. However, with much of this spending undertaken by the government, the growth performance of the GCC countries and other MENA oil exporters suggests that it was relatively unproductive in the sense that it did not contribute to an effective increase in the productive base of the tradable goods sector and hence perpetuated these countries' dependence on oil. Some support for this is provided in the next section which shows that high initial income contributed to both low productivity growth and low capital accumulation in the GCC and other MENA oil countries relative to east Asia. Therefore, the negative effect on growth of high initial levels of per capita income to some extent also reflects the adverse effects of high oil income on the incentives for economic diversification.[26]

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[22] In this context, it should be noted that our framework captures the effect of persistent country characteristics related to oil but not the effects of oil-related country-specific shocks with long-lasting but nevertheless temporary effects on growth (Easterly and others, 1993).

[23] Following the IMF's WEO 2000 publications, countries are classified as oil-exporters if their oil export earnings over the 1994–98 period constitute more than 50 percent of total export earnings. Using this criterion, the oil exporters dummy adds the Republic of Congo, Gabon, Trinidad and Tobago, and Bahrain and subtracts Indonesia from the definition based on OPEC membership.

[24] These variables are highly correlated with the weighted terms of trade volatility variable, which makes it difficult to isolate their partial effect. Although other studies (e.g. Sachs and Warner, 1995) have found a significant negative effect of such variables, this could partly be due to having a different regression specification that does not account for all possible channels through which the abundance of oil can affect growth.

[25] See Sachs and Warner (1995) and Isham and others (2003) for a summary of the channels through which oil affects growth.

[26] The coefficient on initial income could also be biased because the GCC countries' initial income is likely to have been negatively correlated with shocks to oil prices and production

(continued…)

Second, the results in Figure 1 suggest that after initial income, the key channel through which oil affects growth in the GCC countries is different than that in the other MENA oil countries. "An abundance of oil leading to high government consumption" appears to have been the more important channel through which oil affected growth in the GCC countries, while "an abundance of oil leading to poor-quality institutions" appears to have been the more important channel through which oil affected growth in the other MENA oil exporters. The importance of government consumption for explaining the GCC countries' growth differentials with east Asia is consistent with the notion that high oil revenues have been used to finance high levels of public employment and high public sector wages and benefits which may have hampered labor market flexibility and the development of the non-oil private sector. The finding that institutional quality is important for explaining the other MENA oil exporters' growth differential is in line with research that argues that an abundance of oil wealth negatively affects institutional quality because it encourages rent seeking and corruption (e.g. Sachs and Warner, 1995 and Mauro, 1995).[27]

Finally, the results suggest that terms of trade volatility may have constituted another channel through which the abundance of oil affected growth in both GCC and other MENA oil countries. Fluctuations in oil prices exposed the private sector to boom and bust cycles, including in public expenditure, that are likely to have adversely affected the growth of the non-oil sector.

Internal and External Conflicts

The MENA region, particularly the other MENA oil countries and non-oil MENA countries, are characterized by a higher incidence of internal and external conflicts than other developing country groups. All three MENA subgroups score worse for an external conflicts variable, and the other MENA oil group scores worse for an internal conflicts variable collected by the International Country Risk Guide than east Asia and the group of other developing countries (rows 8 and 9 in Table 1). To investigate their effect on growth, the conflict variables are included in the regressions (column 7 in Table 3).[28] One would expect a

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over the sample period (see Barro and Sala-i-Martin, 1995). However, comparing the coefficients obtained from regressions including and excluding GCC countries from the sample suggests that this bias is at best small and without material implications for the analysis.

[27] Recent work by Sala-i-Martin and Subramanian (2003) provides empirical evidence in support of the premise that countries with an abundance of oil tend to have weaker institutional quality and growth. Their sample does not include GCC countries. The finding in this paper—that the GCC countries, which are very heavily dependent on oil, are less hampered by poor institutional quality than the other oil MENA countries—suggests, however, a nonlinear relationship between the abundance of oil and institutional quality.

[28] It should be noted that Lebanon and the Republic of Yemen which suffered extended internal conflicts during the period under review are excluded from the regression analysis.

higher degree of internal and external conflicts would adversely affect the incentives to invest and hence hamper growth. Contrary to our expectations, the estimated coefficients are negative and significant in the case of the internal conflicts variable. The results can, however, reflect the difficulty of precisely estimating the effects of the conflict variables from regressions that include an institutional quality variable because of the high correlation between them. Put simply, it is difficult for countries to run government operations efficiently in the face of conflict. Poor governance and corruption can also contribute to the escalation of political tensions.[29] Evidence supporting this is provided in the regression that includes the conflict variables but excludes the institutional quality variable (column 8 in Table 3). The estimated coefficient on internal conflicts is positive and significant. However, the coefficient estimated on external conflicts remains negative and insignificant.

Given the difficulty of isolating the effect of the conflict variables, the paper uses an alternative approach to assess the growth effects of internal and external conflicts. The basic growth equation is re-estimated using an institutional quality variable that encompasses the effects of indicators of internal and external conflicts in addition to the quality of the bureaucracy, the rule of law, government stability, and the incidence of corruption. The estimated regression coefficients are reported in column 9 of Table 3 and the corresponding decompositions of the growth differentials with east Asia is shown in Figure 3. Other than a more important effect of terms of trade volatility compared with government consumption for the GCC countries, the results are broadly consistent with the earlier results in the sense that the ranking of the various variables for explaining the relative growth performance of each MENA subgroup compared to east Asia remains virtually unchanged. However, with this alternative institutional quality indicator, the fraction of the growth differential not explained by the model declines by 9 percentage points for other MENA oil exporters, by 6 percentage points for MENA non-oil exporters, and by 3 percent for GCC oil exporters. This confirms that conflicts, in particular internal conflicts, have indeed adversely affected the region's growth performance.

IV. Results From Growth Accounting

Another approach that has often been used to study differences in growth across countries is growth accounting. This approach examines the contributions of growth in (physical and human) capital per worker and total factor productivity (TFP) to growth of real output per worker. It is important to note that the growth-accounting method relies on the assumption of competitiveness of factor markets in order to derive TFP (see e.g. Iwata, Khan, and Murao, 2003). Also, as noted earlier, since TFP is calculated as a residual it may not only capture the effects of technical change but also other factors to the extent that they are not

[29] It is also possible that high growth would reduce the likelihood of internal and external conflicts (e.g. Barro, 1991). However, this effect is likely to bias the coefficient estimates upwards. Moreover, using the initial (1984) period values of the conflict variables which would minimize the risk of endogeneity of the variables yields similarly negative coefficient estimates.

fully accounted for by their effects on increases in factor inputs. Thus, the findings regarding TFP growth reported in this section must be interpreted with caution.

Table 4 shows the contributions of growth of capital per worker and TFP calculated across regions using data from Bosworth and Collins (2003) supplemented by data from IMF (2003b) for some MENA countries.[30] The contribution of TFP growth has been particularly low for the oil MENA countries compared with the non-oil MENA countries and developing countries excluding east Asia. Also, the contribution of growth of capital per worker to growth of output per worker though higher than in other developing countries was well below its contribution to growth in east Asia in both the non-oil and the oil MENA countries.[31] Thus, it would appear that both low TFP growth and low accumulation of capital contribute to explain the MENA subgroups growth differentials with east Asia, though the extent varies somewhat across the subgroups. This section examines the channels—accumulation of capital (physical and human) per worker or growth of total factor productivity—through which the various growth promoting factors have affected real per capita growth.

The basic regression specification is estimated using as the dependent variables growth of output per worker, growth of (physical and human) capital per worker and growth of total factor productivity obtained from Bosworth and Collins. The coefficients estimated in the regression for growth of output per worker (Table 5) are broadly similar in magnitude and significance to those obtained in the previous section's basic column 2 regression. One key difference from the results of the basic regression specification is that the coefficient estimated on the terms of trade volatility variable changes sign but remains insignificant. However, apart from the weighted terms of trade volatility variable, the ranking of the key factors for explaining growth differentials across the subgroups of MENA (in Table 6) is roughly the same as that obtained with the basic regression suggesting that it would be appropriate to use the results of the regressions which have as dependent variables growth of capital per worker and TFP growth to gain some understanding of the channels through which the various growth-promoting factors have influenced real per capita GDP growth in the subgroups of MENA.[32]

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[30] The method Bosworth and Collins use to construct TFP growth and growth of capital per worker is described in the appendix. The country groups are defined in the same way in Table 4 as in the previous section of the paper. Due to data constraints, some countries are dropped. Data are available for only one GCC country. Therefore, the GCC and other MENA oil countries are grouped together in this table.

[31] Decomposing the contribution of capital into the contributions of physical and human capital, IMF (2003b) shows that the contribution to growth from increases in physical capital is far lower in the MENA countries than in the other two developing country groups but not the contribution to growth from increases in human capital.

[32] As in the previous section, the regression coefficients are applied to averages of the data for all countries in the relevant group for which the data are available and not only the countries included in the regression estimations.

The results of the regressions with capital per worker growth and TFP growth as dependent variables are broadly consistent with prior expectations and the findings of Bosworth and Collins (2003). Initial income has a significant negative influence on TFP growth while government consumption primarily has an adverse effect on capital accumulation, possibly reflecting the distortion of incentives to save and invest caused by excessive government interference in the economy. Also, not surprisingly, the growth rate of the working population relative to that of the total population growth varies positively with capital accumulation. Institutional quality, on the other hand, appears to predominantly affect the efficiency with which resources (physical and human capital) are used. Real exchange rate overvaluation is also found to have a statistically significant negative effect on TFP growth.[33]

In addition to showing the decomposition of the per worker GDP growth differentials for each MENA subgroup and east Asia, Table 6 shows the effect each explanatory variable in the regressions has on the differentials with east Asia of the contributors to real per capita GDP growth i.e. growth of capital per worker and TFP growth. From Table 6, we can see that high initial income in the GCC and other MENA oil countries has largely affected the contribution of TFP growth for explaining the growth differential with east Asia. The decomposition of the growth differentials does suggest, however, that high initial income also had a sizable effect on the contribution of capital accumulation (accounting for 0.8 percent of the growth differential with east Asia for GCC countries and 0.4 percent for other MENA oil countries) though the estimated effect of initial income in the capital accumulation regressions is insignificant. In addition, high government consumption in the GCC has mainly affected the contribution of capital accumulation to the growth differential with east Asia, while poor institutional quality in the other MENA oil countries has mainly affected the contribution of TFP growth to the growth differential with east Asia. The effect of high initial income on the GCC countries TFP growth is much larger than the estimated effect of poor institutional quality on TFP growth for the other MENA oil countries explaining why the fraction of the overall growth differential with east Asia explained by low TFP growth is less for the other MENA oil countries than the GCC countries.

For the non-oil MENA countries for whom institutional quality and government consumption have been key factors affecting their performance, institutional quality has mainly affected the contribution of TFP growth to explaining the growth differential with east Asia while government consumption appears to have affected the contribution of capital accumulation, resulting in a roughly equal contribution of these factors for explaining the growth differential with east Asia.

[33] The regression results are broadly the same when the institutional quality index that encompasses internal and external conflicts is used in the estimations.

V. Conclusions And Policy Implications

This paper investigates the causes of the MENA region's poor growth performance over the past two decades using an empirical model of long-run growth. The analysis covers a sample of 16 MENA countries of which 10 (including 3 GCC countries, 2 other MENA oil countries, and 5 non-oil MENA countries) had complete data for all variables (with the exception of TFP growth for which data for only one GCC country were available). The paper provides evidence that some of the key determinants of growth varied significantly across the oil and non-oil exporting MENA countries during the 1980s and 1990s. The main findings and policy implications are summarized below.

The main factors explaining the GCC countries' growth differential with east Asia are their high initial level of income and large size of government. Both of these factors reflect the legacy of high oil prices in the 1970s. While contributing to a higher standard of living, they also reduced the scope for catching up with rich countries, facilitated large unproductive public investments and high levels of public employment. The latter appears to have stifled the growth of the private sector and made it hard for the economies to diversify away from oil. This effect is captured by an adverse effect of public sector consumption on the growth of capital per worker in GCC countries compared with the east Asian countries. Based on these findings, the main policy recommendations for the GCC countries would be to reduce the size of government over time. However, given that governments with hydrocarbon revenues are almost inevitably called to transfer part of the income to households, the GCC countries would at least need to find better ways to distribute their oil wealth in order to minimize distortions to incentives.

As is the case for the GCC countries, the high initial level of income is also shown to be a key factor impeding the growth performance of other MENA oil countries. However, according to the model estimates, the main factor hampering growth in the other MENA oil countries after initial income is poor institutional quality. The regressions of the components of growth suggest that poor institutional quality has primarily exerted negative effects by lowering TFP growth in the other MENA oil countries. Hence, improving institutional quality, especially with regard to the quality of the bureaucracy and the strength of the rule of law, for which these countries had low scores relative to other developing country regions, would appear to be fundamental to promote TFP and economic growth in these countries.

The paper shows poor institutional quality combined with large-size of governments to be the main factors hampering growth in the non-oil MENA countries. The poor institutional quality reduced their TFP growth relative to the east Asian countries and the high government consumption exerted a negative effect on growth by reducing capital accumulation. The main policy implications for these countries, as derived from the results of the regression analysis, would be to improve institutional quality—especially with regard to the control of corruption, the strength of the rule of law, and the quality of the bureaucracy for which these countries had relatively low scores—and to reduce the size of the government.

Although the regression analysis does not provide a full explanation of MENA's growth in the past two decades, it identifies a number of key factors affecting MENA's

growth performance. Also, the regressions for the 1980-89 and 1990-2000 subperiods show, in line with Dasgupta, Keller, and Srinivasan (2002), that the MENA region's growth differential with east Asia is less well explained in the 1990s than in the 1980s. Finally, the paper also provides evidence, albeit indirectly, that internal and external conflicts in the region contributed to the relatively slow growth, particularly in the other oil and non-oil MENA countries. This indicates that improving the actual and perceived security situation would be conducive to reviving growth in the MENA region.

Table 1. Regional Comparison of Growth and Growth Determinants:
MENA Subgroups Compared with Other Developing Countries, 1980–2000 1/

	All MENA countries	GCC countries	Other MENA oil countries	Non-oil MENA countries	East Asia	Developing countries excluding E. Asia
Real per capita GDP growth (in percent)	0.0	-1.1	-1.2	1.4	4.1	0.3
Institutional quality (index) 2/	6.5	6.9	6.1	6.2	7.3	5.6
Institutional quality 2 (index) 3/	7.0	7.4	6.5	6.7	8.1	6.4
Government stability	7.7	7.7	7.5	7.9	7.7	6.6
Control of corruption	5.6	5.2	6.5	5.5	6.1	5.4
Bureaucracy quality	5.6	6.5	4.6	5.3	7.6	4.9
Law and order	7.2	8.4	5.8	6.7	7.6	5.6
Internal conflict	8.1	8.8	7.0	8.0	9.5	7.4
External conflict	8.3	8.7	8.0	8.0	10.1	9.2
Trade (imports and exports in percent of GDP)	77.5	113.6	33.4	66.1	110.0	61.6
Qualitative trade restrictiveness index 4/	5.7	2.6	8.8	7.0	3.9	4.4
Qualitative tariff assessment 4/	3.0	1.1	4.6	3.9	1.7	2.6
Qualitative nontariff barrier assessment 4/	1.9	1.5	2.5	2.1	1.8	1.6
Terms of trade volatility 5/	18.4	23.0	26.3	11.0	6.6	13.7
Inflation rate	7.5	2.1	15.9	8.4	6.6	24.4
Real exchange rate overvaluation (index) 6/	113.5	97.1	154.3	117.0	87.3	119.0
Government consumption (in percent of GDP)	20.8	25.8	15.6	17.7	12.4	13.5
Growth of economically active population minus total population growth (in percent)	0.5	0.3	0.9	0.6	0.6	0.3
Initial income, 1980 (log of per capita PPP GDP)	8.3	9.4	8.5	7.4	7.5	7.2
Secondary education enrollment ratios, 1980 7/	48.2	50.6	50.3	44.7	45.7	30.6

1/ Simple averages across countries over the 1980–2000 period, except initial income and secondary education enrollment for which the value in 1980 is shown.

2/ The institutional quality index is an average of bureaucratic quality, control of corruption, government stability, and rule of law indicators reported in the International Country Risk Guide. Each component ranges from 0 to 12, where higher values indicate stronger quality institutions.

3/ The institutional quality 2 index is an average of bureaucratic quality, control of corruption, government stability, rule of law indicators, internal and external conflicts. Each component ranges from 0 to 12, where higher values indicate stronger quality institutions.

4/ The tariff and nontariff barrier assessments range from 0 to 5, where a higher number represents a more restrictive trade regime. The overall restrictiveness index is the sum of the two components.

5/ Terms of trade volatility is the standard deviation of the annual percentage change in the overall terms of trade.

6/ A value of the index above (below) 100 indicates that the real effective exchange rate was above (below) its equilibrium value and hence that the currency was on average overvalued (undervalued) during the period.

7/ Secondary education is the number of students enrolled in secondary education in percent of the secondary school age population at the beginning of the sample period (1980).

Table 2. Factors Identified in the Growth Literature as Affecting Growth

Factor	Effect on Growth	Theoretical Explanation
Institutional quality	+	Strong institutions encourage productive activities rather than rent seeking, corruption, and other unproductive activities (see IMF (2003a) and the references therein).
Trade openness	+	Trade openness improves productivity by encouraging competition and international technology transfers (Coe, Helpman, and Hoffmaister, 1997).
Terms of trade volatility	-	High volatility creates uncertainty that acts as a deterrent to growth (e.g. Sala-i-Martin and Subramanian, 2003).
Macroeconomic variables:		
Inflation	-	High inflation creates uncertainty which adversely affects investment and growth (Fischer, 1993).
Real exchange rate overvaluation	-	Overvalued exchange rates reduce the competitiveness of dynamic, outward-oriented sectors (Acemoglu and others, 2002).
Size of government consumption	-	High levels of government consumption can—beyond a certain threshold—have negative effects on productivity owing to the adverse effects on savings and the distortions resulting from high levels of taxation (Barro, 1991).
Economically active population growth minus total population growth	+	Growth is expected to be higher if the working-age population is growing faster than the total population (Bloom and Williamson, 1998).
Initial conditions:		
Initial level of income	-	A high relative initial level of income reduces the scope for catching up with developed economies, other things equal (Barro, 1991).
Initial stock of human capital	+	A larger initial stock of human capital makes it easier for a country to engage in research and development, and to adopt new products and ideas developed in advanced economies, promoting growth (Barro, 1991).

Table 3. Basic Regression and Variations of the Basic Regression

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	(Dependent Variable: Average growth of real GDP per capita)								
	1980-2000	1980-2000	1980-2000	1980-2000	1980-89	1990-2000	1980-2000	1980-2000	1980-2000
Constant	4.12	4.97	5.88	7.48	11.29	-1.49	5.04	3.87	4.23
	(2.32)*	(2.48)**	(2.73)**	(2.68)**	(3.38)**	(4.49)	(2.72)*	(3.05)	(2.81)
Institutional quality	0.63	0.88	0.84	1.01	0.929	0.32	1.34		
	(0.12)**	(0.23)**	(0.22)**	(0.49)**	(0.210)**	(0.41)	(0.32)**		
Institutional quality 2									0.84
									(0.30)**
Internal conflict							-0.40	0.33	
							(0.18)**	(0.16)**	
External conflict							-0.10	-0.23	
							(0.15)	(0.17)	
Trade to GDP	0.005	0.004	0.004	0.01	0.01	-0.0005	0.004	-0.01	0.01
	(0.002)**	(0.007)	(0.007)	(0.01)	(0.01)	(0.008)	(0.006)	(0.01)	(0.007)
Terms of trade volatility (weighted)	-0.001	-0.0005	-0.002	-0.002	-0.002	-0.00002	-0.0004	-0.001	-0.001
	(0.0006)*	(0.0008)	(0.001)	(0.002)	(0.001)	(0.001)	(0.0007)	(0.0009)	(0.0009)
Inflation rate	-0.005	-0.0002	-0.002	0.04	0.01	-0.02	-0.002	-0.02	-0.001
	(0.01)	(0.008)	(0.008)	(0.03)	(0.01)	(0.009)**	(0.007)	(0.0094)*	(0.01)
Real exchange rate overvaluation	-0.01	-0.01	-0.005	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.004)*	(0.003)*	(0.003)	(0.01)	(0.003)*	(0.007)	(0.003)**	(0.0048)	(0.004)
Government consumption to GDP	-0.07	-0.09	-0.11	-0.12	-0.11	-0.07	-0.13	-0.03	-0.06
	(0.04)*	(0.04)*	(0.05)*	(0.07)*	(0.05)*	(0.06)	(0.04)**	(0.05)	(0.05)
Economically active pop. grth minus total pop. grth	1.74	1.94	2.06	1.75	1.22	1.43	2.01	1.82	1.78
	(0.67)**	(0.72)**	(0.70)**	(1.17)	(0.92)	(0.79)*	(0.73)**	(0.85)**	(0.77)**
Initial income (1980)	-0.94	-1.22	-1.30	-1.68	-2.11	0.24	-0.98	-0.39	-1.26
	(0.34)**	(0.47)**	(0.48)**	(0.61)**	(0.63)**	(0.81)	(0.43)**	(0.44)	(0.58)**
Secondary education, (1980)	0.02	0.02	0.02	0.03	0.03	0.01	0.01	0.03	0.03
	(0.01)**	(0.01)*	(0.01)**	(0.01)*	(0.01)*	(0.01)	(0.01)	(0.01)**	(0.01)**
OPEC membership	0.26	0.11	0.54	1.43	0.15	-0.09	0.18	-1.00	0.30
	(0.65)	(0.84)	(0.92)	(1.12)	(1.30)	(1.04)	(0.95)	(1.02)	(0.91)
GCC countries included	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Estimation Strategy	OLS	IV1	IV1	IV2	IV1	IV1	IV1	IV1	IV1
No. of Observations	74	74	71	64	74	74	74	74	74
R-squared	0.64	0.62	0.62	0.44	0.52	0.45	0.59	0.42	0.58
No. of MENA countries	10	10	7	6	10	10	10	10	10

Notes: For definitions of the variables see Table 1. Terms of trade volatility is scaled by the share of natural resource exports in GDP in 1980. Robust standard errors are in parentheses. A * denotes significance at the 10% level and ** denotes significance at the 5% level. IV1 instruments the institutional quality and trade openness variables. IV2 instruments the institutional quality, trade openness, inflation, government consumption to GDP, and real exchange rate overvaluation variables (see text for further explanation).

Table 4. Sources of Growth in MENA and Other Developing Country Regions

Regions	Average annual growth rates 1980-2000 Contribution of		
	Output per worker	Capital per worker	TFP
Middle East and North Africa	-0.06	0.99	-1.00
Non-oil MENA countries 1/	0.98	1.12	-0.15
Oil MENA countries 2/	-1.09	0.85	-1.86
Developing countries excluding East Asia	0.01	0.47	-0.45
East Asia	3.98	2.62	1.32

Notes: Simple averages across countries. The source of the data used to measure the dependent variables is Bosworth and Collins (2003) and IMF (2003b).
1/ Non-oil MENA comprises of Egypt, Jordan, Morocco, Syrian Arab Republic, and Tunisia.
2/ Oil MENA comprises of Algeria, Islamic Republic of Iran, and Kuwait.

Table 5. Regressions of Growth And Its Components: 1980-2000

	Dependent variable		
	Growth in output per worker	Growth in capital per worker	Total factor productivity growth
Constant	7.05	2.77	4.21
	(2.34)**	(1.43)*	(1.31)**
Institutional quality	0.80	0.25	0.54
	(0.20)**	(0.13)*	(0.13)**
Trade to GDP	0.002	0.001	0.001
	(0.006)	(0.003)	(0.004)
Terms of trade volatility (weighted)	0.0001	0.001	-0.001
	(0.0008)	(0.0005)	(0.0005)
Inflation rate	0.0001	-0.003	0.003
	(0.0079)	(0.004)	(0.006)
Real exchange rate overvaluation	-0.01	-0.001	-0.01
	(0.003)**	(0.001)	(0.002)**
Government consumption to GDP	-0.11	-0.07	-0.04
	(0.04)**	(0.02)**	(0.03)
Economically active pop. grth minus total pop. grth	0.70	0.71	-0.04
	(0.72)	(0.37)*	(0.47)
Initial income (1980)	-1.37	-0.43	-0.92
	(0.42)**	(0.27)	(0.23)**
Secondary education (1980)	0.02	0.01	0.01
	(0.01)	(0.007)	(0.006)
OPEC membership	-0.52	-0.57	0.03
	(0.81)	(0.46)	(0.51)
Observations	63	63	63
R-squared	0.58	0.34	0.64
No. of MENA countries	8	8	8

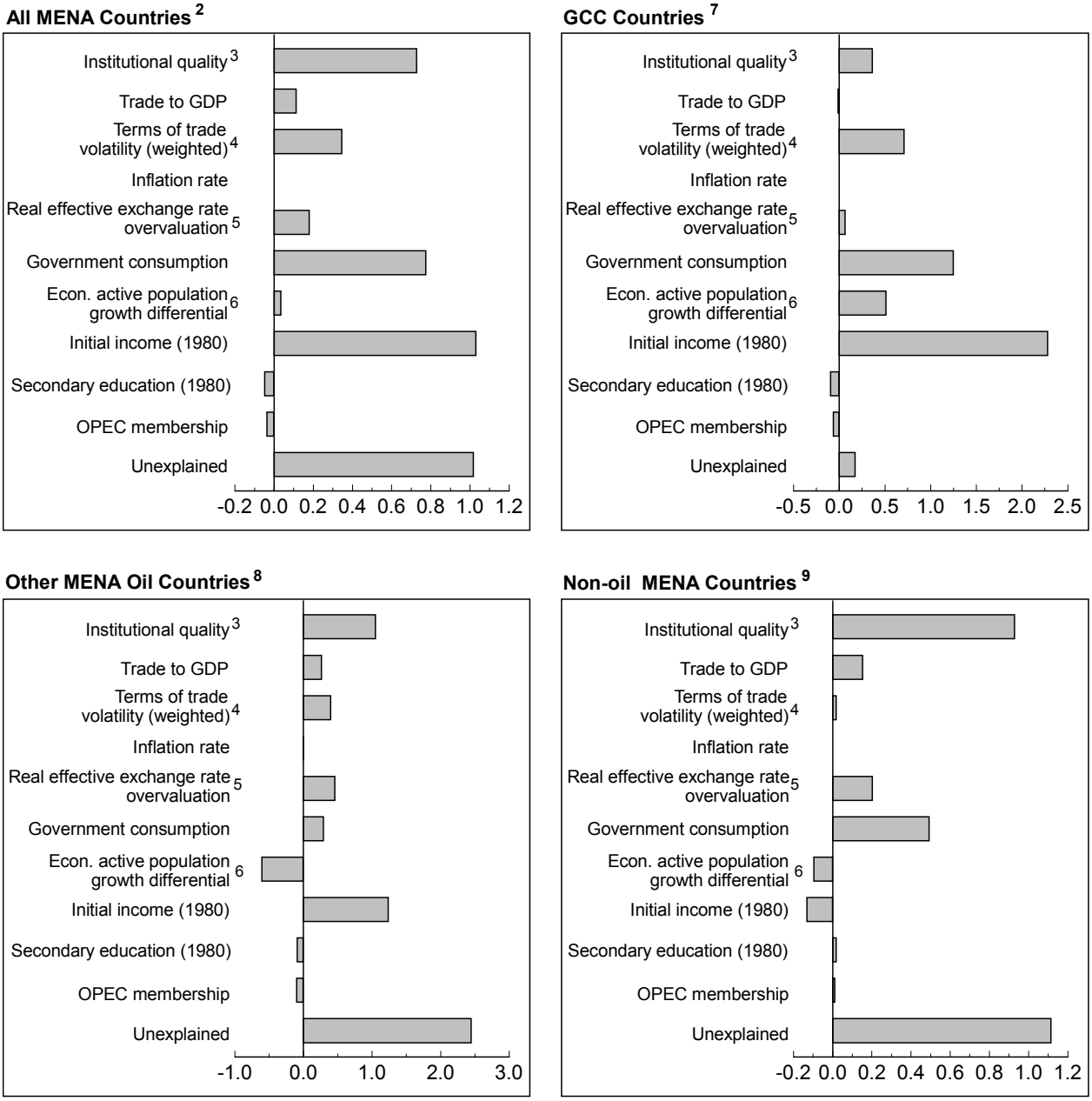
Notes: For definitions of the variables see Table 1. Terms of trade volatility is scaled by the share of natural resource exports in GDP in 1980. Robust standard errors are in parentheses. A * denotes significance at the 10% level and a ** denotes significance at the 5% level. An instrumental variables estimation strategy is used where institutional quality and trade openness are the endogenous variables (see text for further explanation). The source of the data used to measure the dependent variables is Bosworth and Collins (2003) and IMF (2003b).

Table 6. Decomposition of Differentials of Growth and its Components Between Subgroups of MENA and East Asian Countries

	All MENA countries Average growth			GCC countries Average growth			Other MENA oil countries Average growth			Non-oil MENA countries Average growth		
	Output per worker	Capital per worker	TFP	Output per worker	Capital per worker	TFP	Output per worker	Capital per worker	TFP	Output per worker	Capital per worker	TFP
Institutional quality	0.7	0.2	0.5	0.3	0.1	0.2	1.0	0.3	0.7	0.9	0.3	0.6
Trade to GDP	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.0	0.1
Terms of trade volatility (weighted)	-0.1	-0.7	0.5	-0.2	-1.4	1.1	-0.1	-0.8	0.6	0.0	0.0	0.0
Inflation rate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Real effective exchange rate overvaluation	0.2	0.0	0.1	0.1	0.0	0.1	0.5	0.1	0.4	0.2	0.0	0.2
Government consumption to GDP	1.0	0.6	0.4	1.5	0.9	0.6	0.4	0.2	0.1	0.6	0.4	0.2
Economically active pop. grth minus total pop. grth	0.0	0.0	0.0	0.2	0.2	0.0	-0.2	-0.2	0.0	0.0	0.0	0.0
Initial income	1.2	0.4	0.8	2.6	0.8	1.7	1.4	0.4	0.9	-0.1	0.0	-0.1
Secondary education (1980)	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0
OPEC membership	0.2	0.2	0.0	0.3	0.3	0.0	0.5	0.5	0.0	-0.1	-0.1	0.0
Unexplained	0.7	0.9	-0.2	1.2	0.2	0.9	1.3	1.5	-0.2	1.5	1.0	0.5
Memorandum												
Output per worker differential with east Asia	3.8			5.9			4.7			3.0		
TFP differential with east Asia			2.1			4.5			2.5			1.5
Capital per worker differential with east Asia		1.6			1.1			2.1			1.5	

Notes: For definitions of the variables see Table 1. Terms of trade volatility is scaled by the share of natural resource exports in GDP in 1980. The data used to measure growth of output per worker, growth of capital per worker, and total factor productivity growth comes from Bosworth and Collins (2003) and IMF (2003b).

Figure 1. Decomposition of Growth Differentials Between Subgroups of MENA and East Asian Countries: Basic Regression[1]



Sources: Dollar (1992); PRS Group, International Country Risk Guide; World Bank; World Development Indicators; and IMF staff estimates.

[1]The regression coefficients are applied to the difference between the average values for the explanatory variables for MENA (and its subgroups) and east Asian Countries. The calculations use averages for each variable and for all countries in the relevant group for which the data is available and not only the countries included in the regression estimations. Dependent and independent variables represent averages over the period 1980-2000 unless otherwise noted.

[2]The differential in per capita growth rates between all MENA countries and the east Asian countries is 4.2 percent.

[3]Simple average 1984-2000.

[4]Standard deviation of the annual percent change in total terms of trade multiplied by the share of natural resource exports in GDP in 1980. This weighting captures the effect of volatility in income flows that is associated with trade in natural resources.

[5]Real exchange rate overvaluation is based on purchasing-power-parity comparisons, using the Summers-Heston measure, where 100 signifies parity and higher (lower) numbers indicate over-(under-)valuation, following Dollar (1992).

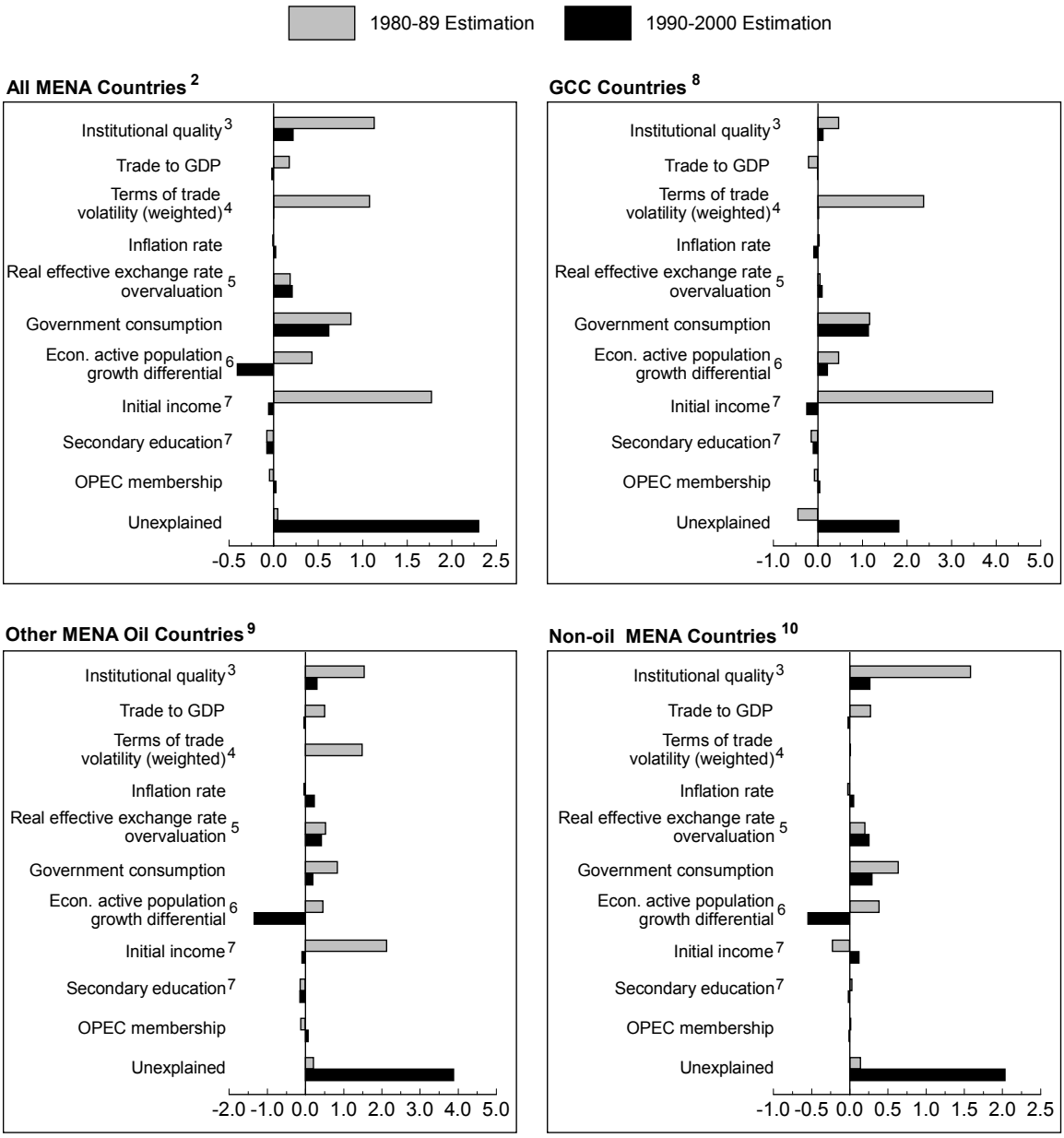
[6]Growth rate of working-age population minus growth rate of total population.

[7]The differential in per capita growth rates between the GCC countries and the east Asian countries is 5.2 percent.

[8]The differential in per capita growth rates between other MENA oil countries and the east Asian countries is 5.4 percent.

[9]The differential in per capita growth rates between non-oil MENA countries and the east Asian countries is 2.7 percent.

Figure 2. Decomposition of Growth Differentials Between Subgroups of MENA and East Asian Countries: 1980-89 and 1990-2000 Subperiod Regressions[1]



Sources: Dollar (1992); PRS Group, International Country Risk Guide; World Bank; World Development Indicators; and IMF staff estimates.

[1]The regression coefficients are applied to the difference between the average values for the explanatory variables for MENA (and its subgroups) and east Asian Countries. The calculations use averages for each variable and for all countries in the relevant group for which the data is available and not only the countries included in the regression estimations. Dependent and independent variables represent averages of either the 1980-1989 or 1990-2000 periods unless otherwise noted.

[2]The differential in per capita growth rates between all MENA countries and the east Asian countries is 5.6 percent for 1980-89 and 2.9 for 1990-2000.

[3]Simple average 1984-1989 for 1980-89 regression and 1990-2000 for 1990-2000 period.

[4]Standard deviation of the annual percent change in total terms of trade multiplied by the share of natural resource exports in GDP in 1980.

[5]Real exchange rate overvaluation is based on purchasing-power-parity comparisons, using the Summers-Heston measure, where 100 signifies parity and higher (lower) numbers indicate over-(under-)valuation, following Dollar (1992).

[6]Growth rate of economically active population minus growth rate of total population.

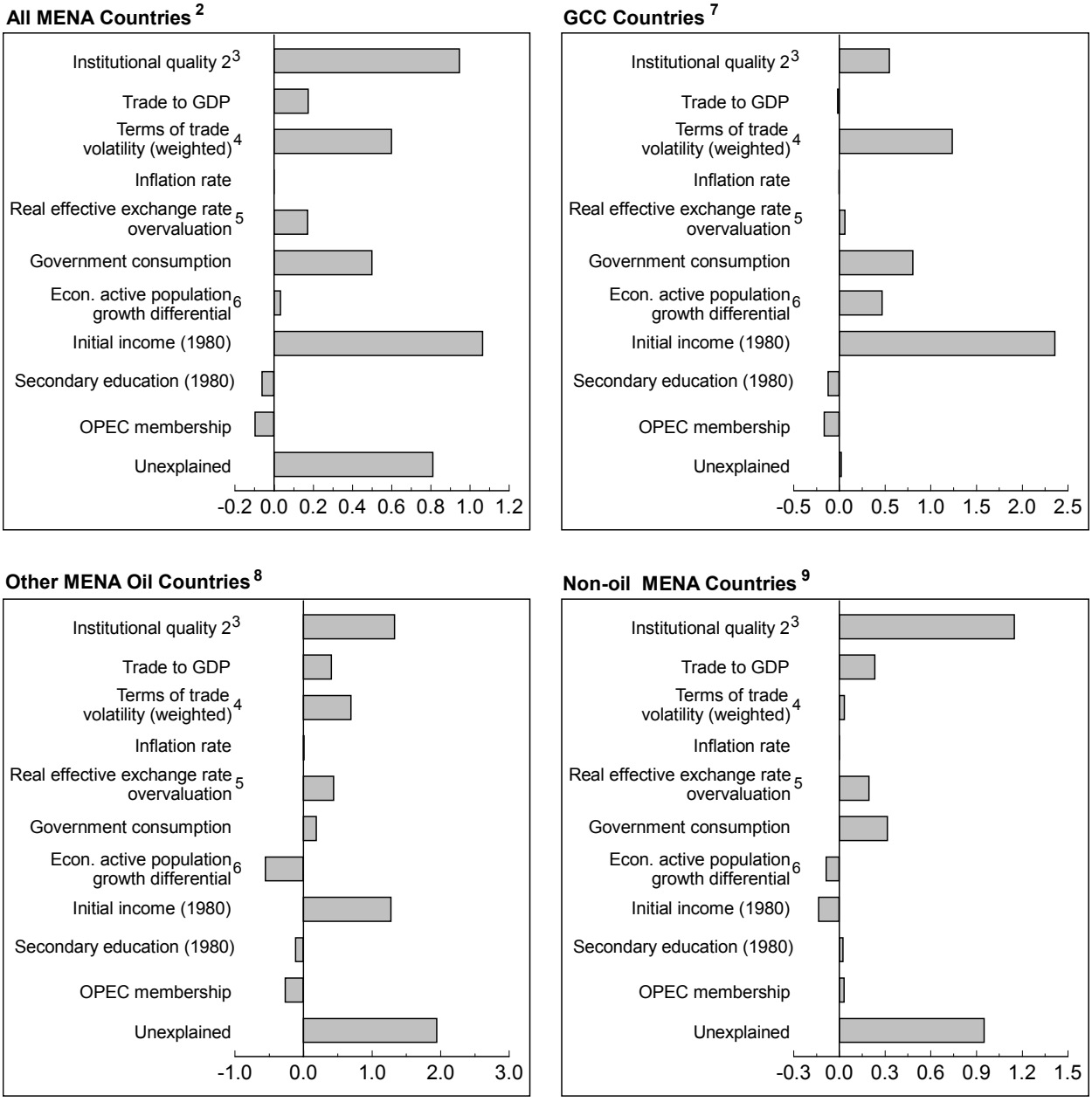
[7]Initial year is 1980 for 1980-89 period and 1990 for 1990-2000 period.

[8]The differential in per capita growth rates between the GCC countries and the east Asian countries is 7.6 percent for 1980-89 and 3.0 for 1990-2000.

[9]The differential in per capita growth rates between other MENA oil countries and the east Asian countries is 7.4 percent for 1980-89 and 3.5 for 1990-2000.

[10]The differential in per capita growth rates between non-oil MENA countries and the east Asian countries is 3.0 percent for 1980-89 and 2.4 for 1990-2000.

Figure 3. Decomposition of Growth Differentials Between Subgroups of MENA and East Asian Countries: Regression With a Measure of Institutional Quality That Encompasses Conflicts[1]



Sources: Dollar (1992); PRS Group, International Country Risk Guide; World Bank; World Development Indicators; and IMF staff estimates.

[1]The regression coefficients are applied to the difference between the average values for the explanatory variables for MENA (and its subgroups) and east Asian Countries. The calculations use averages for each variable and for all countries in the relevant group for which the data is available and not only the countries included in the regression estimations. Dependent and independent variables represent averages over the period 1980-2000 unless otherwise noted.

[2]The differential in per capita growth rates between all MENA countries and the east Asian countries is 4.2 percent.

[3]Simple average 1984-2000.

[4]Standard deviation of the annual percent change in total terms of trade multiplied by the share of natural resource exports in GDP in 1980. This weighting captures the effect of volatility in income flows that is associated with trade in natural resources.

[5]Real exchange rate overvaluation is based on purchasing-power-parity comparisons, using the Summers-Heston measure, where 100 signifies parity and higher (lower) numbers indicate over-(under-)valuation, following Dollar (1992).

[6]Growth rate of economically active population minus growth rate of total population.

[7]The differential in per capita growth rates between the GCC countries and the east Asian countries is 5.2 percent.

[8]The differential in per capita growth rates between other MENA oil countries and the east Asian countries is 5.4 percent.

[9]The differential in per capita growth rates between non-oil MENA countries and the east Asian countries is 2.7 percent.

Data Appendix

This appendix provides the definition and data sources for the variables used in the paper. It also defines the country groupings.

Data Definitions and Sources

Economic growth is measured as the average annual growth rate of real per capita GDP over 1980–2000 (reflecting the availability of reliable data). The source of the data is the WEO database.

Inflation is measured as the average increase in the logarithm of the Consumer Price Index over 1980–2000 (reflecting the availability of reliable data). The source of the data is the World Bank's *World Development Indicators* (WDI).

The initial level of income is measured as the logarithm of per capita GDP in purchasing power parity terms in 1980. The source of the data is the WEO database.

Government consumption is the average of the ratio of government consumption expenditure to GDP from 1980 to 2000 (reflecting the availability of reliable data). The source of the data is the WDI.

Trade openness is defined as the sum of imports and exports of goods and services, divided by GDP. The source of the data is the WDI.

Exchange rate overvaluation is based on purchasing power parity comparisons, using the Summers-Heston measure, where 100 signifies parity and higher (lower) values indicate over-(under-)valuation, following the methodology of Dollar (1992). The average degree of overvaluation over 1980–2000 is used. Since this index is not available for the GCC countries (except for Bahrain), exchange rate misalignment for these countries is calculated using the percentage difference between the actual real effective exchange rate (REER) as reported in the IMF's Information Notice System and a Hodrik-Prescott filter of the REER.

Institutional quality is measured as an index constructed as the average of four indices reported by the International Country Risk Guide (ICRG) over 1984–2000. The indices are (1) corruption—the degree of all forms of corruption such as patronage, nepotism, and suspiciously close ties between politics and business; (2) rule of law—the strength and impartiality of the legal system and the extent of popular observance of the law; (3) bureaucracy quality—the strength and expertise of the bureaucracy to govern without drastic changes in policy or interruptions in government services; and (4) government stability—the ability of the government to carry out its declared program and to stay in office. The indices are re-scaled from 1 to 12, where high values indicate good institutions. For an alternative regression specification, the institutional quality index is constructed as the average of the four indices above as well as two indicators of internal and external conflict reported by the ICRG. The internal conflict indicator refers to the extent of political violence in the country, and the external conflict indicator refers to the risk to the government arising from foreign action ranging from nonviolent external pressure (e.g., trade restrictions, territorial disputes, and diplomatic pressures) to cross-border conflicts and war.

Terms of trade volatility is measured as the standard deviation of the annual change in the terms of trade over 1980–2000 weighted by the share of natural resource exports in total exports in 1980 to capture the volatility of income flows that is associated with exports of natural resources. Natural resource exports are defined as the sum of exports of fuel, ores and metals, agricultural and raw materials, and food products. The data to measure the share of natural resources in total exports come from the WDI, while the terms of trade data are from the WEO database.

Secondary education is measured as the number of students enrolled in secondary schools as a percent of the secondary-school-age population. The source of these data is the WDI.

The demographic burden is defined as the difference between the growth rate of the economically active population and the total population growth rate. The economically active population is defined as the population aged 15–64. The data to calculate the growth rates of the economically active population and total population are obtained from the WDI.

Growth rates of capital per worker are obtained from Bosworth and Collins (2003) and supplemented with data from IMF (2003b) for some MENA countries. Bosworth and Collins (2003) calculate the growth rates of capital per worker as the sum of the contributions of physical capital per worker and education per worker, where the contribution of physical capital per worker is its growth rate multiplied by capital's production share (assumed to be equal to 0.35), and the contribution of human capital is the growth rate of an index of labor quality multiplied by labor's production share (assumed to be 0.65).

Total factor productivity growth data are obtained from Bosworth and Collins (2003) and supplemented with data from IMF (2003b) for some of the MENA countries. Bosworth and Collins (2003) calculate TFP growth as the difference between the growth rate of output per worker and the contribution of growth in capital per worker. The primary source of the data to measure output per worker and capital per worker is the WDI.

Country Coverage

This section lists all countries and economies used in the paper. Owing to data constraints, the regression analysis is limited to a sample of 74 countries, including 21 advanced economies and 53 developing countries, of which 10 are MENA countries—Algeria, Bahrain, Egypt, Islamic Republic of Iran, Jordan, Kuwait, Morocco, Saudi Arabia, Syrian Arab Republic, and Tunisia.

Advanced Economies. Australia, Austria, Canada, Cyprus, Finland, France, Greece, Iceland, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

East Asia. China, Indonesia, Korea, Malaysia, the Philippines, Singapore, Thailand, Taiwan Province of China, and Papua New Guinea.

Other Developing Countries. Argentina, Bangladesh, Barbados, Bolivia, Botswana, Brazil, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Chile, Colombia,

Democratic Republic of the Congo, Costa Rica, Côte d'Ivoire, Dominican Republic, Ecuador, El Salvador, Ethiopia, Gabon, The Gambia, Ghana, Guatemala, Guyana, Haiti, Honduras, India, Jamaica, Kenya, Madagascar, Malawi, Mauritania, Mexico, Mozambique, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Panama, Paraguay, Peru, Rwanda, Senegal, Sierra Leone, South Africa, Sri Lanka, Tanzania, Togo, Trinidad and Tobago, Turkey, Uganda, Uruguay, Venezuela, Zambia, and Zimbabwe.

Middle East and North Africa. This group is divided into non-oil MENA countries, GCC oil-exporting countries and other oil-exporting MENA countries. Following WEO convention, a country is classified as an oil exporter if its oil export earnings over 1994–98 constituted more than 50 percent of total export earnings.

Non-oil MENA countries. Egypt, Jordan, Lebanon, Morocco, Syrian Arab Republic, Tunisia, and Yemen.

GCC countries. Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates.
Other MENA oil-exporting countries. Algeria, Islamic Republic of Iran, and Libya.

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