

Economic Returns to Investment in Education

The main conclusion of the previous chapter is that the MENA region has invested heavily in education over the past few decades and as a consequence has improved the level, quantity, and quality of human capital. The question to be addressed in this chapter is what the development outcomes of this investment have been. In other words, have improvements in human capital contributed to economic growth, better income distribution, and less poverty in MENA countries?

The discussion is organized in three sections: the first covers the relationship between education and economic growth, the second addresses the relationship between education and income distribution, and the third section examines the relationship between education and poverty. In each section, we elaborate the arguments for the kind of relationship that should exist, explore whether that relationship holds in the MENA region, and offer alternative explanations when it does not.

Education and Economic Growth

Per capita economic growth in the MENA region in the past 20 years has been relatively low, in part because of high population growth rates, and in part because many MENA countries still depend on oil exports for economic growth and oil prices remained relatively low through the 1980s, 1990s, and early 2000s. In addition, the region generally lacks significant dynamic sectors that can compete internationally and is home to large informal labor markets, mainly in low-level services. These characteristics contrast sharply with East Asia and the more dynamic economies of Latin America.

Under these conditions, we would not expect to see a strong relationship in the MENA region as a whole between investment in human capital—especially investment in secondary and tertiary education—and

economic growth. This turns out to be the case. Thus, the MENA experience brings home the idea that investment in human capital does not by itself generate economic growth. Earlier findings about *virtuous circles* in East Asia claiming that high growth rates in that region were driven by investment in education are not incorrect, they are just incomplete. Relatively high levels of human capital in the 1960s and rapid increases since then were undoubtedly important to East Asian growth. In the case of the MENA region, other growth-enhancing policies were not in place, and this has led to less than full realization of the benefits of investment in education.

Investment in Education and Economic Growth: A Broad Perspective

Does investment in education necessarily enhance economic growth? There are compelling reasons that it should, but the empirical evidence does not always support this conclusion.

The Rationale for a Positive Education–Economic Growth Relationship.

Individuals are willing to take more years of schooling partly because they can earn more and get better jobs, on average, with more schooling. For many, more schooling can also be a source of social mobility. Similarly, nation-states and regions are interested in raising the average level of schooling in their population, in part, because they think that doing so will improve productivity, raise the quality of jobs in the economy, and increase economic growth.

The link between education and economic growth in some of the early work on the economics of education was based on the argument that a major effect of more education is that an improved labor force has an increased capacity to produce. Because better-educated workers are more literate and numerate, they should be easier to train. It should be easier for them to learn more complex tasks. In addition, they should have better work habits, particularly awareness of time and dependability. But exactly how education increases productivity, how important it is, and in what ways it is important are questions that have no definite answers. A shortage of educated people may limit growth, but it is unclear that a more educated labor force will increase economic growth. It is also unclear what *kind* of education contributes most to growth—general schooling, technical formal training, or on-the-job training—and what *level* of education contributes most to growth—primary, secondary, or higher education.

One of the clues in support of the conclusion that education does contribute to growth is that countries with higher levels of economic growth

have labor forces with higher levels of formal schooling. Beyond such a *macroeconomic approach* to the relation between education and economic growth, the new growth theories assert that developing nations have a better chance of catching up with more advanced economies when they have a stock of labor with the necessary skills to develop new technologies themselves or to adopt and use foreign technology. In such models, more education in the labor force increases output in two ways: education adds skills to labor, increasing the capacity of labor to produce more output; and it increases the worker's capacity to innovate (learn new ways of using existing technology and creating new technology) in ways that increase his or her own productivity and the productivity of other workers. The first of these emphasizes the human capital aspect of education (that is, that education improves the quality of labor as a factor of production and permits technological development); the second places human capital at the core of economic growth and asserts that the externalities generated by human capital are the source of self-sustaining economic growth—that human capital not only produces higher productivity for more educated workers but for most other labor as well.

This model also sees innovation and learning-by-doing as *endogenous* to the production process, with the increases in productivity being a self-generating process inside firms and economies (Lucas 1988; Romer 1990). Such learning-by-doing and innovation as part of the work process are facilitated in firms and societies that foster greater participation and decision making by workers, since those are the firms and societies in which more educated workers will have the greatest opportunities to express their creative capacity.

The frequent observation that individuals with more education have higher earnings is another indication that education contributes to growth. The education–higher earnings connection reflects a *microeconomic approach* to the relation between education and economic growth. Greater earnings for the more educated represent higher productivity—hence, an increase in educated labor in the economy is associated with increased economic output and higher growth rates. There are instances where higher earnings for the more educated may merely represent a political reward that elites give their members—a payoff for being part of the dominant social class. But it is difficult to sustain an economic system for very long if those who actually produce more are not rewarded for their higher productivity, and if those who simply have political power get all the rewards. One of the reasons that socialist systems in Eastern Europe were unable to sustain economic growth was almost certainly due in part to an unwillingness to reward individuals economically on the basis of their productivity and, instead, to reward the politically powerful with economic privilege.

Mixed Empirical Findings. There are then compelling reasons to believe that education increases productivity and brings about other economic and social attributes that contribute positively to economic growth. The problem is that the empirical evidence demonstrating the education–economic growth relationship shows mixed results, and often rejects the hypothesis that investment in human capital promotes economic growth.

Three types of empirical studies in the literature concern the role of education in production. The first two are microeconomic in nature. They study the relation between education and individual income on the one hand, and education and productivity on the other. Although the results of these studies vary, they essentially show that there exists a positive relation between an individual's level of education, his or her productivity, and his or her earnings (see, among others, Psacharopoulos 1973, 1993; Carnoy 1972, 1995). The third type of empirical analysis seeks to estimate the impact of investment in education on economic growth using econometric techniques. However, it is this attempt to estimate the macroeconomic relation between investment in education and output that produces major contradictions.

The macroeconomic analyses of growth appeared at the end of the 1980s, within a convergence framework. Barro (1990) was the first to show that, for a given level of wealth, the economic growth rate was positively related to the initial level of human capital of a country, whereas for a given level of human capital, the growth rate was negatively related to the initial level of GDP per capita. Convergence, therefore, appears to be strongly conditioned by the initial level of education. Azariadis and Drazen (1990) assume that economic growth is not a linear process; rather, it goes through successive stages in which the stock of physical and human capital enables a country to reach a given growth level. Their results show that the initial literacy rate plays a different role in predicting growth rates at different levels of development. Literacy is correlated with the variations of growth in the least advanced countries, but it does not seem to be related to most developed countries' growth. Mankiw, Romer, and Weil (1992) assume that the level of saving, demographic growth, and investment in human capital determine a country's stationary state. They also find that these different stationary states seem to explain the persistence of development disparities.

These different studies show that the variations of growth rates among countries can be explained partly by the initial level of human capital. But does a higher level of investment in education affect the growth path? The answer to the latter question is predominantly "no."

Barro and Lee (1994) show that the increase in the number of those who attended secondary school between 1965 and 1985 had a positive ef-

fect on growth, but estimates by others do not confirm this result. Using an aggregated production function, Benhabib and Spiegel (1994) and Pritchett (1996) also measure the impact of human capital investment on the rate of economic growth. They use various measurements of human capital, including the number of years of education, literacy rates, and secondary enrolment rates. Whatever the education variable chosen, the associated coefficients appear either as insignificant or as having a negative sign.¹

In conclusion, the empirical tests generally show that education is one of the initial conditions that define the long-term steady state toward which the economy tends: the countries that in 1960 had a higher level of education had a greater opportunity, 40 years later, to reach a higher level of development. On the other hand, despite the diversity of methods and measures of human capital variables, the role of human capital in the convergence process is still not consistently positive. It is unclear that the countries that invested more in education universally experienced a higher growth rate.

Education and Economic Growth in the MENA Region

Against this background, how did MENA countries fare? In particular, was the region able to translate its investment in education into higher economic growth and improved productivity?

Education and economic growth. In his article “Where has all the education gone?” Pritchett (1996) tests the impact of investment in human capital on a panel of 86 countries. The results show that there is no significant effect of education on economic growth. He then tests the same specification distinguishing by geographic area as well. Education is shown to have a positive impact in Asia and Latin America but a negative one in the MENA region. The result is relatively stable whatever the human capital variable used.

Fattah, Liman, and Makdisi (2000) conducted a more complete study of the determinants of economic growth in MENA. They tested the impact of various variables—namely, investment in physical capital, investment in human capital, openness to trade and investment, the overall institutional environment, and external shocks—on economic growth; the results are shown in table 2.1.

They used a set of panel data that includes 86 countries. They show that the coefficients of these variables carry the expected sign and are significant for the entire sample. However, the results for the MENA region indicate that the initial level of education is not a significant determinant of growth (although carrying the right sign).

TABLE 2.1

Cross-Country Growth Regression Results

Sample/variable	Coefficient	t-statistic
Large sample (panel of 86 countries)		
Constant	-1.844	-1.930
Investment rate: INVY	0.132	3.798*
Macro performance: INFL	-0.002	2.310*
Initial wealth: Y60	-0.0003	-4.515
Initial education: PESEN60	0.017	3.350*
Natural resources: SXP	-2.880	-2.304*
Openness: SOPEN	1.245	3.427*
External shock: GPART	0.192	0.555
Volatility: STDG	0.001	0.017
MENA specific		
Investment rate: INVY•MENA	-0.152	-4.483*
Macro performance: INFL•MENA	-0.038	6.646*
Initial wealth: Y60•MENA	0.001	21.908
Initial education: PESEN60•MENA	0.004	0.569
Natural resources: SXP•MENA	-5.010	-3.147*
Openness: SOPEN•MENA	-1.135	-2.650
External shock: GPART•MENA	1.750	4.871*
Volatility: STDG•MENA	-0.220	-2.529
N = 86		
R ² = 0.67		

Source: Fattah, Limam, and Makdisi 2000.

The above conclusion is puzzling in light of the historical patterns of economic growth and investment in education in MENA. On the one hand, the region's GDP per capita growth was positive and rapid in the 1960s and 1970s, and much lower in the 1980s and 1990s (see table 2.2).

The region's earlier track record of per capita economic growth was so impressive that it outpaced the corresponding growth rates in the rest of the world, whereas the region's performance was almost the worst in the latter decades. On the other hand, investment in human capital in the region was much more linear and steady. While the region saw a major increase in investment in human capital during the period of rapid growth in the 1960s and 1970s, investment in human capital continued in the 1980s and 1990s. The earlier investment should have had a positive effect on growth in the 1980s and 1990s, but this positive effect did not materialize. Before attempting to solve this puzzle, we look next at the relationship between investment in education and productivity.

Education and productivity growth in the MENA region. Table 2.3 shows Total Factor Productivity (TFP) growth from the 1960s through

TABLE 2.2

GDP per Capita Growth

(percent, average for the period)

	1960–69	1970–79	1980–89	1990–2003
Algeria	1.7	3.9	−0.2	0.3
Bahrain	—	—	−2.8	2.7
Djibouti	—	—	−6.9	−3.5
Egypt, Arab Rep. of	2.9	4.1	3.3	2.2
Iran, Islamic Rep. of	—	−2.7	−2.9	3.3
Iraq	3.2	6.9	−9.6	—
Jordan	—	11.1	0.1	0.7
Kuwait	−4.8	−3.9	−5.2	−2.0
Lebanon	—	—	−43.7	6.3
Libya	20.5	−1.5	−10.2	1.3
Morocco	2.1	2.8	1.7	1.3
Oman	19.7	2.7	4.5	1.0
Qatar	—	—	—	—
Saudi Arabia	2.1	9.0	−5.8	0.3
Syrian Arab Rep.	3.5	5.3	−0.5	2.0
Tunisia	3.3	4.9	1.0	3.2
United Arab Emirates	—	−4.4	−4.7	−1.4
West Bank and Gaza	—	—	—	−6.4
Yemen, Rep. of	—	—	—	1.4
Mean	5.4	2.9	25.1	0.8
China	0.9	5.3	8.2	8.2
Indonesia	1.5	5.3	4.4	3.2
Korea, Rep. of	5.6	6.3	6.4	5.3
Malaysia	3.5	5.2	3.0	4.0
Philippines	1.9	2.9	−0.4	0.9
Thailand	4.6	4.6	5.4	4.0
Mean	3.0	4.9	4.5	4.3
Argentina	2.6	1.3	−2.1	1.5
Brazil	3.0	5.9	0.9	0.5
Chile	2.0	0.8	2.7	4.0
Mexico	3.5	3.3	0.2	1.4
Peru	2.3	1.1	−1.9	1.3
Mean	2.7	2.5	0.0	1.7

Source: World Bank, *Global Development Finance and World Development Indicators* central database (accessed in August 2005).

1990s, which was calculated by Keller and Nabli (2002) for various regions. TFP growth represents the residual part of the growth rate in output that is not attributable to increases in physical or human capital stock. Thus, TFP growth can be interpreted as an expression of technological progress as well as the efficiency with which capital and labor are utilized.

The TFP growth results go far in helping us understand the economic growth problem in the MENA region. TFP growth increased

TABLE 2.3

Total Factor Productivity Growth by Region, 1960s–1990s

		Growth of GDP per worker	Growth of physical capital per worker	Growth of human capital per worker	TFP growth
Sub-Saharan Africa	1960s	1.8	3.8	0.4	0.1
	1970s	0.6	4.2	0.3	-1.3
	1980s	-0.9	-0.1	0.7	-1.3
	1990s	0.3	0.0	0.5	0.0
East Asia and Pacific	1960s	2.1	1.1	0.8	1.2
	1970s	3.3	5.3	0.9	0.7
	1980s	5.6	6.7	1.0	2.3
	1990s	7.5	7.8	0.6	4.0
Latin America and the Caribbean	1960s	2.9	3.1	0.6	1.3
	1970s	2.9	4.3	0.6	0.8
	1980s	-1.7	0.2	0.9	-2.4
	1990s	0.6	0.6	0.8	-0.1
OECD	1960s	4.4	5.8	0.5	1.7
	1970s	1.8	3.6	1.4	-0.4
	1980s	1.8	2.3	0.3	0.7
	1990s	1.3	2.2	0.5	0.1
South Asia	1960s	2.2	4.0	0.6	0.2
	1970s	0.6	1.9	1.0	-0.7
	1980s	3.6	2.7	0.9	2.0
	1990s	2.9	2.1	0.8	1.6
MENA	1960s	4.6	4.9	0.5	2.4
	1970s	2.6	7.9	1.5	-1.4
	1980s	0.4	2.1	1.4	-1.3
	1990s	0.7	-0.3	1.2	0.0
World	1960s	2.7	3.2	0.6	1.1
	1970s	2.2	4.1	1.0	0.0
	1980s	3.2	3.8	0.8	1.2
	1990s	4.0	4.1	0.7	2.0

Source: Keller and Nabli 2002.

rapidly in the 1960s, as might be expected because of the very high growth rates in that decade. In the following two decades, TFP growth was negative, which reduced per capita growth in the 1970s and 1980s. In the 1990s, TFP growth was no longer negative (zero) and per capita growth was modestly positive.

The key here is that, despite a high rate of investment in both physical and human capital in the 1970s, TFP growth in the MENA region declined compared to the 1960s, whereas in East Asia it rose, and in Latin America it remained the same, with both regions achieving higher growth than MENA during that decade. The rapid increase in investment in the 1960s and 1970s and the corresponding negative growth of TFP in the 1970s were characteristic of most MENA countries. In Egypt, for example, the rate of investment in physical and human capi-

tal increased twofold, but the TFP growth decreased by 25 percent. In Morocco and Algeria as well, the investment rate in physical and human capital doubled, but the TFP growth was negative in the 1970s.

The picture was far worse in the 1980s, particularly for the oil-producing countries. During this decade, the decline in oil prices no longer allowed for high investment in physical and human capital. These investments were sharply reduced (in fact, the growth rates of physical capital stock per capita declined by 75 percent). Keller and Nabli (2002) show that all MENA countries experienced a decline in their TFP growth during the 1980s. The macroeconomic stabilization programs set up at the beginning of the 1990s contributed to a slightly positive TFP growth regionwide (although it was close to zero). Kuwait, Morocco, Oman, and Saudi Arabia are the countries where productivity was still declining in the 1990s.

Thus, regardless of how the impact of investment in education in the MENA region is evaluated, the story is similar: the higher level of investment in education during the last four decades was not associated with higher economic growth or with appreciable gains in TFP growth compared to East Asia and Latin America.

Possible Explanations for the Weak Education–Growth Relationship in MENA

Finding it difficult to accept the notion that an increase in the level of education does not positively affect economic growth, several analysts have attempted to reconcile the contradiction between expectations and some of the empirical findings. Their effort produced a few possible explanations. One of these explanations is related to the heterogeneity of the education–growth relationship from one country to another. Another is related to the quality of education, including the capacity of workers to innovate or adopt new technologies. A third explanation is related to the distribution of education within the active population. A fourth explanation concerns the allocation of workers among different economic activities. From this perspective, growth opportunities are determined to a lesser extent by educational investments than they are by engaging educated workers in jobs that capitalize on their skills.

Which of these explanations is most relevant to the MENA region? While we attempt to answer this question below, the short answer is that most of these explanations are relevant to varying degrees.

A significant relation between education and growth is not universal.

One of the main conclusions of the analyses of the education–growth relationship is the absence of homogeneity across countries. If the eco-

nomic, social, and cultural characteristics of each country modify the micro relation between education and wages, the same characteristics may also modify the relationship between education and growth.

This conclusion is supported by various empirical studies. For example, Lau, Jamison, and Louat (1991) have estimated the impact of primary education on growth in five regions of the world. They found that the effect is positive in the Southeast Asian countries, not significant in Latin American countries, and negative in the MENA and sub-Saharan countries. Azariadis and Drazen (1990) show that the coefficient of human capital in the growth equation is about five times higher in the developing countries than in the developed countries. And Temple (1999) excludes nonrepresentative countries (outlier observations) from the sample of Benhabib and Spiegel (1994) and shows a significant and positive relation between the increase in the level of education and the GDP growth rate.

It is thus incorrect to assume that education has the same impact on growth in all countries. However, this is precisely the assumption made by throwing all countries into the cross-country analyses. Panel analyses have the advantage of being able to take into account country specificities by including a different intercept for each country, but even then, the analysis assumes that the relation between education and growth is the same once these specificities are taken into account.

Given that the analyses that distinguish MENA from non-MENA countries consistently show a weak if not negative relationship between investment in education and economic growth, the search for an explanation for this weakness has to be MENA-specific. It either has to do with characteristics of the education systems of the region or with the way graduates are deployed, as discussed below.

Is quality of education the missing link? The first factor in explaining the weak relationship between education and economic growth is the quality of human capital and the capacity of workers to innovate or adopt new technology. With respect to the *quality of human capital*, most growth regressions use the average years of schooling in the labor force as a measure of the stock of human capital. However, this measure does not capture the variations in the quality of education. It accounts for neither the initial level of educational quality nor for the changes in quality over time of each year of schooling. Moreover, if the average level of education as measured by years of schooling increases, the quality of education is bound to decline as more students from lower-social-class backgrounds are enrolled. This could reduce the impact of the investment in human capital on economic growth. In addition, schooling heterogeneity is usually as important between countries as between individuals.

Thus, cross-country regressions based on the assumption that one year of schooling is the same across individuals and countries fail to take heterogeneity of quality into account.

Recognizing this problem, Hanushek and Kimko (2000) constructed a number of quality indicators on the basis of international tests score. Although not many countries participate in these tests, those that do were found to exhibit a positive correlation between education and economic growth. The findings suggest that differences in the quantity and quality of education among countries could explain 40 percent of the variance in the growth rate. The results obtained by Dessus (2001) are similar to those obtained by Hanushek and Kimko. When the author builds a model in which the payoff to the investment in human capital depends on the quality of education, he finds that a one-standard-deviation increase in the initial level of schooling increases the rate of return to human capital by 0.2 points. Similarly, he finds that a lower pupil-teacher ratio in primary school increases the impact of education on economic growth.

For MENA countries, several studies claim that the low quality of education is one reason why the relationship between education and growth is weak. El Erian, Helbling, and Page (1998) and Ridha (1998) assert that the education systems in the Arab countries focus more on repetition of definitions, and knowledge of facts and concepts, and less on developing critical-thinking and problem-solving capacities. Thus, they are not surprised that the expansion of the average level of education in the labor force did not generate more productivity or rapid economic growth.

To be sure, the data presented in chapter 1 show that the region has made significant progress on the quality of education. Literacy rates of males and females have increased significantly over the past few decades. Student scores on international tests in some MENA countries are not far off those of a number of Latin American countries. And the increased level of education in the MENA region has had a similar impact on the fall in fertility rates and the increase in life expectancy as it did in Asia. Why then would this improvement not have a positive effect on economic growth? The answer probably lies in the *relative* rather than the *absolute* measures of quality of education in a world where capital is mobile and knowledge is key to competitiveness. As noted in chapter 1, literacy rates in MENA are still far below those of other developing countries, fields of study are more focused on the humanities and less on science, and test scores are lower than the comparator averages. Thus, we cannot exclude the low quality of education as one possible explanation for the apparent lack of relationship between human capital investment and economic growth in the region.

Turning to the *capacity of individuals to innovate or adopt new technology*, the argument here is derived from the endogenous growth theory. As noted before, this theory holds that an important contribution of human capital to increases in economic output is in adapting and managing innovation, hence raising the productivity of all labor, whether highly educated or not. Because traditional econometric models focus primarily on the direct impact of education on individual worker productivity, they might not account for this contribution.

Measuring the impact of education on adapting and managing new technologies is not an easy task, however. For Benhabib and Spiegel (1994), the contribution of human capital to technical progress is related more to increasing the capacity to use and adapt foreign technology than it is to the development of local innovation. This result suggests that the impact of education on growth and technological development is strongly related to the country's degree of openness. Gould and Ruffin (1995) support this conclusion. In a more open economy with a literacy rate of 70 percent, the externalities of the human capital could generate 1.75 percent of additional growth annually. The conclusion of Berthelémy, Dessus, and Varoudakis (1997) is even more categorical: they claim that only open economies can benefit from investment in education.

What about the MENA region? Unfortunately, the capacity to innovate or adopt new technologies does not appear to be high. During the 1990s, European or American patents registration by the Arab scientists were zero percent of world total (see table 2.4). High-technology achievements are also fairly rare—activities such as microprocessing in Morocco or Arab language software production in Egypt are quite unusual. If a significant and positive education–growth relation is mainly the product of the development or adaptation of new technologies, the absence of innovation and the low level of foreign direct investment (FDI) in the MENA region are not good signs for a positive impact of investment in education on current and future economic growth.

The distribution of education and economic growth. The absence of a statistically significant relation between education and economic growth may also be a function of the distribution of education, which tends to be excluded from growth regressions. The argument is that the impact of education on productivity will be low if only a small proportion of the population has a high level of education while the majority is illiterate.

To explore this issue, Lopez, Vinod, and Wang (1998) test the impact of different measures of the distribution of years of education on growth. By taking distribution indicators into account, the coefficient of human capital indicators becomes positive and significant. Moreover, the authors find a negative relation between the Gini coefficient of human cap-

TABLE 2.4

Scientific and Technological Capacities in World Regions

(percent of world total, 1995)

	Expenditure on R&D	Scientific publications	European patents	U.S. patents
Arab States	0.4	0.7	0.0	0.0
North America	37.9	38.4	33.4	51.5
Western Europe	28.0	35.8	47.4	19.9
Latin America	1.9	1.6	0.2	0.2
Sub-Saharan Africa	0.5	0.8	0.2	0.1
Japan and NICs	18.6	10.1	16.6	27.3
China	4.9	1.6	0.1	0.2
India and Central Asia	2.2	2.1	0.0	0.0
Others	2.2	2.9	1.3	0.6
World	100	100	100	100

Source: UNESCO 1998.**Note:** Data for expenditures on research and development are for 1994.

ital distribution and the economic growth rate: the larger the disparities in education in the labor force, the smaller the predicted increase in income per capita. Birdsall and Londono (1997) also find supporting evidence to the hypothesis that more equal distribution of education is associated with higher economic growth.

Although none of the countries in the study by Lopez et al. (1998) came from the MENA region, the information provided in chapter 1 indicates that the distribution of education, measured by the standard deviation of the number of years of schooling, has declined over time.² This trend is largely the result of starting from very low levels of educational attainment in the population. For example, in the Arab Republic of Egypt, the average level of education has been increasing rapidly over the past few decades, but the disparity between the proportion of adult illiterates and a bulge of higher education graduates has also increased. This trend seems to hold in other countries in the MENA region, which may help explain the weak contribution of education to economic growth.

The allocation of human capital. Finally, it is possible that the absence of a statistically significant relation between education and growth is the result of the limited opportunities for the educated worker to get a job in dynamic, competitive, and private sector-led sectors in the economy. The lack of such opportunities or of others in fairly efficient public sector corporations reduces the probability that higher-educated labor will develop new technologies or new productive activities that make the engine for economic growth. Government employment is a poor substitute for such activities, as productivity in government jobs tends to be low.

For both reasons, poor allocation of human capital weakens the contribution of investment in education to economic growth.

This hypothesis is validated by a number of studies. According to Pritchett (1996), if a developing country does not have a productive structure to be able to integrate the most qualified people, the macroeconomic output of education strongly decreases. Gelb, Knight, and Sabot (1991) show that a high proportion of graduates employed in the public sector is correlated with significantly lower economic growth. Even in a developed country like Italy, Lodde (2000) shows that the manufacturing sector benefits the most from educated labor.

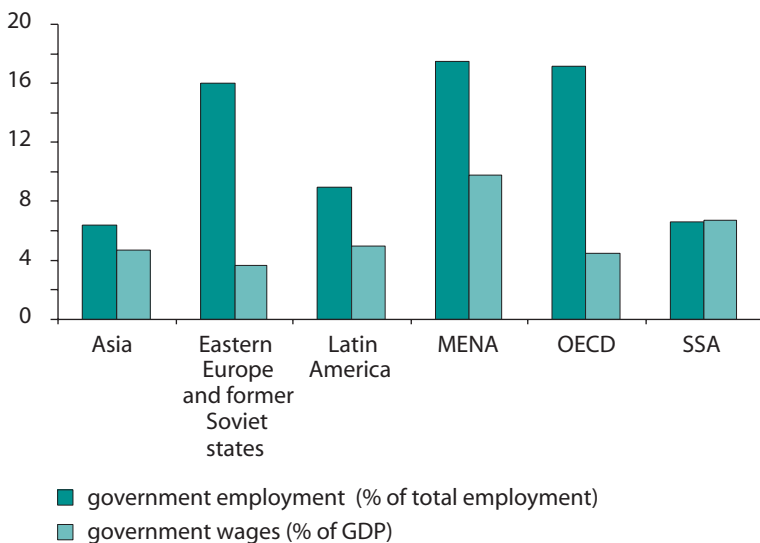
In the MENA region, the allocation of skilled workers among various activities is quite relevant in explaining the lack of a significant statistical relation between educational investment and economic growth. The region suffers from a low level of economic diversification, not only in oil-producing countries, but also in labor-abundant countries like Egypt, the Syrian Arab Republic, and Morocco. So, unlike East Asia and less than most Latin American countries, the MENA region has too small a manufacturing sector for its stage of development. The result is that this economic structure either does not permit the full utilization of the skills of highly educated labor or it only allows their utilization in activities with low payoff.

In addition—and perhaps because of the low level of economic diversification—the region is also characterized by the strong presence of the state as an employer. In the 1990s, the share of public employment in the region was higher than in any other region in the world (see figures 2.1 and 2.2). Governments employed almost 20 percent of *all* workers—somewhat higher than in Eastern European and OECD countries but much higher than in Latin America or in Asia.³ While the percentage of government employment in MENA is comparable to that of the OECD and Eastern European countries, the latter groups of countries pay a much lower fraction in wages relative to their GDP than do the countries of the MENA region.

The dominant role of the public sector as an employer and the advantages associated with working for government (i.e., higher wages than in the private sector, permanent employment, social status, etc.) have had negative effects on the labor market and on students' educational choices in MENA. Many graduates prefer to wait for a government job for as long as ten years rather than accept another job, even in a country like Egypt where the policy of employment guarantee has been abolished for some time. At the same time, there is a strong preference for fields of study that prepare students for administrative careers rather than for private sector jobs. These two effects essentially deprive the economy from benefiting from its investment in education to achieve higher productivity, individual earnings, and economic growth.

FIGURE 2.1

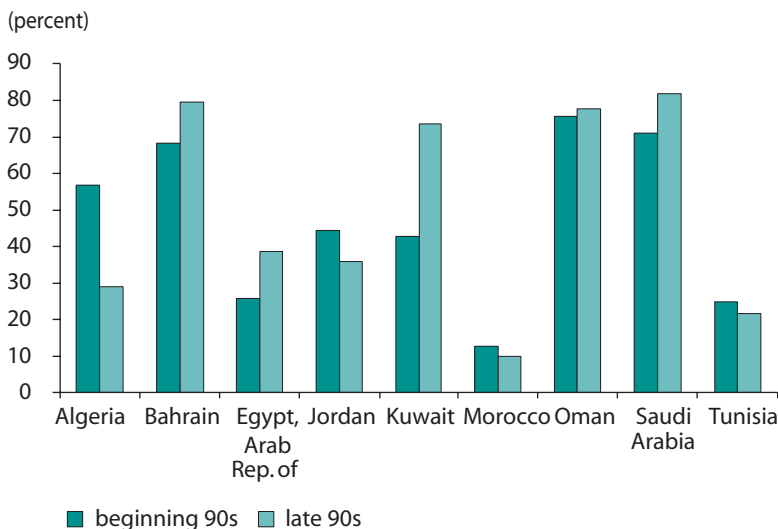
Size of Government around the World by Region, 1990s



Source: Adapted from World Bank 2004.

FIGURE 2.2

Public Sector Employment as a Share of Total Employment in MENA Countries



Source: Adapted from World Bank 2004.

Education and Income Distribution

Turning to education and income distribution, a nation's income distribution is influenced by many factors, particularly the distribution of wealth, both physical (land, physical capital) and human (education, skills). In general, the more equally these assets are distributed, the more likely the fruits of economic growth will also be distributed fairly equally. Furthermore, in societies where a large proportion of assets are owned by the state or the state is able to tax income heavily and distribute those taxes among various income groups through state spending, state incomes and investment policies can play an important role in the way income is distributed.

In addition, the relationship between investment in education and income distribution is part of a more complex relationship between education and economic growth on the one hand and between economic growth and income distribution on the other. This relationship can be positive or negative. For example, if the state invests in education to maximize its economic payoff, this investment may contribute optimally to economic growth. However, if the social rate of return to investment in higher education is higher than it is to primary schooling, this optimal (for growth) educational investment strategy could over time produce greater income inequality, everything else equal. Conversely, the same education investment strategy could contribute to greater income equality, if the rate of return to primary schooling is higher than it is to higher levels of education (Psacharopoulos 1993). Either way, the rates of return themselves are not constant over time. As the economy grows, consumption patterns and technological changes could alter the structure of the demand for labor, hence the pattern of these rates of return. These other forces may increase income inequality even if the educational investment pattern contributes to greater equality.

Thus, the relationship between education and income distribution is conditioned by several factors. The purpose of this section is to explore the nature of this relationship in the MENA region to find out whether or not investment in education contributed to positive changes in income distribution.

Education and Income Distribution: A Broad Perspective

In principle, the distribution of earnings from employment and from labor-intensive self-employment should be closely related to the distribution of education. Early work on income distribution by Kuznets (1956) and Adelman (1961) suggested that at very-low-income, low-average education, mainly agricultural societies, income is more equally

distributed because most workers have very low levels of education and are engaged in subsistence agriculture. Incomes are concentrated at low levels and that concentration dominates the distribution of income. As the level of education rises, the distribution of education becomes more unequal, these societies become more urbanized, and income distribution tends toward greater inequality; this is both because of differences between urban and rural incomes and because of greater income inequality within urban areas, where worker skills and the payoff to skills tend to vary more than they do in rural areas. Finally, according to Kuznets, as average education in societies reaches very high levels, the distribution of education becomes more equal again (now at a high level), and income distribution tends to become much more equal.

Adelman tested Kuznets' "inverted U" theory of income distribution by plotting the Gini coefficients in different countries against their GDP per capita. She showed that countries with very low levels of GDP per capita had, on average, smaller Gini coefficients (greater income equality) than did countries with middle-level GDP per capita. She also showed that countries with high GDP per capita had lower Gini coefficients than did middle-GDP per capita countries.

Yet, Adelman's confirmation of the "inverted U" theory does not seem to hold up in individual or groups of countries over time. Even when economies have gone through major changes in their structure as well as the educational structures of their labor forces, income distribution has changed little. For example, the Republic of Korea has undergone a profound transformation from a substantially rural society in the 1950s to a highly industrialized, high-income, highly educated economy in the 1990s, with little change in income distribution during that period. The changes that have occurred appear to have been more related to government income policies than to production and labor-force structural changes (Nam 1994). Another example that contradicts Kuznets' and Adelman's notion of rising and then falling inequality as economies develop is the United States. Income distribution in the United States became more equal in the 1920s–1940s, then stayed at that level of equality until the early 1970s despite rapid equalization of the distribution of education, then became steadily more unequal from the mid-1970s until the present, even as education distribution continued to equalize (Carnoy 1994).

More broadly, Bourguignon (2005) reviews the empirical literature on the relationship between income distribution and growth. On the impact of distribution on growth, he concludes that good theoretical arguments are available to predict both positive and negative effects, and that the empirical evidence is "inconclusive." On the impact of growth on distribution, he concludes that the results:

“... certainly do not imply that growth has no significant impact on distribution. Rather they indicate that there is too much country specificity in the way growth affects distribution for any generalization to be possible. Indeed, case studies, as opposed to cross-sectional studies, show that distributional changes have very much to do with the pace and structural features of economic growth in the period under analysis.” (Bourguignon 2005 p. 13)

Thus, the arguments about the overall forces that affect distribution have not been resolved. In light of this conclusion, what can be said about the relationship between education and income distribution in the MENA region? In particular, what can be said about the impact on income distribution of such variables as the distribution of years of education in the labor force, changes in the pattern of investment at various levels of education, and changes in the variance of the payoffs (rates of return) to investment in education? These questions are addressed below, following a review of income and education distribution in the MENA region.

The Education–Income Distribution Relationship in MENA

To the extent that education is extended to low-income groups, it enhances their earning capacity. This should improve income distribution, other things being equal. In the MENA region, available data suggest that income distribution improved over time, but no similar improvement, measured by the standard deviation of the average years of schooling, is observed over time.

Income distribution. Table 2.5 shows the Gini coefficients for the MENA region, as well as for East Asia and Latin America. Taken as given, the Gini coefficients for the MENA countries are much lower (more equal distribution) than those in Latin America and about the same as those in the more equal East Asian countries. The MENA region is more egalitarian on average than other regions.

Over time, the data also show that the Gini coefficients are improving in the MENA region and are stable or worsening modestly everywhere else. In Latin America, with the exception of Brazil, which has one of the most unequal income distributions in the world, income distribution in most countries seems to have become more unequal in the 1990s and 2000s. Income distribution in East Asia appears to have been more stable over time, except for China, where it is becoming more unequal starting from a very equal distribution, and for Thailand, where income distribution may be becoming more equal. In several countries of the

TABLE 2.5

Income Distribution, 1960–2003

(Gini Coefficients multiplied by 100)

	1960	1970	1980	1985–89	1990–95	1996–2000	2001–03
Algeria ^c	—	—	40.2	38.7	—	35.3	—
Egypt, Arab Rep. of	42 (44) ^a	38 ^b	32.1	—	32	28.9	34.4
Iran, Islamic Rep. of	—	44 (56) ^b	47.7	—	—	43	—
Jordan ^c	—	—	40.8	36.1	40.7	36.4	—
Morocco	50	49	39 ^c (52)	—	39.2 ^c	39.5 ^c	—
Tunisia ^c	42 (51)	44 (53)	42.7	43	40.2	41.7	39.8
Yemen, Rep. of ^c	—	—	33.6	—	—	33.4	—
Mean	44.7	43.8	39.4	39.3	38	36.9	37.1
China	—	—	30	32	38	40.3	—
Indonesia ^c	33	31 (46) ^b	34 (51)	32	33	—	34.3
Korea, Rep. of ^d	32	33	38	34	31.6	31.6	—
Malaysia	—	50	—	48.4	48.5	49.2	—
Philippines	50	49	—	45	45	46.2	46.1
Thailand	41	42	47	48	46 ^c (49)	41.4 ^c	43.2 ^c
Mean	39	41	37.3	39.9	40.4	41.7	41.2
Argentina	47	44	—	—	—	—	52.2
Brazil	60	61	—	60	60	59.1	59.2
Chile	—	46	53	53	56.5	57.5	57.1
Colombia	52	57	55	—	53.7	57.1	—
Mexico	53	54	51	55	50.3	51.9	54.6
Peru	60	57	49	—	44.9 ^c	46.2	49.8
Uruguay ^e	—	—	42	42	42	44.6	—
Mean	54.4	53.2	50	52.5	51.2	52.7	54.6

Sources: World Bank 2005a, Deininger and Squire 1996. Unless otherwise noted, Ginis are for distribution of individual gross income (before taxes and income and nonincome transfers).

Note: (): figure in parentheses indicates Gini coefficient if distribution based on individual incomes to compare with distribution based on household expenditures for the same year.

a. 1965.

b. 1975.

c. Ginis are for distribution of household expenditures.

d. Ginis are for distribution of household incomes.

e. Gini coefficient is for urban income distribution only.

MENA region, however, the distribution of consumption (and probably income as well) seems to have tended to greater equality in the 1990s.

This conclusion must be qualified, however. The data in table 2.5 represent three different measures of distribution: individual income distribution, household income distribution, and distribution of personal/household expenditures. Gini coefficients of individual income distribution are generally greater than those estimating household income distribution, and the Gini of household income distribution is generally larger than the Gini for the distribution of expenditures—because individuals and households with higher incomes tend to spend a smaller

fraction of their income, expenditure distributions are characterized by less variance than are income distributions.

Most estimates of distribution in the MENA countries use expenditure data, not income data. In some cases, it was possible to compare Gini coefficients for incomes in the same year as the Gini of expenditures. The Gini for income is always higher, and it gives an idea of how high the Gini coefficient would be in the MENA countries if we were measuring the distribution of income rather than expenditures. Thus, although the Gini coefficients for the MENA countries are much lower (more equal distribution) than those in Latin America and about the same as those in the more equal East Asian countries, it is likely that at least some (and perhaps a large part) of the difference in Gini coefficients between MENA and Latin America is an artifact of the use of expenditure data in MENA and of income data in Latin America. For example, in Tunisia, the Gini coefficient for individual income distribution is about 9 points higher than it is for consumption distribution. Tunisian consumption (and probably income) distribution has tended to become more equal—a smaller Gini coefficient—but the Gini coefficient for income distribution is probably about 0.48–0.50 in this period rather than the 0.39–0.41 shown for consumption expenditure distribution. This puts Tunisia at about the middle of Latin American income distributions and at about the same level of inequality as the Philippines, Thailand, or Malaysia; however, it is much less equal than Korea or China.

Notwithstanding the qualifications described above, the mostly cross-section data provided in table 2.6 give additional support to the conclusion that income distribution is relatively more equal in the MENA region compared to other regions. These data measure inequality in terms of the ratio of the income earned by the highest 20 percent of income earners to the lowest 20 percent of income earners in 1995 and 2002. The data only cover seven countries in the MENA region, none of which is from the Gulf States. Although these data suffer from some of the problems noted earlier, the pattern is clearly in favor of the MENA region. In particular, income distribution by this measure is more equal in the region compared to the countries in Latin America. And although some East Asian countries, such as South Korea and Indonesia, enjoy more equal income distribution than most MENA countries, the majority of countries in the region have better income distribution than do Malaysia and the Philippines.

The Distribution of Education

In contrast to the level and trends of income distribution in the MENA region, the distribution of education is becoming less equal

TABLE 2.6

Income Distribution as Measured by Ratio of Income Earned by Highest 20 Percent of Income Earners to Lowest 20 Percent of Income Earners, 1995–2002

	Year	% total income earned by lowest 20% of income earners	% total income earned by highest 20% of income earners	Ratio of income earned by highest 20% to lowest 20%
Algeria+	1995	7.0	42.6	4.7
Egypt, Arab Rep. of+	1999/2000	8.6	43.6	5.1
Iran, Islamic Rep. of+	1998	5.1	49.9	10
Jordan+	1997	7.6	44.4	5.8
Morocco+	1998/99	6.5	46.6	7.2
Tunisia+	2000	6.0	47.3	7.9
Yemen, Rep. of+	1998	7.4	41.2	5.6
Mean		6.9	45.1	6.8
Indonesia+	2002	8.4	43.3	5.2
Korea, Rep. of ^	1998	7.9	37.5	4.7
Malaysia^	1997	4.4	54.3	12.3
Philippines+	2000	5.4	52.3	9.7
Thailand+	2000	6.1	50.0	8.2
Mean		6.4	47.5	8.0
Argentina^	2001	3.1	56.4	18.2
Brazil^	2001	2.4	63.2	26.3
Chile^	2000	3.3	62.2	18.8
Colombia^	1999	2.7	61.9	22.9
Mexico+	2000	3.1	59.1	19.1
Peru^	2000	2.9	53.2	18.3
Uruguay (u)	2000	4.8	50.1	10.4
Mean		3.2	58.0	19.2

Source: World Bank 2005a.

Note: +: Data are for distribution of household expenditures; ^: Data are for distribution of household incomes; (u): Data are for urban income distribution only.

over time. Chapter 1 of this report shows that MENA countries made large investments in education in the 1970s, 1980s, and 1990s. The average education in MENA countries' labor forces increased from very low levels in the 1960s to about two years below the average education in labor forces in Latin American countries. At the same time, however, the dispersion of human capital, measured by the standard deviation from the average years of schooling in the population 15 years old or older during the period 1970–2000, has been rising (see table 1.5).

When we look at the Gini coefficients of the number of years of schooling for the same set of countries (table 2.7), both MENA and non-MENA countries exhibit an improvement over time. Gini coeffi-

TABLE 2.7

Gini Coefficients of the Distribution of Education, 1970–2000

	1970	1975	1980	1985	1990	1995	2000
Algeria	0.816	0.767	0.707	0.655	0.606	0.562	0.518
Bahrain	0.724	0.665	0.631	0.603	0.514	0.481	0.443
Djibouti	—	—	—	—	—	—	—
Egypt, Arab Rep. of	—	0.846	0.788	0.668	0.619	0.562	0.518
Iran, Islamic Rep. of	0.838	0.783	0.727	0.677	0.616	0.556	0.517
Iraq	0.852	0.807	0.732	0.744	0.677	0.622	0.605
Jordan	0.655	0.614	0.613	0.548	0.504	0.468	0.443
Kuwait	0.662	0.712	0.631	0.574	0.544	0.533	0.521
Lebanon	—	—	—	—	—	—	—
Libya	—	0.717	—	0.631	—	—	—
Morocco	—	—	—	—	—	—	—
Oman	—	—	—	—	—	—	—
Qatar	—	—	—	—	—	—	—
Saudi Arabia	—	—	—	—	—	—	—
Syrian Arab Rep.	0.713	0.674	0.617	0.562	0.518	0.481	0.458
Tunisia	0.818	0.758	0.693	0.670	0.616	0.571	0.538
United Arab Emirates	—	0.764	—	—	—	—	—
West Bank and Gaza	—	—	—	—	—	—	—
Yemen, Rep. of	—	0.991	0.957	0.910	0.846	—	—
Mean	0.760	0.758	0.710	0.658	0.606	0.537	0.507
China	—	0.552	0.507	0.493	0.419	0.401	0.383
Korea, Rep. of	0.510	0.389	0.333	0.281	0.210	0.198	0.192
Malaysia	0.547	0.514	0.471	0.454	0.420	0.392	0.379
Philippines	0.432	0.357	0.340	0.332	0.291	0.275	0.255
Thailand	0.425	0.433	0.371	0.400	0.404	0.398	0.391
Indonesia	0.586	0.581	0.505	0.438	0.581	0.536	0.502
Mean	0.500	0.471	0.421	0.400	0.388	0.367	0.350
Argentina	0.311	0.325	0.294	0.317	0.272	0.270	0.267
Brazil	0.540	0.465	0.484	0.482	0.437	0.434	0.429
Chile	0.383	0.387	0.370	0.367	0.368	0.374	0.372
Colombia	0.509	0.459	0.472	0.473	0.485	0.489	0.481
Mexico	0.511	0.498	0.497	0.469	0.384	0.373	0.358
Peru	0.492	0.490	0.414	0.424	0.418	0.359	0.361
Uruguay	0.392	0.348	0.357	0.335	0.343	0.346	0.346
Mean	0.448	0.425	0.413	0.410	0.387	0.378	0.373

Source: Thomas, Wang, and Fan 2001.

coefficients have been declining from very high values because, initially, a high fraction of the population had zero years of education. Thus, more individuals are being educated, even if the variance of years of schooling is increasing in the population. Even then, however, the education Gini coefficients for the MENA region are much higher than those of East Asia and Latin America, indicating more inequality in education in MENA.

Possible Interpretations of the Weak Education–Distribution Relationship

There are three possible explanations for the weak relationship between the observed improvements in the distribution of income in the MENA region and increased inequality in the distribution of years of education in a more educated labor force. The first is related to the pattern of public expenditure on various levels of education; the second is related to changes in the rates of return on education at different levels; and the third is related to female participation in the labor force. These explanations are taken up in turn.

Changes in the pattern of investment on different levels of education.

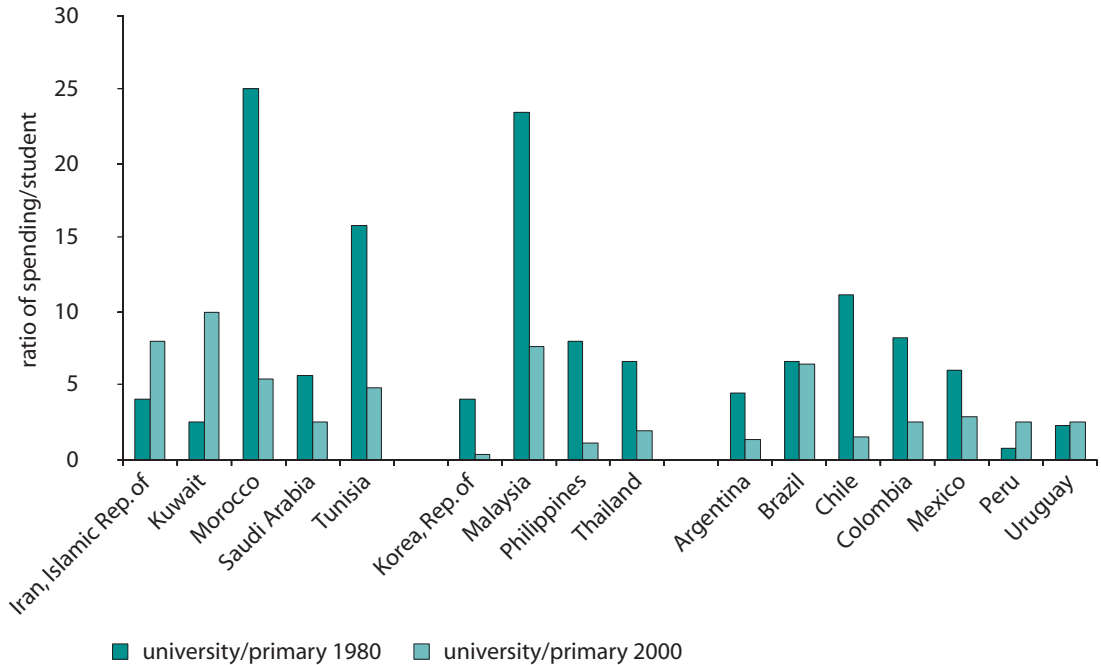
One human capital variable that helps predict changes in income distribution is changes in the pattern of expenditures on different levels of education. A shift in expenditure in favor of higher education tends to worsen income distribution, while a shift in favor of primary education is likely to improve income distribution. This is largely because students (and their parents) who can afford to forgo income (and incur cost) by enrolling in higher education tend to be better off than those who only satisfy themselves with basic education.

To explore what happened in the MENA region, figure 2.3 shows the ratio of public spending per pupil at the level of university relative to the amount spent per pupil in primary school in 1980 and 2000. The data are only available for five MENA countries (the Islamic Republic of Iran, Kuwait, Morocco, Saudi Arabia, and Tunisia), which we compare to a sample of countries from East Asia and Latin America. Although the sample is small, two noteworthy observations can be made. Between 1980 and 2000, almost all countries in the sample outside of the MENA region reduced their spending per student in university relative to basic education. In the MENA region, while Morocco, Saudi Arabia, and Tunisia did the same, Iran and Kuwait moved in the opposite direction during the same period. The second observation is that the average spending per pupil in higher education relative to basic education remained higher in the MENA region than did the corresponding ratio for comparator countries. Given that the distribution of the years of schooling among a more educated adult population in the MENA region has also become more unequal over time, higher spending per student in university relative to primary schools in the region relative to other regions may have diminished the potential equalizing effect of education in MENA.

Changes in the variance of the payoffs (rates of return) to investment in education. What about changes in the relative payoff to different levels

FIGURE 2.3

Ratio of Public Spending per Student in University Compared to Primary School, 1980 and 2000



Source: Author's calculations based on the World Bank WDIs.

of education, which earlier was assumed to be constant? This is probably the most important predictor of how investment in human capital can alter income distribution over time. If the rate of return to higher education increases faster than the rate of return to basic education, those with higher education (and initial higher earnings) will see their earnings go up more rapidly than those with lower levels of schooling (and lower initial earnings). This trend would worsen income distribution, other things being equal.

Table 2.8 presents a set of rates of return for four MENA countries as well as for a sample of countries from Asia and Latin America. Comparing these rates of return across regions suggests that the payoffs to university, while higher than to investment in lower levels of schooling in MENA, are low compared to the corresponding rates in Latin America and East Asia. The low variations in the rates of return to different levels of education in MENA have the effect of equalizing income, even if at low levels of earnings. The second observation is that the rates of return are not rising in MENA countries over time. That also works in the same equalizing direction. The reason for both observations is that MENA countries have on average experienced very low levels of eco-

TABLE 2.8

Private and Social Rates of Return to Education by Level of Education, 1970s–1990s

(percent annually per year of schooling within level)

	Private rate of return			Social rate of return		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
Egypt, Arab Rep. of 1988*	5	6	9	—	—	—
Egypt, Arab Rep. of 1998*	5	6	8	—	—	—
Jordan 1997*	3	4	7	—	—	—
Jordan 2002*	2	4	9	—	—	—
Morocco 1991*	8	10	12	—	9	10
Morocco 1999*	5	8	9	—	8	9
Yemen, Rep. of 1997*	3	2	5	—	—	—
Indonesia 1977	—	25	16	—	—	—
Indonesia 1978	—	—	—	22	16	15
Indonesia 1989	—	—	—	—	11	5
Korea, Rep. of 1974	—	20	19	—	16	12
Korea, Rep. of 1979	—	14	19	—	11	12
Korea, Rep. of 1986	—	10	19	—	8	12
Philippines 1971	9	6	10	7	6	8
Philippines 1977	—	—	16	—	—	8
Philippines 1988	18	10	12	13	9	10
Argentina 1985	30	9	11	—	—	—
Argentina 1987	—	14	12	—	12	11
Argentina 1989	10	14	15	8	7	8
Argentina 1996	—	16	16	—	12	12
Brazil 1970	—	25	14	—	24	13
Brazil 1989	37	5	28	36	5	21
Chile 1976	28	12	10	12	10	7
Chile 1985	28	11	10	12	9	7
Chile 1987	—	19	20	—	15	15
Chile 1989	10	13	21	8	11	14
Chile 1996	—	16	20	—	11	17
Colombia 1973	15	15	21	—	—	—
Colombia 1989	28	15	22	20	11	14
Mexico 1984	22	15	22	19	10	13
Peru 1980	—	—	—	41	3	16
Peru 1990	13	7	40	—	—	—
Peru 1997	—	8	12	—	7	11
Uruguay 1987	—	19	18	—	19	16
Uruguay 1989	—	10	13	—	8	12
Uruguay 1996	—	36	12	—	30	10

Sources: Egypt (1988, 1998), Jordan (1997), Morocco (1991, 1999), and Yemen (1997): World Bank 2004 (staff estimates). Jordan 2002: calculations based on HEIS Survey 2002. East Asia and Latin American countries: Allen 2001, CRESUR 2004.

Note: *Males only, simple average of private and public sector rates. All other countries— males and females combined or simple average of male and female rates of return when rates are estimated separately.

conomic growth in the last two decades, as noted earlier in this chapter; this must have dampened the returns to higher education.

Female participation in the labor force. One final possible explanation as to why MENA income distributions may be more equal than those in Latin America when education distribution is becoming less equal over time is that a smaller percentage of the labor force in MENA is female (see table 2.9). Because women generally earn lower incomes than men,

TABLE 2.9

Female Labor Force Participation Rates, 1980–2003, by Country

(percent)

	1980	1990	1995	2000	2001	2002	2003
Algeria	21.4	21.1	24.4	27.6	28.4	29.2	29.9
Bahrain	11.0	17.0	18.9	21.7	22.1	22.5	22.9
Djibouti	—	—	—	—	—	—	—
Egypt, Arab Rep. of	26.5	27.1	28.9	30.5	30.8	31.1	31.4
Iran, Islamic Rep. of	20.0	20.3	23.5	27.0	27.8	28.6	29.4
Iraq	17.3	16.3	18.0	—	—	—	—
Jordan	14.6	17.1	20.4	23.9	24.4	25.0	25.5
Kuwait	13.0	22.8	19.2	21.5	22.3	23.2	23.9
Lebanon	22.7	26.6	28.2	29.3	29.6	29.9	30.2
Libya	18.6	18.4	20.9	23.4	23.8	24.2	24.7
Morocco	33.5	34.5	34.6	34.7	34.9	35.0	35.2
Oman	6.3	10.7	13.7	17.2	18.2	19.1	20.1
Qatar	6.4	11.7	14.5	16.6	17.1	17.5	17.9
Saudi Arabia	7.6	11.4	14.6	17.7	18.6	19.4	20.2
Syrian Arab Rep.	23.5	24.4	25.6	26.9	27.3	27.6	27.9
Tunisia	28.9	29.1	30.5	31.9	32.2	32.5	32.7
United Arab Emirates	5.1	10.7	11.7	13.2	13.6	14.1	14.5
West Bank and Gaza	—	—	—	11.5	11.9	12.4	12.8
Yemen Rep. of	32.5	29.7	29.2	28.6	28.7	28.8	28.9
Mean	18.2	20.5	22.2	23.7	24.2	24.7	25.2
China	43.2	45.0	45.2	45.1	45.1	45.1	45.0
Indonesia	34.8	38.1	39.2	40.5	40.8	41.0	41.2
Korea, Rep. of	38.7	39.3	40.3	41.4	41.1	40.9	40.7
Malaysia	33.7	35.0	36.3	37.6	37.9	38.1	38.4
Philippines	34.7	36.5	37.2	37.9	38.1	38.2	38.3
Thailand	47.6	47.2	47.0	47.1	47.1	47.0	47.0
Mean	38.8	40.2	40.9	41.6	41.7	41.7	41.8
Argentina	27.6	28.5	30.9	33.3	33.9	34.5	35.1
Brazil	28.4	34.8	35.2	35.5	35.5	35.5	35.5
Chile	26.3	29.9	31.8	33.6	34.1	34.6	35.1
Colombia	26.2	36.0	37.7	39.1	39.3	39.5	39.7
Mexico	26.9	30.0	31.7	33.8	34.0	34.2	34.4
Peru	23.9	27.5	29.6	30.9	31.2	31.5	31.8
Mean	26.6	31.1	32.8	34.3	34.7	35.0	35.3

Source: The World Bank, *Government Development Finance* and *World Development Indicators* central database (accessed in August 2005).

as more women enter the labor force, this may make income distribution more unequal, particularly if the women who enter the labor force are the less educated. On the other hand, if most women who work have higher levels of education, this may actually equalize income distribution, because it drives down the average levels of income among the top 20 percent of income earners.

In MENA countries, a much higher percentage of women with higher education compared to those with lower education participate in the labor force, and this difference in participation is greater than it is in Latin America or East Asia. Thus, if anything, women's participation in the labor force in MENA countries tends to make income distribution stay more equal than in other regions.

Education and Poverty Reduction

Finally, consider the relationship between education and poverty. Here, conventional wisdom has it that economic growth is the key to a successful poverty-reduction strategy. This view is well articulated in the 2000–2001 World Development Report, *Attacking Poverty*, which states that:

“Growth is essential for expanding economic opportunity for poor people—though this is only the beginning of the story of public action... The question is how to achieve rapid, sustainable, pro-poor growth. A business environment conducive to private investment and technological innovation is necessary, as is political and social stability to underpin public and private investment. And asset and social inequalities directly affect both the pace of growth and the distribution of its benefits.” (p. 38)

Although growth is considered only a necessary but not a sufficient condition for poverty reduction, the emphasis in the above view is clearly placed on growth and its determinants.

In a departure from conventional wisdom, Burguignon (2005, p. 2) argues that, although the relation among poverty, economic growth, and income distribution varies across countries and with different development levels and income distribution, “An arithmetic identity links the growth of the mean income in a given population with the change in distribution—or in ‘relative’ incomes—and the reduction of absolute poverty.” In other words, poverty reduction is a byproduct of the interaction between the rate of growth of the mean income of the population and the change in the distribution of income. Clearly, the emphasis here

is placed equally on economic growth and income distribution rather than on growth and how distribution may impact it.

Bourguignon's argument has important implications for exploring the role that investment in education may have played in reducing poverty in the MENA region, which is the subject of this section. It suggests that the best way of proceeding is by looking at how education may have affected economic growth and distribution. In addition to reiterating the salient points of these discussions, this section also shows how education may have affected poverty through its influence on population growth in MENA.

Trends in Poverty Reduction

What is the level of poverty in the MENA region? What happened to poverty in the region over time? And how does the region compare with other developing countries?

The answer to these questions is that the region did well, both in terms of reducing poverty over time and in comparison with other regions.

The data provided in table 2.10 show an interesting pattern. Over the last 20 years, East Asia and the Pacific (dominated by the data from China) has had the largest proportion of persons with low incomes (i.e., those living on less than \$1 or \$2 per day) of the three regions; however, it also registered the greatest decline in the proportion of low-income earners during this period. In 1981, Latin America and MENA had much lower proportions than East Asia of low-income persons. However, these proportions hardly changed in Latin America, so that the East Asian figures, which had been much higher in 1981, had sharply reduced the gap with Latin America by 2001. MENA did better in the last two decades. The proportion of the population in that region living on less

TABLE 2.10

Share of People Living on Less than \$1 and \$2 per Day by Region, 1981–2001

(percent)

	1981	1984	1987	1990	1996	2001
East Asia and Pacific						
< \$1 per day	57.7	38.9	28.0	29.6	16.6	14.9
< \$2 per day	84.8	76.6	67.7	69.9	53.3	47.4
Latin America and the Caribbean						
< \$1 per day	9.7	11.8	10.9	11.3	10.7	9.5
< \$2 per day	26.9	30.4	27.8	28.4	24.1	24.5
MENA						
< \$1 per day	5.1	3.8	3.2	2.3	2.0	2.4
< \$2 per day	28.9	25.2	24.2	21.4	22.3	23.2

Source: Table 2.5, World Bank 2005.

than \$1 per day dropped to about 2 percent in 2001, and those living on less than \$2 per day fell below the Latin American proportion, even though this represented a small decline compared with 1981.

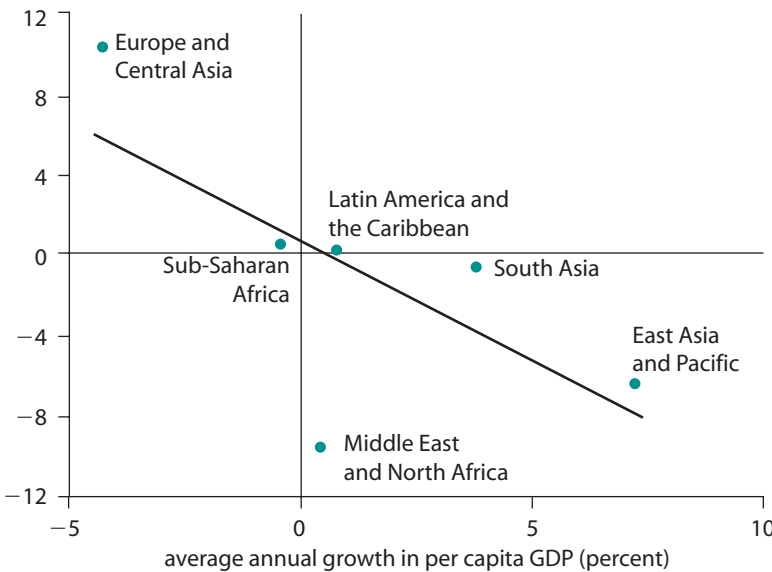
Figure 2.4 depicts the changes in poverty reduction against per capita GDP growth rate by region in the 1980s and 1990s. It shows that MENA, Latin America, and East Asia all had positive per capita growth in these two decades, but that East Asia’s was much higher. It also shows that poverty reduction in Latin America was much lower during this period than it was in East Asia, as might be expected (see trend line). Yet MENA’s rate of poverty reduction was not far from East Asia’s, despite MENA’s much lower rate of growth of per capita GDP.

Table 2.11 provides additional data on poverty rates in the 1990s, in this case by country within regions. Reported poverty rates in this table are measured in terms of each country’s national definition of poverty, so they should be interpreted with some care. Nevertheless, once again the data suggest that, generally, poverty rates are lower in East Asia and MENA than in Latin America, and are declining within the countries in the region that have had more rapid rates of growth. For example, in MENA, the poverty rate rose in Morocco in the 1990s because of a very slow rate of growth (GDP per capita increased only 7 percent in the entire decade), but it fell in Egypt, where the growth rate was higher (a 22

FIGURE 2.4

Economic Growth and Poverty Reduction by Region, 1980–2000

(percent)



Source: Adapted from World Bank 2001 (figure 3.3).

TABLE 2.11

Proportion of Population under Poverty Line, 1990s

	National population below the poverty line		Urban population below the poverty line	
	1995	1998	1995	1998
Algeria	22.6	12.2	14.7	7.3
Egypt, Arab Rep. of	22.9	16.7 (1999)	22.5	—
Jordan	15.0 (1991)	11.7 (1997)	—	—
Kuwait	—	—	—	—
Morocco	13.1 (1990)	19.0	7.6 (1990)	12.0
Tunisia	7.4 (1990)	7.6 (1995)	3.5 (1990)	3.6 (1995)
Yemen, Rep. of	—	41.8	—	30.8
Mean	16.2	18.2	18.6	13.4
China	6.0 (1996)	4.6	<2 (1996)	<2
Korea, Rep. of	—	—	—	—
Malaysia	15.5 (1989)	—	—	—
Philippines	40.6 (1994)	36.8 (1997)	28.0 (1994)	21.5 (1997)
Thailand	18.0 (1990)	13.1 (1992)	—	10.2 (1992)
Mean	20.0	18.2		
Argentina	—	—	28.4	29.9
Brazil	23.9 (1996)	22	15.4 (1996)	14.7
Chile	19.9 (1996)	17	—	—
Colombia	60.0	64.0 (1999)	48	55.0 (1999)
Mexico	10.1 (1988)	—	—	—
Peru	53.5 (1994)	49.0 (1997)	46.1 (1994)	40.4 (1997)
Mean	33.5	38.0	34.5	35.0

Source: World Bank 2005.

Note: < 2: less than 2.

percent increase in GDP/capita for the decade). Jordan and Algeria's poverty rates fell despite low economic growth in the 1990s.

Education, Growth, and Poverty Reduction

The positive influence of economic growth on poverty reduction is supported by several studies. For example, Chen and Revallion (2002) show that economic growth is highly correlated with “absolute poverty”—that is, per capita consumption and a reduction in the percentage of the population living on less than \$1 per day. In some countries, growth is associated with much more poverty reduction than in others. On average, however, every additional percentage of growth in average household consumption in the 1980s and 1990s across 65 developing countries reduced the share of people living on less than \$1 per day by about 2 percent (World Bank 2001, figure 3.3).

The positive effect of economic growth on reducing poverty is also evident from historical trends. In Europe and the United States, long-

term economic growth since the beginning of the nineteenth century reduced poverty in 180 years from levels near three-quarters of the population to under 15 percent in the United States and far less in other countries (Bassanini and Scarpetta 2001). China's rapid growth since 1980 has reduced the proportion of the population living on less than \$1 per day from 64 percent in 1981 to 17 percent in 2001, and the population living on less than \$2 per day from 88 percent to 47 percent (World Bank 2005, table 2.5). Korea eliminated poverty in one generation through extraordinarily rapid and sustained economic growth.

If higher growth can substantially reduce poverty, how can investing in education contribute to higher economic growth? This issue was discussed earlier in the chapter, and the conclusions are mixed. Investment in human capital *should* contribute to growth, and probably does. Yet, because investment in education takes place in young people, and the payoff to such investment occurs over a long period of time, it is difficult to show with available data the effects of educational investments in more recent years (the 1980s, for example), when secondary and higher education expanded rapidly in Latin America and the MENA countries. Initial levels of education in the 1960s show a significant influence on later growth rates, so according to these empirical estimates, MENA countries, which had very low educational levels in the 1960s, were predicted to have much lower growth rates than East Asia in the 1980s and 1990s.

That's not the whole story, however. Investing in education apparently contributes much more to growth when those who are educated have the opportunity to use their education in more productive activities. In MENA, these opportunities have been more limited than in East Asia, for example, mainly because there has been less investment in manufacturing, high-value-added agriculture, and high-value-added services in MENA than in East Asia. A high fraction of the highly educated individuals in MENA are employed in the public sector, whereas in East Asia, a high fraction works in manufacturing and high-value-added services.

Education, Income Distribution, and Poverty Reduction

Why does MENA have poverty rates that are as low as or lower than those of East Asia and Latin America when its economic growth rates have been no higher than, say, Latin America's, and much lower than East Asia's? One answer is that, "For a given rate of growth, the extent of poverty reduction depends on how the distribution of income changes with growth and on initial inequalities in income, assets, and access to opportunities that allow poor people to share in growth." (World Bank 2001, p. 52)

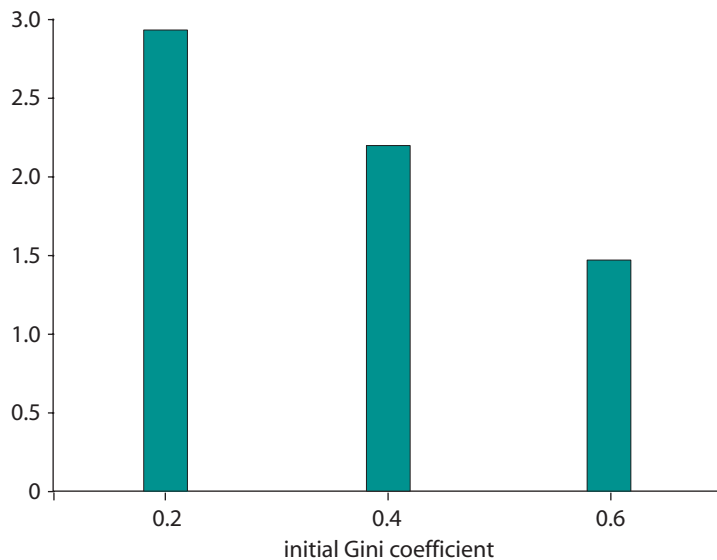
In general, the more equal the initial distribution of income, the more poverty is reduced for a given rate of economic growth (figure 2.5). Because MENA countries such as Algeria, Egypt, Iran, Jordan, Morocco, and Tunisia have income distributions with a Gini coefficient of about 0.35–0.45, whereas many East Asian economies (other than Korea and Indonesia, and perhaps China) are closer to 0.45–0.50 (see table 2.5), this alone could explain a difference of a few percentage points of annual reduction in poverty for each percentage of per capita income growth. Further, because East Asian countries have had per capita economic growth rates that are even greater than this (about 6 percent higher than the average MENA per capita growth rate in 1980s and 1990s), this has more than offset the income distribution effect. The main point, however, is that more equal income distribution in the MENA countries probably has had a positive effect on poverty reduction—enough so that poverty rates are low in MENA despite slower economic growth rates than in East Asia, and much lower than in Latin America despite similar growth rates in that region.

A recent report on poverty reduction and social development in the MENA region (World Bank 2005) makes the point this way:

The move from a statist toward a market-oriented economic system carries implications for economic growth and social develop-

FIGURE 2.5

Average Annual Reduction in Incidence of Poverty Associated with 1 Percent Increase in Average per Capita Consumption



Source: Adapted from World Bank 2001 (figure 3.6).

ment. At some risk of oversimplification, it might be argued that market-oriented systems are better at producing economic growth but worse at ensuring equitable social development in terms of poverty reduction and improvements in access to education and health. If so, one would expect higher growth and poorer social development performance in MENA to have resulted from the ongoing transition in economic regimes. As it turns out, however, the opposite has happened. Economic growth collapsed in the region during the 1980s and has been quite low during the 1990s. At the same time, poverty and social development indicators, and especially the latter, have been more robust than could have been expected on the basis of the weak growth performance alone. This suggests the successful operation of an activist social policy that sought to protect social development objectives despite low growth and associated fiscal constraints (World Bank 2005, p. 1).

As economies grow, income distribution may change, and this too changes the reduction of poverty rates over time. Bourguignon (2005) shows that the effect on poverty of a change in income distribution can be sizable. This effect is large both when countries with relatively unequal income distributions reduce income inequality and when countries with relatively lower levels of income inequality become more unequal. The question of concern here is what the role of education is in effecting the changes in income distribution, and thus poverty, in the MENA region.

As noted above, the effect of education on income distribution varies with the pattern of investment across levels of education and changes in the rates of return to different levels of education. In most countries, the rates of return to primary and secondary education declined in the 1980s and 1990s, whereas the rates of return to higher education increased. This probably has had the effect of offsetting any increases in income equality resulting from equalizing the distribution of education in a society. Thus, even as young people from lower-income families increased their average level of education relative to the education of youth from higher-income families, the payoff to lower-income youth fell on the education they received compared to the payoff to the higher levels of education taken by youth from higher-income families.

With respect to the MENA region, the overall contribution of increasing the average level of education in the population does not seem to have contributed much to greater income equality. Surely, many countries in the region expanded educational attainment rapidly in the 1980s and 1990s, and tended to expand from the “bottom”—that is, investing first in universal primary education, then expanding secondary educa-

tion, and so forth. This pattern of expansion must have contributed to more equal distribution of education among those in the labor force, and possibly to improved income distribution, hence to poverty reduction. However, this equalizing force was dampened by the low rates of return on education and their change over time. The payoffs to higher education in MENA countries were lower than they were in Latin America and East Asia, and the changes in these payoffs to higher education in the region during the 1980s and 1990s were relatively small. One exception to the above pattern of expansion was Egypt, where heavy investment in higher education in the 1980s preceded full enrollment of children in primary schools. This may have contributed to making income distribution more unequal (still at a relatively moderate Gini coefficient) in the late 1990s, but even so, the effect was small.

Other factors besides education can and do influence income distribution and poverty. One of these factors is direct income support to the poor by the state, and indeed, governments in many countries, such as Egypt and Jordan in the MENA region and Taiwan and China in East Asia, have actively pursued redistributing income through various mechanisms (although Chinese redistribution policies are on the wane). These policies seem to have had a much more direct effect on reducing poverty than educational investment policies because they directly affect the incomes of lower-income families rather than depending on the indirect effects of educational investment (and changing market returns). The influence of “Arab socialism” in Algeria, Egypt, and Syria continues to be important. In addition, the oil countries essentially guarantee natives an income floor, including state-provided health services and other family benefits.

Education, population growth, and poverty. Investment in women’s education can have a positive effect on equalizing incomes and reducing poverty through lowering fertility rates in lower-income families and through increasing family incomes, possibly more at lower income levels than at higher income levels. Because MENA countries delayed investment in education—especially women’s education—far longer than Latin American or East Asian countries did—the MENA region is generally characterized by much higher fertility rates (table 2.12) and population growth rates (figure 2.6). Because lower-income families tend to have more children than higher-income families, these higher fertility rates have three effects:

- They increase poverty rates, because lower-income families need more resources to maintain their larger numbers of children;
- They increase the costs of education, because lower-income families with more children have fewer resources and fewer resources per child

TABLE 2.12

Fertility Rates, 1962–2003

(number of children per women of child-bearing age)

	1962	1972	1990	1997	2003
Algeria	7.4	7.4	4.5	3.5	2.7
Bahrain	7.2	6.2	3.8	3.3	2.3
Djibouti	6.9	6.7	6.0	5.5	5.2
Egypt, Arab Rep. of	7.1	5.5	4.0	3.6	3.1
Iran, Islamic Rep. of	7.3	6.5	4.7	2.8	2.0
Iraq	7.2	7.1	5.9	4.7	4.1
Jordan	—	—	5.4	3.9	3.5
Kuwait	7.3	6.9	3.4	2.9	2.5
Lebanon	6.4	4.9	3.2	2.5	2.2
Libya	7.2	7.6	4.7	3.8	3.3
Morocco	7.2	6.9	4.0	3.1	2.7
Oman	7.2	9.3	7.4	4.8	4.0
Qatar	7.0	6.8	4.3	2.8	2.5
Saudi Arabia	7.3	7.3	6.6	5.7	5.3
Syrian Arab Rep.	7.5	7.7	5.3	4.0	3.4
Tunisia	7.2	6.2	3.5	2.4	2.0
United Arab Emirates	6.9	6.4	4.1	3.5	3.0
West Bank and Gaza	—	—	—	5.5	4.9
Yemen, Rep. of	7.6	7.7	7.5	6.4	6.0
Mean	7.1	6.9	4.9	3.9	3.4
China	7.6	4.9	2.1	1.9	1.9
Indonesia	5.4	5.4	3.1	2.8	2.4
Korea, Rep. of	5.4	4.1	1.8	1.6	1.5
Malaysia	6.7	5.2	3.8	3.3	2.8
Philippines	6.6	5.5	4.1	3.6	3.2
Thailand	6.4	5.0	2.3	1.9	1.8
Mean	6.3	5.0	2.8	2.5	2.3
Argentina	3.1	3.2	2.9	2.6	2.4
Brazil	6.2	4.7	2.7	2.3	2.1
Chile	5.3	3.6	2.6	2.3	2.2
Mexico	6.8	6.5	3.3	2.6	2.2
Peru	6.9	6.0	3.7	3.1	2.7
Mean	5.6	4.8	3.0	2.6	2.3

Sources: World Bank, Global Development Finance and World Development Indicators central database (accessed in February 2006).

to invest in the education of their children, putting increased pressure on state resources to provide them a given quality of education;

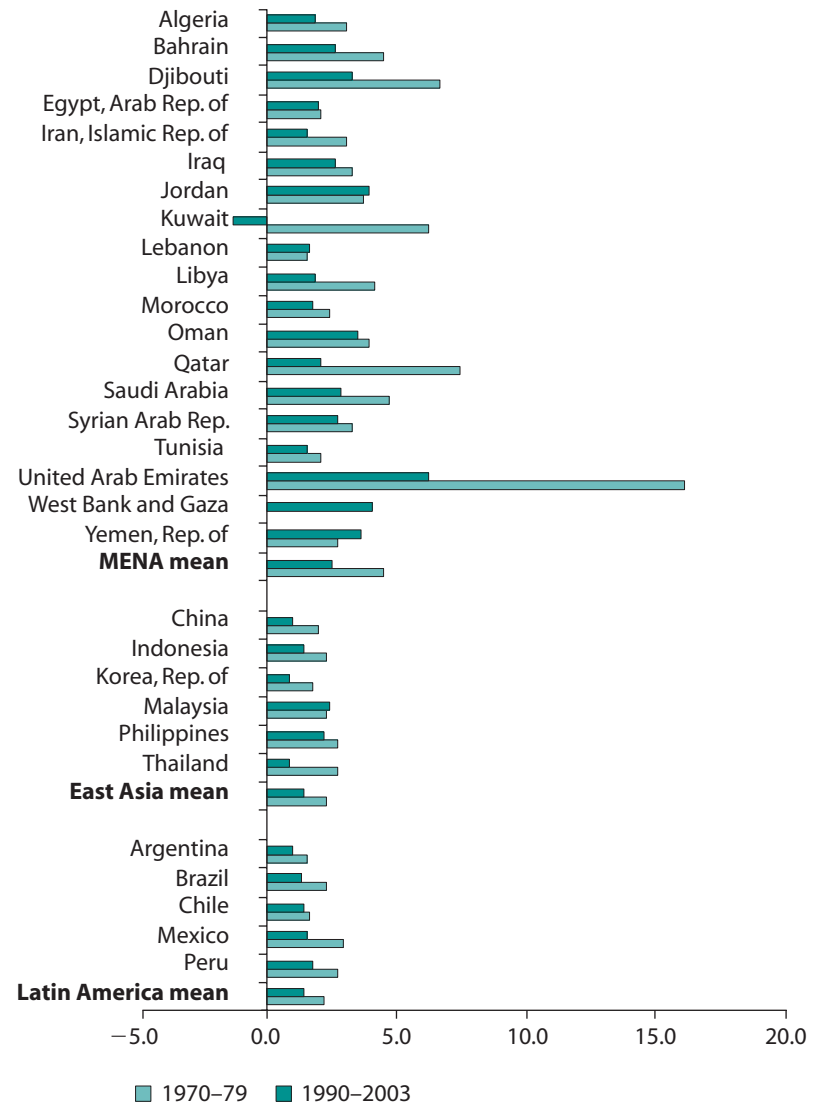
- They raise the cost of programs of direct intervention in poverty reduction.

The good news for the MENA region is that the trends of gender parity in education and women's participation in the labor force have improved over the last few decades. By now, gender parity in education has

FIGURE 2.6

Population Growth Rate by Country and Region, 1970–79 and 1990–2003

(percent)



Source: World Bank, *Global Development Finance* and *World Development Indicators* central database (accessed in August 2005).

almost been achieved by most countries in the region. Simultaneously, women’s participation in the labor market is on the rise, especially among the educated. Not surprisingly, women’s fertility rates declined from an average of 7.1 children in 1962 to 3.4 in 2003. While the most recent fertility rates for the region are still higher than those of East Asia

and Latin America, the gap is all but vanishing. These developments are likely to contribute to poverty reduction in the future.

Summing Up

This chapter has argued that the relationship between human capital and economic growth is highly conditioned by the quality and distribution of education in the labor force and the economic structure of each country. Investing in more and better-distributed education in the labor force helps create conditions that could lead to higher productivity and higher economic growth, but this is by no means sufficient. It is also necessary to adopt policies that lead to the creation of diversified, dynamic, and competitive sectors capable of absorbing the more educated labor force to translate human capital into higher economic growth. The evidence supports the view that countries that combine both do better on average than those that do one without the other.

The story of the MENA region is simply one of catching up on both fronts. There are exceptions but, as discussed in chapter 1, most MENA countries have yet to reach the level and quality of human capital of the more dynamic economies in the developing world. In addition, most countries in the MENA region have yet to develop economically into modern, industrialized productive structures capable of absorbing a significant fraction of the labor force into high-productivity jobs. Short of making a leap forward in both areas, further investment in education is likely to go unrewarded.

As for the relationship between education and income distribution, it has been shown that income distribution in the MENA region is somewhat more equal than it is in many other developing countries, and may have become more equal in several key MENA countries over the past 15–20 years. The analysis of education and economic growth earlier in this chapter provides some clues as to why this might be the case. A very high fraction of university graduates is employed in the public sector in MENA, and only a small fraction is employed in the private sector. This pattern contrasts starkly with East Asia and some countries of Latin America, where a significant fraction of the more educated is employed in rapidly growing manufacturing or financial and business services. These sectors usually reward higher education with greater earnings than a public bureaucracy does.

Another, related reason is that the expansion of education in the population in MENA has been rapid compared to job growth. Given that there are relatively few job opportunities outside government for secondary and university graduates, the expansion of education has pro-

duced a large surplus of graduates, high unemployment, and long waits for government jobs. This means that rates of return to higher education are probably not rising, as they are in East Asia and Latin America. These low rates of return to higher education in MENA are likely the main factor in explaining the somewhat more equal income distributions in MENA countries in comparison with East Asia and Latin America.

In addition, income distribution may have remained somewhat more equal in the MENA region than in Latin America because the participation of women in the labor market in MENA over the past 20 years has tended to include the better educated, whereas in Latin America and East Asia, a much higher proportion of the growth in female employment has been among less-educated women entering the manufacturing sector. Because these women are near the bottom of the income scale, this tends to make income distribution more unequal in Latin America and East Asia relative to MENA.

Finally, neither growth rates nor education appear to have contributed to the low poverty levels of MENA countries. Growth rates were very modest in the last two decades and the returns to education were low. Rather, the main reasons for low poverty rates in MENA seem to be: (1) relatively moderate and somewhat declining inequality of income distribution, so whatever growth rates in GDP per capita occurred, they contributed to higher consumption per capita for the poor, and thus lower poverty rates; and (b) income support programs, especially for poor families.

A third factor is the increase in women's education and participation in the labor force. These trends appear to have contributed to lower fertility and population growth rates across a wide range of groups including lower-income families. Beside reducing the cost of government welfare and the cost of providing education, lower fertility and population growth rates could diminish the negative distributional impact of diverging rates of return on higher relative to lower education that are often associated with the deployment of the educated labor force into the more dynamic sectors of the economy.

Endnotes

1. In the 1990s, new econometric tools introduced a temporal dimension into cross-country estimates. These panel analyses (Knight, Loayza, and Villanueva 1993; Islam 1995; Judson 1995; Berthelémy, Dessus, and Varoudakis 1997; Bassani and Scarpetta 2001; and Dessus 2001) start with the results obtained by Mankiw, Romer, and Weil 1992 (MRW) and show how the integration of a temporal dimension modifies the results. The results are mixed as well.

2. Measured by Gini coefficients, the distribution of education has improved in MENA as well as elsewhere, but MENA has consistently fallen below other regions, as discussed below.

3. There are wide variations within MENA, however. The Moroccan administration employs only 10 percent of the working population, but Egypt and Jordan employ approximately 35 percent. The situation is more extreme in the oil-producing countries, where more than 70 percent of the working population is employed by the state.

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