Building Human Capital for Economic Development in the Arab Countries

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Abstract

This paper explores the effectiveness of education and training programs in providing the human capital needed for economic development in Arab countries. It reviews educational attainment and the pattern of expenditures on education in these countries. Further, it assesses the rate of return on investment in education as well as the impact of education on enhancing technological capacity and reducing unemployment.

On the basis of the analysis, the paper proposes a reform strategy that aims to improve the effectiveness of the education system. The components of this strategy include developing monitoring indicators, expanding private sector participation in the provision of educational services, improving internal efficiency, and increasing the flow of information about the educational system.

ملخص

تناقش هذه الدراسة مدى كفاءة نظم التعليم وبرامج التدريب المطبقة في الدول العربية في توفير رأس المال البشري اللازم لتحقيق التنمية الاقتصادية. وفضلا عن استعراض نمط الإنفاق على التعليم في هذه الدول، تقوم الدراسة بتحليل إنجازات التعليم وتقدير معدل العائد على الاستثمار في هذا القطاع، وكذلك انعكاساته على تدعيم الطاقة التكنولوجية وتخفيض معدلات البطالة.

واستنادا إلى التحليل السابق، تقترح الورقة تبني إستراتيجية للإصلاح تستهدف رفع كفاءة وفاعلية نظام التعليم. وتضم هذه الإستراتيجية مجموعة من الإجراءات من أهمها: استحداث مؤشرات للمراقبة؛ زيادة مشاركة القطاع الخاص في توفير الخدمات التعليمية؛ تحسين الكفاءة الداخلية؛ وأخيرا، ضمان توفير معلومات آنية حول نظام التعليم.

I. Introduction

This paper explores the effectiveness of education and training programs in providing the human capital needed for economic development in Arab countries. It addresses such questions as: (a) are the returns on education commensurate with expenditures? (b) do the incentive structures motivate teachers to teach, encourage students to learn, and prompt bureaucrats to monitor? and (c) what are the lessons of experience that could be applied to make education more effective in the Arab region?

The issues addressed in this paper raise fundamental questions regarding the links between education, human capital formation, and economic development. One interpretation of this relationship, albeit narrow, would be to relate per worker output as an indicator of development performance to human capital appropriately measured.[1] The trouble is that the extensive literature following this interpretation shows that the relationship is negative, though not statistically significant. This means that an increase in human capital, however measured, does not contribute to development.

But there is a broader interpretation. Economic development broadly defined has come to mean more than increases in per capita income. According to a recent book by Professor A. K. Sen (1999: 3), the Noble Prize winner for Economic Science in 1998, "in analyzing social justice, there is a strong case for judging individual advantage in terms of the capabilities that a person has, that is, the substantive freedoms he/she enjoys to lead the kind of life he/she values." Among the various substantive freedoms is the ability to read and write and contribute meaningfully to the literary life of the community. In the context of this wider approach to development, education is seen as a human right. This is a much richer and deeper interpretation, but it is also much harder to put into practice.[2] The best known attempt to adopt this interpretation is the United Nations Development Program's (UNDP) human development index (HDI).

This paper addresses the issues at hand from a development perspective; no claim is being made to address educational reforms, in general, nor in specific Arab countries.

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[1] See Hall and Jones (1999) for the use of per worker income as the indicator of long-run performance of nations.

[2] The approach is consistent with the Universal Declaration of Human Rights which states in Article 26(1) that "everyone has a right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory." See UNESCO (2000) for a historical review of the commitment of the international community to the cause of education including the "World Conference for Education for All" held in Jomtien, Thailand in 1990.

Moreover, the analysis is constrained by available data. The remainder of the paper is organized as follows. Section II characterizes the economic diversity in Arab countries and explores their educational achievements and expenditures on education. Section III analyzes a number of possible relationships between education and development including education and technological capacity, the effect of education on economic performance, the rate of return on investment in education, and the impact of education on unemployment. Section IV reviews lessons of experience and offers some concluding remarks.

II. The Track Record

Economic Diversity in Arab Countries

Arab countries exhibit great diversity in their economic structure. According to the Economic Research Forum (ERF, 1998), Arab countries could be grouped into four broad categories: mixed oil producers (MOP) including Algeria, Libya, and Iraq; the Gulf Cooperation Council (GCC) countries including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates (UAE); diversified economies (DE) which include Egypt, Jordan, Morocco, Lebanon, Syria, and Tunisia; and primary producers (PP) including Comoros, Mauritania, Sudan, Djibouti, and Yemen.[3] In 1998, the total population of the Arab world was estimated at 258 million (4.4% of the population of the world).

In 1998, the Arab world produced goods and services worth US$ 587.5 billion at current prices. This amounts to a per capita income of $2,282 per annum. This average, however, does not account for significant variations among countries and sub-groups. At the country level, per capita GDP varied from a high of $17,222 for UAE, to a low of $325 for Yemen. At the sub-regional level, the highest GDP was recorded for GCC as $231.5 billion and a per capita income of $7,901, followed by that of MOP with a GDP of $124.8 billion and a per capita income of $2,386. DE ranked third with a GDP of $162.5 billion and a per capita income of $1,377, while PP had the lowest GDP of $68.7 billion and a per capita income of $1,189.

Another indicator of diversity is the production structure which is conventionally looked at in terms of the share of various sectors in GDP and employment. According to

[3] The classification of Comoros, Libya and Djibouti is not exact. Palestine is not included for obvious conceptual reasons; though in some documents the West Bank and Gaza Strip is included as an Arab economy.

available information, in the 1990s the average share of GDP for the agricultural sector was 17.7 percent for the Arab countries. The share was highest for the PP group (30%) and lowest for the GCC group (only 2.6%), with 12.3 percent for the MOP group, and 16.6 percent for the DE group. In contrast, the average share of GDP for industry, including extractive industry, was 34.3 percent for the Arab countries with the highest share recorded for the GCC group (50.3%), followed by the MOP group (47.6%), and the DE group (28.6%), while the lowest share was recorded for the PP group (23.4%). The average share of GDP for the services sector was 48 percent for the Arab countries and ranged from a high of 54.8 percent for the DE group, to a low of 40 percent for the MOP group.[4]

Available information also reveals great diversity among Arab countries in terms of sectoral employment. By the end of the 20th century, 32 percent of the region's labor force was engaged in agriculture, 23.3 percent in industry, and the rest in the services sector. The share of agriculture in the employment of labor was highest for the PP group (51% of the total labor force), followed by the DE group (33.4%), the MOP group (21%), and the GCC group (12.7%). As for industry, the GCC group boasted the highest share of employment in this sector (30.4%), followed by the DE group (25.3%), MOP group (24.3%), and the PP group (15.3%).[5]

Educational Achievements in Arab Countries

Another dimension of diversity is related to educational achievements in Arab countries and the classification of these countries in accordance with the UNDP's human development index (HDI). This index broadened the concept of development, in the sense of human progress, to include not only achievements in per capita income (reflecting decent standards of living), but also other achievements including living longer and healthier lives (indicated by life expectancy at birth) and the ability to read and write (measured by various indicators of educational achievements). The HDI is a composite index combining all three of these indicators; it varies from unity for highest achievement to zero for lowest achievement. Countries are classified into three groups based on the HDI: the high human development group (with an HDI in excess of 0.8); the medium human development group (with an HDI in excess of 0.5 but less than 0.8); and the low human development group (withan HDI less than 0.5).

[4] These calculations are based on World Bank (2000).

[5] These calculations are based on the ILO (1999).

Table 1 summarizes the distribution of Arab countries according to HDI for 1998 as reported by UNDP (2000). The table also reports the 1998 population and income of the various groups; the percentage weights are given in figures between brackets.

Table 1: The Distribution of Arab Countries According to the Human Development Index, 1998

Country Group	Number of Countries	Total Population (million)	Total Real GDP ($billion in PPP)	Average HDI
High HDI	4	6.43 (2.43)	129.89 (13.43)	0.821
Medium HDI	12	206.56 (72.20)	777.27 (80.38)	0.670
Low HDI	4	51.21 (19.38)	59.81 (6.19)	0.456
Total	20	264.20 (100.00)	966.97 (100.00)	0.658

Source: UNDP (2000).

In the above table, the four Arab countries that belong to the high human development category are Kuwait (with an HDI of 0.836); Bahrain (0.82); Qatar (0.819); and UAE (0.81). The four Arab countries that belong to the low human development category are Sudan (with an HDI of 0.477); Mauritania (0.451); Yemen (0.448); and Djibouti (0.447). The remaining twelve Arab countries belong to the medium human development category. For all the Arab countries the average HDI was 0.658, indicating that the region as a whole belongs to the medium human development category.

As the table shows, the high HDI group of Arab countries comprises only 2.4 percent of the total population of the Arab countries, but has a share of 13 percent of total real GDP. At the other extreme, the low HDI group comprises 19.4 percent of the total population and has a share of only 6.2 percent of total real GDP.

In constructing the HDI, two aggregate indicators of educational achievements are used; the adult literacy rate (defined as the percentage of people age 15 and above who can, with understanding, both read and write a short statement on their everyday life), and the combined gross enrollment ratio for the conventional levels of education: primary, secondary, and tertiary (defined as the number of students at all three levels as a percentage of the

population of official age for each level).[6] Table 2 provides evidence of these educational achievement indicators in the Arab countries according to the sub-groups. For each sub-group the table reports the population weighted average of the indicators used. The overall average is a weighted average of the sub-groups, with the population shares of the sub-groups as MOP (21.78%), GCC (11.21%), DE (47.6%), and PP (19.11%).

Not surprisingly, the table confirms the diversity of Arab countries with respect to educational achievements. There are obvious differences in educational achievements among groups of countries, as well as among countries within groups. The overall average for the education indicators for Arab countries compares less favorably with that of the world; an Arab adult literacy rate of 60 percent compared to a world average of 79 percent. The Arab countries also had a combined school enrollment ratio of 61 percent compared to a world average of 64 percent.

Comparing the Arab countries, the table shows that for the combined gross enrollment ratio indicator, nine countries enjoy better-than-average educational achievement. These countries are Bahrain, Qatar, UAE, Libya, Lebanon, Jordan, Tunisia, Algeria, and Egypt. The best performing Arab country in terms of this indicator is Libya with a gross enrollment ratio of about 92 percent, followed by Bahrain (81%), Lebanon (77%), and Qatar (74%). The worst performing is Djibouti (21%), followed by Sudan (34%), and Comoros (39%).

As for the adult literacy rate, the table shows that eleven countries enjoy better-than-average educational achievement. These countries are Kuwait, Bahrain, Qatar, UAE, Libya, Saudi Arabia, Lebanon, Oman, Jordan, Tunisia, and Syria. The highest adult literacy rates are found in Jordan (about 89%), followed by Bahrain (87%), and Lebanon (85%). The lowest rates among Arab countries are for Mauritania (41%), followed by Yemen (44%), and Morocco (47%).

[6] For the purposes of HDI a composite educational index is obtained from these indicators by giving the adult literacy rate a weight of two-thirds and the combined enrollment ratio a weight of one-third.

Table 2: Education Indicators in Arab Countries, 1998

Country/Sub-Group	Combined Gross Enrollment Ratio (%)	Adult Literacy Rate (age 15 and above) (%)	GDP per Capita (PPP US$)	Value of Human Development Index
Algeria	69	65.5	4792	0.683
Iraq	50	53.7	3197	0.583
Libya	92	78.1	6697	0.760
Mixed Oil Producers (MOP)	**64**	**62.0**	**4341**	**0.651**
Bahrain	81	86.5	13111	0.820
Kuwait	58	80.9	25314	0.836
Oman	58	68.8	9960	0.730
Qatar	74	80.4	20987	0.819
Saudi Arabia	57	75.2	10158	0.747
UAE	70	74.6	17719	0.810
GCC	**59**	**75.4**	**12311**	**0.761**
Egypt	74	53.7	3041	0.623
Jordan	69	88.6	3347	0.721
Lebanon	77	85.1	4326	0.735
Morocco	50	47.1	3305	0.589
Syria	59	72.7	2892	0.660
Tunisia	72	68.7	5404	0.703
Diversified Economies (DE)	**68**	**59.2**	**3386**	**0.646**
Comoros	39	58.8	1398	0.510
Djibouti	21	62.3	1266	0.447
Mauritania	42	41.2	1563	0.451
Somalia	Na	Na	Na	Na
Sudan	34	55.7	1394	0.477
Yemen	49	44.1	719	0.447
Primary Producers (PP)	**39**	**51.2**	**1174**	**0.466**
Arab Countries	**61**	**60.1**	**4165**	**0.625**

Source: Compilation based on UNDP (2000).

An additional measure of educational achievement is the average number of years of schooling in a population. This measure was largely used as a proxy for human capital and reported for populations above the age of 15 and under the age of 25. Due to the methodology of constructing the measure from census/survey data, the measure is not generally available

for current years except on the basis of projections.[7] Compared to the other two education indicators, the country coverage was also limited; therefore it was not used in the calculations of the HDI.

Table 3 makes use of the latest available information from Barro and Lee (2000) for populations above the age of 15.[8] The table also reports the appropriate weighted average for the Arab countries, where the weights are the size of the population age 15 and above, as well as the weighted average results for various regions in the world, except for the developed countries where figures between brackets are the number of countries per region.

Moreover, the table reports the annual growth rate for each Arab country, as well as the average of the countries where the growth rate is estimated on the basis of a time trend equation.[9] Growth rates for the various regions of the world are based on end point calculations rather than on a trend equation.

The table shows that the overall weighted average years of schooling for Arab countries was only 1.1 years in 1960, but increased progressively to an estimated 4.8 years by 2000, which was lower than that of the world (an average of 6.7 years), and for the rest of the developing world (an average of 5.1 years). Among the sub-regions of the developing world, the achievement of the Arab countries was lower than that of all other regions except for South Asia (with an average of 4.6 years) and Sub-Saharan Africa (an average of 3.5 years).

The time trend was an important aspect of educational achievement as measured by the average years of schooling of the population. The Arab countries for which relevant data was available recorded the highest increase in human capital accumulation during 1960-2000. As the table shows, the highest annual rate of growth of the average years of schooling was in the Arab countries (4.2%) compared to a growth rate of 2.5 percent for the developing countries as a whole. South Asia ranked second with an annual growth rate of 2.8 percent, followed by East Asia with 2.2 percent.

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[7] The most widely followed method of estimation is the perpetual inventory method which uses census observations on attainments as benchmarks and new school entrants as flows to be added to the stocks with an appropriate time lag (for example, see Barro and Lee, 2000:3-7).

[8] Older data sets on educational attainment in terms of years of schooling are to be found in Kyriacou (1991) and Nehru, Swanson and Dubey (1995).

[9] All estimated time trend coefficients are statistically significant: for Algeria the coefficient is 0.0465 (with a t-value of 17.2); Bahrain 0.0407 (t-value of 8.1); Egypt 0.0409 (t-value 5.9); Iraq 0.0263 (t-value 2.6); Jordan 0.0282 (t-value 23.1); Kuwait 0.0231 (t-value 9.7); Syria 0.038 (t-value 12.9); Tunisia 0.0516 (t-value 9.5); Sudan 0.044 (t-value 21.7); and, for the Arab countries 0.0417 (t-value 12.4).

Table 3: Average Years of Schooling for the Population Age 15 and Above in a Sample of Arab Countries, 1960-2000

Country/ Region	1960	1965	1970	1975	1980	1985	1990	1995	2000	Growth Rate (%)
Algeria	0.98	1.04	156	2.01	2.68	3.46	4.25	4.83	5.37	4.65
Bahrain	1.04	1.58	2.78	3.23	3.62	4.06	4.97	5.50	6.11	4.07
Egypt				1.55	2.34	3.56	4.26	4.98	5.51	4.10
Iraq	0.29	0.81	1.36	1.85	2.66	2.53	3.27	3.74	3.95	2.63
Jordan	2.33	2.74	3.25	3.77	4.28	5.23	5.95	6.47	6.91	2.82
Kuwait	2.89	2.88	3.13	3.37	4.53	5.43	5.75	5.96	6.22	2.31
Syria	1.35	1.77	2.15	2.84	3.65	4.47	5.11	5.48	5.77	3.80
Tunisia	0.61	0.94	1.48	2.27	2.94	3.34	3.94	4.53	5.02	5.16
Sudan	0.41	0.50	0.62	0.83	1.14	1.34	1.64	1.93	2.14	4.36
Arab Countries	**1.12**	**1.02**	**1.43**	**1.75**	**2.44**	**3.21**	**3.65**	**4.41**	**4.83**	**4.17**
World (107)	**4.64**		**5.16**		**5.92**		**6.43**	**6.44**	**6.66**	**0.91**
Developing Countries (73)	**2.05**		**2.67**		**3.57**		**4.42**	**4.79**	**5.13**	**2.54**
Sub-Saharan Africa (22)	**1.74**		**2.07**		**2.39**		**3.14**	**3.39**	**3.52**	**1.78**
Latin America (23)	**3.30**		**3.82**		**4.43**		**5.32**	**5.74**	**6.06**	**1.53**
East Asia (10)	**2.83**		**3.80**		**5.10**		**5.84**	**6.35**	**6.71**	**2.18**
South Asia (7)	**1.51**		**2.05**		**2.97**		**3.85**	**4.16**	**4.57**	**2.81**

Source: Based on Barro and Lee (2000: 3, Table 4).

Among the Arab countries, the table shows that by the year 2000 the best performing country in terms of average years of schooling was Jordan with 6.9 years, followed by Kuwait with 6.2 years, and Bahrain with 6.1 years. At the other extreme, the worst performing country was Sudan with 2.1 average years of schooling, followed by Iraq with about 4 years. The remaining countries had average years of schooling in excess of 5 years. Despite this variability in educational performance, it was generally acknowledged that average years of schooling of 4 years and above was an important achievement at the national level. “In conjunction with some research capacity and higher education attainment, this level

represented an approximate 'takeoff' point, a threshold of education in the workforce where increasing returns to scale for human capital begin to accrue. When this minimum average attainment was present, the quality of labor attains a critical mass allowing greater overall productivity" (World Bank, 1998a: 10).

In terms of growth of human capital stock, the best performing country was Tunisia with an annual growth rate of 5.2 percent, followed by Algeria (4.7%); Sudan (4.4%); Egypt (4.1%); and Bahrain (4.1%). The lowest growth rate was recorded for Kuwait (2.3%), followed by Iraq (2.6%), Jordan (2.8%), and Syria (3.8%). Despite this variability, the rate of growth of human capital in each of the Arab countries in the sample was higher than those recorded for the various regions of the world, with only South Asia surpassing the growth rates in Kuwait and Iraq.

Expenditures on Education in Arab Countries

According to available information, average world public expenditure on education in 1980 was about 4.4 percent of GNP and increased to 5.2 percent of GNP by 1995, an annual increase of about 1.1 percent. Most of the Arab countries seem to have measured up to the world commitment to publicly finance education.

As Table 4 shows, in 1980 weighted average public spending on education in the Arab countries was 5.2 percent of GNP. This is higher than public spending shares for all regions of the world except that of the developed countries (5.6 percent of GNP). For the low and medium income group of countries the share was 3.9 percent. Geographically, the share was 4.1 percent of GNP for Sub-Saharan Africa, 3.9 percent for Latin America, 2.1 percent for East Asia, and 2 percent for South Asia.

The table indicates that the weighted average share of public spending on education in Arab countries increased by about 0.7 percent annually. Thus, by 1995 the share of public spending on education increased to 5.8 percent of GNP. This was also a world trend as the share of public spending increased for the low and medium income group to 4.6 percent of GNP (an annual rate of increase of 1.03 percent), Sub-Saharan Africa increased to 5.3 percent, South Asia increased to 3.9 percent, East Asia increased marginally to 2.6 percent, while Latin America remained the same. By 1995, the Arab countries' commitment to publicly fund education was the highest among all world regions including the developed countries where the share declined to 5.5 percent.

Table 4: Public Expenditure on Education as a Percentage of GNP in the Arab Countries, 1980 and 1995

Country/Sub-Group	1980	1995	Annual Growth Rate (%)
Algeria	7.8	5.1	-2.33
Iraq	3.0	NA	NA
Libya	3.4	NA	NA
Mixed Oil Producers (MOP)	**5.5**	**5.1**	**-0.47**
Bahrain	NA	3.4	NA
Kuwait	2.4	5.6	5.44
Oman	2.1	4.6	5.02
Qatar	NA	3.4	NA
Saudi Arabia	4.1	5.5	1.85
UAE	1.3	1.8	2.06
GCC	**3.4**	**5.0**	**2.44**
Egypt	5.7	5.6	-0.11
Jordan	NA	6.3	NA
Lebanon	NA	2.0	NA
Morocco	6.1	5.6	-0.53
Syria	4.6	7.2	2.83
Tunisia	5.4	6.8	1.45
Diversified Economies (DE)	**5.7**	**5.9**	**0.22**
Comoros	NA	NA	NA
Djibouti	NA	NA	NA
Mauritania	NA	5.1	NA
Somalia	Na	Na	NA
Sudan	4.8	NA	NA
Yemen	NA	7.0	Na
Primary Producers (PP)	**4.8**	**6.8**	**NA**
Arab Countries	**5.2**	**5.8**	**0.68**

Note: Growth rates for sub-groups are based on sub-group averages.

Source: Own calculations based on World Bank (1998a), World Development Indicators.

While the weighted average shares in the table could be used to compare the Arab sub-groups, such a task would be stretching the available data to the limit. However, it should be

noted that by 1995 none of the sub-groups had a share of less than 5 percent of GNP, an observation that confirms the Arab countries' commitment to supporting education.

Although detailed information needed to estimate per student cost of education in the Arab countries was scarce, a few indicative estimates show that there were fairly wide variations among countries in the mid-1990s. According to estimates by the World Bank (1998b: 47, Table C7), real current expenditure per student at the primary level varied from a high of $1,122 in purchasing power parity (PPP) in Lebanon to a low of $210 in Yemen. For the remaining countries in the sample, real current expenditure per primary student was $703 in Tunisia, $622 in Algeria, $517 in Jordan, $395 in Morocco, $338 in Egypt, and $262 in Syria.[10]

The highest real current expenditure per student at the secondary level was estimated as $1,366 in Algeria, $1,320 in Morocco, $1,169 in Tunisia, and $938 in Lebanon. The lowest real current expenditure per student at the secondary level was estimated as $372 in Yemen, followed by Jordan, Syria, and Egypt, each with about $527. For all countries, except Lebanon, secondary education was more public resource intensive than primary education. The margin of difference, however, varies between countries. The highest margin can be found in Morocco where secondary education was about 234 percent more expensive. The lowest difference was in Jordan where secondary education was only 1.7 percent more expensive.

The highest real current expenditure per student at the tertiary level was estimated as $8,281 for Algeria, $6,063 for Jordan, $5,449 for Lebanon, and $5,036 for Tunisia. The lowest real current expenditure per student at the tertiary level was estimated as $1,433 for Yemen, followed by $2,801 for Egypt, $3,337 for Syria, and $3,886 for Morocco.

An interesting comparison between education and development was to compare these estimates to real per capita GNP. Table 5 summarizes this aspect for Arab countries in the sample where the weighted average for the sample was also reported.

The table shows that per student public expenditure in primary and secondary education represents a fraction of GNP per capita for all countries, while public spending for tertiary education was more than GNP per capita for all countries except Lebanon (90%) and Egypt (98%). The average per student expenditure/GNP per capita ratio for primary education

[10] These are countries for which relevant information is available in the UNESCO database.

was 12.4 percent, while that for secondary education was 25.4 percent, and that for tertiary education was 126 percent. For all education levels the ratio was highest in Yemen, while the lowest ratio for primary was recorded for Syria (8.7% of GNP), the lowest ratio for secondary was recorded for Jordan (14.8% of GNP), and the lowest ratio for tertiary was recorded for Lebanon (90% of GNP). In one interpretation, the per student expenditure/GNP per capita ratio was perceived as a reflection of the importance these countries placed on financing education. In this sense, Yemen made the largest sacrifice at all educational levels.

Table 5: Real per Student Expenditure by Level of Education in a Sample of Arab Countries

Country	**Real Expenditure Per Student in Primary Education (US$ PPP)**	**Real Expenditure Per Student in Secondary Education (US$ PPP)**	**Real Expenditure Per Student in Tertiary Education (US$ PPP)**	**GNP Per Capita in 1996 (US$ PPP)**	**Primary to GNP Per Capita (%)**	**Secondary to GNP Per Capita (%)**	**Tertiary to GNP Per Capita (%)**
Algeria	622	1367	8,281	4,620	13.46	29.59	179.24
Egypt	338	528	2,801	2,860	11.82	18.46	97.94
Jordan	517	527	6,063	3,570	14.48	14.76	169.83
Lebanon	1,122	938	5,449	6,060	18.51	15.48	89.92
Morocco	395	1,320	3,886	3,320	11.90	39.76	117.05
Syria	263	528	3,337	3,020	8.71	17.48	110.50
Tunisia	703	1,169	5,036	4,550	15.45	25.69	110.68
Yemen	210	372	1,433	790	26.58	47.09	181.39
Average	**393**	**806**	**3,998**	**3,173**	**12.39**	**25.40**	**126.00**

Sources: Own calculations based on World Bank (1998b: 39 and 47, Tables B1 and C7, respectively).

III. The Impact of Education

This section explores the relationships between education and development including education and technological capacity, the effect of education on economic performance, the rate of return on investment in education, and the impact of education on unemployment.

Education and Technological Capability

At the aggregate level, one possible way of assessing the contribution of education to long-term development is by looking at national achievements in science and technology. Another important factor to acknowledge is that "an ideal growth-and-development society would be one that knows how to operate, manage, and build instruments of production and can create, adapt, and master new techniques on the technological frontier; is able to impart knowledge and know-how to the young, whether by formal education or apprenticeship training; can choose people for jobs based on competence and relative merit, and can promote and demote on the basis of performance" (Landes, 1998: 217).[11] In such a society, the autonomy of intellectual inquiry can be nurtured, scientific methodology can be sustained, and the normalization of research and its diffusion can be achieved. Historical investigation shows that these were the most critical sources of success for Europe (Landes, 1998: 201).

Technological innovations leading to increased production are invariably informed by advances in scientific inquiry. According to a survey of active scientists, Kaku (1998) shows that economic activity in the 21st century will be shaped by science and technology. Three interrelated scientific revolutions are identified as having informed the technological advances of the 20th century: the quantum revolution, the computing revolution, and the bio-molecular revolution. The celebrated success of the genome project is one example of future developments in the 21st century. Such advances are expected to dramatically change the nature of societies and economies in the future.

The scientific and technological capacity of nations is currently measured by a number of indicators. According to the World Science Report produced by UNESCO (1998: 22-30), such indicators include total expenditures on research and development (R&D), science and technology personnel, scientific publications, and registered patents.

According to the latest available information, worldwide gross domestic expenditure on R&D amounted to $470 billion in 1994. R&D expenditure by Arab countries was estimated at $1.9 billion, only 0.4 percent of total world expenditure. Not surprisingly, 84 percent of global R&D expenditure is contributed by the developed countries: North America

[11] There are, of course, other characteristics to the ideal growth and development society, but these are directly related to our concern. All of these characteristics are based on a study of the long historical experience of the rise and fall of nations.

(37.9%); Western Europe (28%); and Japan and the newly industrialized countries (NICs) (18.6%).

Data from the Science Citation Index, which provides systematic coverage of the articles published in 2,500 of the most cited and influential journals, was used for the purpose of measuring scientific output and activity. According to the latest information, the contribution of Arab countries was only 0.7 percent of total scientific publications in 1995. Similar to gross domestic expenditure on R&D, world scientific output is concentrated in North America (38.4%); Western Europe (35.8%); and Japan and NICs (10.1%).

Table 6: Scientific and Technological Capacities in World Regions, 1995 (percentages of total)

Region	Expenditure on R&D*	Scientific Publications	European Patents	US Patents
Arab States	0.4	0.7	0.0	0.0
North America	37.9	38.4	33.4	51.1
Western Europe	28.0	35.8	47.4	19.9
Latin America	1.9	0.7	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	100.0	100.0	100.0	100.0

Note: * Figures are for 1994.
Source: UNESCO (1998: 23-26).

The number of patents published by patent offices was used as a measure of technological capability. While recognizing the limitation of using patents published by the two biggest and most renowned patent systems in the world, UNESCO reports such indicators by world region. The latest available information shows that Arab countries did not contribute to the recorded patents in either system. As expected, Western Europe dominates the European patent system with 47.4 percent, followed by the USA (33.45), and Japan and NICs

(16.6%). Similarly, North America dominates the US patent system with 51.5 percent, followed by Japan and NICs (27.3%), and Western Europe (19.9%).

The evidence suggests that despite the massive expansion and political commitment to education in Arab countries, they are still at the very early stages of building the technological capacity required to effect development.[12] Without necessarily subscribing to a conspiracy theory, such a situation can be seen as a colonial legacy. According to Landes (1998: 432), much of what the colonial subjects "learned in the schools and universities of the colonial master was political and social discourse rather than applied science and technical know-how."

The Effect of Education on Economic Development: A Puzzle

An emerging puzzle in the empirical literature is that despite the rather impressive expansion in human capital measured by the average years of schooling in the population, GDP per capita does not show a similar trend. This is especially true in the developing regions of the world including the Arab countries. Thus, the growth of educational capital per worker does not seem to have any association with the growth of output per worker.

The standard methodology for analyzing this puzzle is the estimation of a production function relating output per worker as a dependent variable to physical capital per worker and human capital per worker as explanatory variables. The production function could be estimated in level form or as growth rates using the Cobb-Douglas function.[13]

A recent study estimated a production function with variables expressed as rates of growth for a sample of 91 countries over the period 1960-1985 (Pritchett, 1999a). The basic estimated equation (using ordinary least squares) shows an elasticity of output, with respect to physical capital per worker, of 0.524 that is significantly different from zero (with a t-value of 12.8). This is an expected result, though slightly on the high side compared to results obtained from national income accounts. On the other hand, the estimated equation revealed an

[12] Landes (1998: 409) quotes a merchant banker from the GCC countries as having asked and answered: "What is rich? Rich is education... expertise… technology. Rich is knowing. We have money, yes. But we are not rich. Without knowledge, we are nothing. We import everything."

[13] A generally specified production function usually takes the following form: Y =F(K, L, H) where Y is output, K is physical capital stock, L labor, and H is human capital stock. If the production technology exhibits constant returns to scale then output per worker, y=Y/L can be expressed as y= f(k, h) where k is physical capital per worker and h is human capital per worker. A per worker Cobb-Douglas function takes the form $y = A k^{\alpha}h^{\beta}$, where A is a technology parameter and α andβ are output elasticities with respect to physical and human capital respectively.

elasticity of output with respect to human capital per worker of –0.049 that is not significantly different from zero (with an absolute t-value of 1.07). At best, this implies that growth in human capital per worker had no effect on output. If the negative sign is taken into consideration, the result implies that there is surplus human capital per worker. The coefficient of determination, which measures the proper fit of the relationship, is reported as 0.653, which is fairly high for estimations based on cross-sectional observations. The result implies that about 65 percent of the variation in per worker GDP growth can be explained by variations in the two per worker capital inputs. This result is shown to be robust to measurement errors, a wide range of samples, datasets on GDP growth or human capital expansion, and estimation techniques.[14]

As noted, the above is a general result for a cross section of countries. Pritchett (1999b: 6-8) reports region specific results. The results for the Arab countries are embedded in those of the Middle East and North Africa region (MENA) of the World Bank. In the MENA region considered in the estimation, seven out of nine countries were Arab. These included Algeria, Egypt, Jordan, Morocco, Syria, Tunisia, and Yemen. Thus, the results for MENA can reasonably be taken to represent Arab countries. Four results are reported depending on the source of data for the human capital stock and growth figures. In all of the results the estimated coefficient of human capital is negative, ranging in absolute value from a high of 0.62 (with a t-value of 2.21) to a low of 0.074 (with a t-value of 0.35). For three cases, the coefficient is not significantly different from zero. The fourth result has a negative coefficient of 0.62 that is significant (with an absolute t-value of 2.2). All the results for the Arab region confirm the general result noted above for the world sample; that the massive expansion in education in Arab countries during 1960-1985 does not seem to have had a growth payoff. In other words, the return to education at the aggregate level of the economy in the Arab countries seems to have been zero if not negative. Therefore, it seems that there is surplus education in the Arab countries, a conclusion that does not correspond with the level of development (as measured by educational achievement) in these countries compared to other regions of the world.

[14] See Benhabib and Spiegel (1994) and Thomas et al. (2000) for attempts to salvage a positive and significant relationship between human capital input and output. The attempt by Thomas et al. (2000) is based on using lagged output increments in PPP rather than growth rates and incorporating an education Gini coefficient in the production function.

The disassociation between the rate of accumulation of human capital and the rate of growth of output can also be seen by looking at the record of growth in Arab countries. According to Makdisi, Fatah and Limam (2000), the growth record of Arab countries during 1960-1998 was characterized by a period of relatively high growth during the 1960s and 1970s, followed by a slow down during the 1980s and 1990s, as well as extremely volatile growth performance. "Starting from the second half of the 1980s, the variability of growth rates declined somewhat but remained higher than the average world growth rate. Over the period 1960-1998, the variance of the average growth rate of per capita GDP for the Arab region was twice as high as that of the average world growth rate" (Makdisi et al., 2000: 3). These observations, together with the observation made about the relatively high growth rates of human capital in the region, would result in the lack of association between the two.[15]

The Rate of Return on Education

The most recent compilation of the rate of return on education for a large number of countries worldwide is provided by Psacharopoulos (1994). The compilation is based on results using one of the three standard methods for estimating the rate of return on education: the full method, the basic Mincer earnings function, and the extended earnings function.[16] The compilation is for the latest year the results were reported; the results themselves are usually reported for the three main levels of education: primary, secondary, and tertiary; the duration of each level of education may vary among countries. For each level, the social and private rates of return to education can be calculated.

Of 78 results based on the full method, only five were for Arab countries. The Arab countries were Morocco (with results for 1970); Somalia (1983); Sudan (1974); Tunisia

[15] Additional evidence based on a panel of six Arab countries is provided in El-Erian et al. (1998), where it is shown that the expansion in education in the Arab countries did not result in higher productivity or more rapid growth. The authors speculate that this may have been due to the low quality of education and the distortions in the labor market. A major aspect of distorted modern labor markets in these countries is the relatively high pay for employees in the public sector. This resulted in distorted educational choices by individuals with the result that the education system became oriented toward producing graduates for employment in the public sector.

[16] According to Psacharopoulos (1994:1325) the "full method requires working with detailed age-earning profiles by level of education and finding the discount rate that equates a stream of education benefits to a stream of education costs at a given point in time. The basic earnings function involves the fitting of a semi-log ordinary least squares regression using the natural logarithm of earnings as the dependent variable, and years of schooling and potential years of labor market experience and its square as independent variables." The extended earnings function converts the continuous years of schooling into a series of dummy variables referring to the completion of the main schooling cycles: primary, secondary, and tertiary. All these methods have their theoretical foundation in human capital theory first developed by Mincer (1974) and Becker (1972).

(1980); and Yemen (1985). Of 62 results based on estimating a Mincer earnings function, only three were for Arab countries, Kuwait (with results for 1983), Morocco (1970), and Tunisia (1980).

Despite the variability in the reported results, the compilation makes a number of observations on world patterns. The most important among these are outlined below.

(i) Based on the full method, of the three main levels of education, primary education exhibits the highest social profitability in all regions. The world average social rate of return on primary education is 18.4 percent compared to 13.1 percent for secondary, and 10.9 percent for tertiary education. The highest social rate of return on primary education is reported for Sub-Saharan Africa (24.3%), while the lowest rate (14.4%) is reported for countries belonging to the Organization for Economic Cooperation and Development (OECD). For Arab countries, the average social rate of return on primary education is reported for Morocco (50.5%); Somalia (20.6%); and Yemen (2%).

(ii) Based on the full method, the private rates of return are considerably higher than the social rates for all regions and all levels of education. The world average private rates of return are reported as 29.1 percent for primary, 18.1 percent for secondary, and 20.3 percent for tertiary. The pattern holds for the Arab countries in the sample; the private rates of return to the three educational levels are reported as 59.9 percent, 13 percent, and 33.2 percent, respectively, for Somalia; and 10 percent, 41 percent, and 56 percent, respectively, for Yemen. For Sudan, the private rates of return are only reported for secondary (13% compared to a social rate of return of 8%) and tertiary (15% compared to a social rate of return of 4%). For Tunisia, only the private rates of return to secondary (13%) and tertiary (27%) are reported.

(iii) Based on the full method, the social and private rates of return to education decline as per capita income increases. For example, the social and private rates of return to primary education are reported as 23.4 percent and 35.2 percent, respectively in low-income countries

compared to 14.3 percent and 21.3, respectively percent in upper-middle income countries.

(iv) Based on the Mincerian earnings function, the rate of return on education declines with the level of development as reflected by per capita income and the average years of schooling in the population. For example, low income countries with an average per capita income of about $842 and 7.4 average years of schooling, recorded an average rate of return on education of about 11.5 percent. High income countries, with an average per capita income of $13,669 and 10.9 average years of schooling, recorded an average rate of return on education of 6.6 percent. This pattern was also true for all the Arab countries. In 1983, Kuwait reported 8.9 average years of schooling with a rate of return on education of 4.5 percent. In 1980, Tunisia reported 4.8 average years of schooling with a rate of return on education of 8 percent. In 1970, Morocco reported 2.9 average years of schooling with an average rate of return on education of 15.8 percent.

(v) The social rates of return to various higher education specializations exhibit fairly large variations. The lowest social rates are reported for physics (1.8%); agriculture (7.6%); and sciences (8.9%); while the highest rates are reported for law (12.7%); economics (12%); engineering (10.9%); and medicine (10%). In contrast, the private rates of return to these specializations do not show such large variations, ranging from a high of 19 percent for engineering to a low of 13.7 percent for physics.

In the above compilation, the results for the Arab world are both limited in coverage and outdated. Recent results on the rate of return on education do not seem to conform to the general world pattern. For example, Assaad (1997: 112-113) reports results for Egypt in 1988 organized by sector of employment and by gender, and using the data set provided by the October 1988 round of the Egyptian Labor Force Sample Survey. He estimated a Mincer equation that accounts for "the endogeneity of participation in wage work where self-employment is common" (Assaad, 1997: 98). An expanded Mincer equation was estimated

where the dependent variable is the logarithm of hourly work and where the explanatory variables included region of residence and sample selection terms.

The educational attainment variable is specified in 11 categories with "illiterate" used as the reference category.[17] Findings indicated very low rates of return to primary schooling ranging from 2.3 percent for males employed in the private sector (4% for females in this sector) to 3.7 percent for males employed in the public sector (8% for females in this sector). Moreover, the rate of return seemed to increase with the level of education. For males in the Egyptian public sector, the rate of return on general secondary education was 7.8 percent, while that for technical institutes was 8.4 percent, a B.A. in engineering was 10.6 percent, and a postgraduate degree was 11.6 percent.

Fergany (1998) reported further results for Egypt using 12,504 observations from the October 1988 round of the Egyptian Labor Force Sample Survey. He estimated a Mincer equation with an interaction term between education and experience, in addition to a number of other explanatory variables including personal, employment, and household characteristics, as well as regions. The dependent variable is the logarithm of "earnings from all main jobs for persons who ever participated in economic activity in a year-long reference period" (Fergany 1998: 47). Educational attainment was counted in terms of completed years of education, while labor market experience was measured by the duration since first seeking work.[18] Two major findings of the study were: (a) that controlling for other explanatory variables "returns to education are conditioned by the length of labor market experience; i.e., earnings as a function of educational attainment behave differently under varying lengths of labor market experience"; and (b) that return to "education is relatively low except for university education

[17] The other education categories used are: ability to read and write (those who did not complete primary schools); primary (earning a diploma after five years of primary school); Preparatory (earning a diploma after three years of preparatory school); general secondary (earning a diploma from a three-year secondary school that leads to higher education); blue and white collar vocational secondary (completing three years of vocational training); technical institute (earning a diploma from a two-year post secondary technical institute; university; engineering; and postgraduate. It is known that for such a function, the rate of return on a given level of schooling is obtained by subtracting the estimated coefficient of the lower level of education from that of the given level and dividing the difference by the duration of schooling of the given level. In technical term the estimated equation is of the form $\text{Ln } y_i = a + \sum b_k D_{ik} + cx_i + d(x_i)^2$, where y is hourly wage, x is experience, D_{ik} is a dummy variable for the level of education k (e.g., primary, preparatory). The rate of return on level k is given by $[b_k - b_{k-1}]/n$.

[18] The estimated equation is of the form: $\text{Ln } Y_i = a + b S_i + c (S_i)^2 + d X_i + e (X_i)^2 + n SX + \sum h_j G_j$, where Y is earnings, S is years of schooling, X is years of labor market experience, and Gj are other explanatory variables. The lower case letters are coefficients to be estimated. The rate of return on education is given by: [b + 2cS + nX], depending on the statistical significance of the estimated coefficients.

(starting with 16 completed years) and higher. But education less than primary was also associated with a rise in earnings" (Fergany, 1998: 49).[19]

Recent estimates for Kuwait also show rather low returns to education. For instance, Chishti and Khalaf (2000) used the 1996 Kuwaiti Civil Service Commission database to estimate Mincer equations for Kuwaiti public sector employees disaggregated by gender. The rate of return on education for Kuwaiti males is about 6 percent, while that of Kuwaiti females is about 8 percent. Controlling for experience, and introducing an interaction term between experience and education, the results show that for the two genders the rate of return tends to decline with experience. For Kuwaiti males, the rate of return is [0.067 – 0.0006 X], while that for females is [0.09-0.0007 X] where X is experience.

Lane, Hakim and Miranda (1999) used the World Bank's 1990/1991 Living Standard Measurement Survey to estimate a Mincer equation where the dependent variable is the logarithm of hourly wages. In addition to experience and education, explanatory variables included the gender of the employee, the type of employer, the sector of employment, the sector of residence, and whether the worker works for the household. For the pure Mincer equation the rate of return on education is estimated as 9.9 percent, which is considered rather high. When other explanatory variables are included, the rate of return declines to 5.3 percent.

From the above evidence, it is perhaps clear that the rate of return on education in Arab countries does not seem to conform to the general patterns from around the world. This signals a peculiarity of the region that needs further study for more clarification. At this stage, however, it is important to recall that the theoretical basis on which the Mincer equation is based may not be relevant to the development stage of the Arab countries. As noted earlier, in terms of the aggregate educational achievement of these countries, and irrespective of their political regimes, most of these countries accorded education a very high development priority and invested in education as a human right.

Education and Unemployment

Despite the paucity of reliable data on labor markets in Arab countries, it is fair to note that the issue of unemployment is one of the most studied aspects of Arab economic development. One possible reason for this is the role of the Arab regional labor market, where labor

[19] The rate of return on education is given by [–0.0157 +0.0022 S +0.0015 X], where S is years of schooling and X is the years of labor market experience. Clearly, then, the rate of return on education increases with the years of education and the length of labor market experience.

migration from a number of non-oil-producing Arab countries to the Gulf oil-producing countries has acted as a vent for excess labor. A second reason is that over the past two decades or so, the official rate of unemployment has increased to the extent that the Arab countries have collectively distinguished themselves as one of the highest unemployment regions in the world.

The most recent account of the major features of the Arab labor market is provided by ERF (2000: 111-114). The analysis correctly distinguishes between the labor markets in the GCC countries and other Arab countries. The labor market in the latter group of countries is the most problematic of the two; according to the ERF analysis, three major features can be identified: relatively high unemployment rates, declining real wages, and the predominance of the government sector in total employment.

(i) High unemployment rates: according to ERF (2000: 111), and excluding GCC and non-Arab countries of the MENA region, "unemployment rates progressively increase from 10 to 19 percent as we move from Egypt, Syria, Jordan, Morocco, and Lebanon. It reaches between 25-30 percent in Libya, Algeria, and Yemen. More serious is the fact that unemployment has increased or, at best, remained stagnant throughout the 1990s in many countries in which unemployment levels are the highest." Fergany (2001) notes that the Arab region had the highest average unemployment rate (15%) in the 1990s compared to the world average (5%).

(ii) Declining real wages: the relatively high unemployment rates in the region are compounded by relatively low and declining average labor productivity. Comparing various groups of Arab countries with Korea and Argentina, Fergany (2000: 3) used World Bank figures on GNP per worker to note that in "the nine Arab countries richest in oil resources, productivity hardly exceeded half the level of the two countries of comparison, whereas in the group of medium oil-endowed Arab countries (Tunisia, Syria, and Egypt) productivity fell below one-sixth of that of Korea and Argentina. In the eight oil-poor Arab countries (Jordan, Sudan, Somalia, Morocco, Yemen, Djibouti, Lebanon, and Mauritania), productivity was less than one-tenth of the level of Korea and Argentina." In addition to low average labor productivity, manufacturing real wages have declined in the region, except for the GCC countries, by an estimated annual average rate of 2 percent

during 1990-1996. According to ERF, Algeria and Egypt registered the largest average real wage declines.

(iii) Government employment: for a sample of eight non-GCC Arab countries, ERF reports that the share of government employment in total civilian employment amounted to 16.5 percent, which is 5.5 percentage points higher than the world average. The share of government employment is lower than the world average in Lebanon (8.1%) and Morocco (8.3%). The Arab public employment share is much higher than that for Latin America (9%), Africa (7%), and Asia (6%). It is noted that this rather high share does not include employment in the public enterprise sector. "Combining government and public enterprise employment brings employment in the broader public sector among wage employees to as much as 35 percent in Egypt, 50 percent in Jordan, and almost 60 percent in Algeria" (ERF, 2000: 113). These very high employment shares had very obvious implications for the labor market component of the economic reform policies implemented in the region. Large-scale dismissals of government workers became an important labor market policy.

However, for the non-GCC group of countries, the above features could be relevant to the modern sector labor market. It is conventionally assumed that in countries where the agricultural sector contributes significantly to the GNP, agricultural labor markets are competitive, and hence, efficient with relatively low unemployment rates. For the GCC countries, relatively low unemployment rates are recorded and the nature of unemployment is considered to be frictional in the sense that the unemployed nationals would be the ones that are waiting for preferred jobs (for example, see Shaaban et al., 1995). Recently, however, concern about these countries' ability to create employment opportunities has been increasingly expressed.[20]

While there are no robust results relating unemployment rates to the level of education, a number of observations have been made that claim perhaps an inverted u-shaped relation exists where unemployment rates are higher for those who hold intermediate level

[20] In some cases, a number of observations were made regarding the effect macroeconomic reforms have on the ability of Arab countries to create additional jobs. It is noted in this respect that most of these programs have a civil service reform component that involves creating unemployment rather than creating jobs. The overall causal effect of such policies, however, has yet to be established on firm empirical ground (for example, see Shaaban et al., 1995).

education than for those with lower, as well as higher educational qualifications (for example, see Shaaban et al., 1995). In the context of urban labor markets, for which unemployment rates are usually reported, such patterns of unemployment can be explained in terms of the relationship between earnings and education, the nature of the production technology employed, and the extent of the importance of institutional factors in the working of the labor market.

IV. Lessons of Experience and Concluding Remarks

Across regions of the world there is a perception that the quality of education has declined and that the educational systems display pervasive facets of inefficiency. Educational reforms seem to be anchored on these perceptions. A recent compilation and interpretation of research results on school systems in developing countries addressed the question of the efficiency of education systems by asking: "do resources purchased and used by the schools systematically improve student performance?" (Hanushek, 1995: 229).

Of the many inputs to the education process, six are used in looking at the efficiency issue: school facilities (34 studies); teachers' education (63 studies); teachers' experience (46 studies); teachers' salary (13 studies); expenditure per pupil (12 studies); and teacher-pupil ratio (30 studies). The number of studies reporting statistically significant effects (positive or negative), as well as those reporting statistically insignificant effects are recorded. The results of the compilation and interpretation are summarized below.

(i) School facilities: there is evidence that school facilities, such as quality buildings and libraries, positively affect student performance. Out of 34 studies, 22 reported positive and statistically significant effects, while only 3 studies reported negative and statistically significant effects. The remaining 9 studies reported statistically insignificant effects.

(ii) Education of teachers: there is evidence that the education of teachers has a positive effect on the performance of students. Of 63 studies, 35 reported positive and significant effects and only 2 reported negative and significant effects. There is, however, uncertainty regarding this conclusion in view of the fact that 26 studies reported statistically insignificant effects.

(iii) Experience of teachers: there is no strong evidence of a positive and statistically significant effect on performance. Out of 46 studies, 16 reported positive effects on performance and only 2 reported negative and statistically significant effects. The remaining 28 studies reported statistically insignificant effects.

(iv) Salary of teachers: there is no evidence that higher wages for teachers result in better performance by students. Of 13 studies, 4 reported positive and statistically significant effects, while only 2 reported negative effects. The remaining 7 studies reported statistically insignificant effects.

(v) Expenditure per pupil: there is no compelling evidence that expenditure per pupil improves performance. Out of 12 studies, 6 reported positive and statistically significant effects, while the other 6 reported statistically insignificant effects.

(vi) Class size: there is no evidence pointing to a positive effect of smaller class sizes on performance. Of 30 studies, 8 reported positive and significant effects, another 8 reported negative and significant effects, and 14 reported statistically insignificant effects.

The above "findings indicate that there are no clear and systematic relationships between key inputs and student performance. The analysis does not state that differences in resources could never be important, only that they have not been, due to the way schools are organized. Some evidence suggests that minimal levels of basic school resources, such as the availability of textbooks and the provision of minimal facilities are important in student achievements" (Hanushek, 1995: 232-233). It is also recognized that the educational process itself is very complicated and that there is very little understanding of how it works. This ignorance about the process is likely to continue in the future. It is suggested, therefore, that policymakers learn how to live with such a fact and design policies that acknowledge it.

It has been argued that the educational system must meet a number of development goals given changing world circumstances, including a shift in the content of education toward emphasis on "learning how to learn," improving the effectiveness of the educational system in building human capital, ensuring universal completion of compulsory education of good quality, increasing country-level information on the various aspects of the performance

of the educational system, and maintaining a sustainable financial basis for the educational system.[21]

Given the challenges of effecting meaningful developmental transformations in the countries of the region, the above educational development goals can be best met by a number of country specific strategies with the following common elements:[22]

(i) The need for a comprehensive, long-term development framework: over the past two decades, policy programs were designed on an ad hoc short-term basis with the aim of achieving financial stability within the context of conventional economic reform programs. Recently, there seems to have been a shift toward establishing long-term development frameworks in which economic policy in general, and sectoral policies in particular, should be designed. Most of the countries in the region have had experience with some form of long-term development planning and this experience needs to be recalled. With respect to the educational sector, the process of revisiting past development planning experience would require an analysis of the current situation. In order for countries to devise relevant educational policies they need a precise, quantitative statement of the goals of the educational sector, together with performance indicators for the overall development goals of the country; an informed discussion on alternative strategies that could achieve these goals; and a clear indication of the resource costs involved to achieve the specified goals, not only from the perspective of the education sector, but also in the context of the national availability of resources to achieve the overall development goals of the country. For the purposes of both the development framework and the plans and programs of the educational sector, the country's various stakeholders need to discuss the development vision embodied in the frameworks and the sectoral plans so that country ownership of these plans can be ensured.

(ii) The need to focus on results: in the context of the overall development framework, the goals of the education sector could be formulated around verifiable goals including increasing completion levels, closing gender and geographic gaps, and

[21] See World Bank (1998b: 16-24).
[22] See World Bank (1998b: 24-32).

expanding learning achievements. This implies, among other things, that the design of policies and programs for the educational sector needs to change from emphasizing the provision of inputs, to monitoring results. The shift in orientation could be helped, in part, by strategies aimed at the simplification of the education sector's management structure (i.e., away from multiple ministries); the decentralization of decisions, within agreed resource envelops, by increasing autonomy at the level of educational units (e.g., schools, institutes, and universities); and the increased participation of parents and communities in the management and resource mobilization efforts of these units. In addition, it is now recognized that a well-performing educational system, in terms of the development goals assigned to it, needs to align its curricula, teacher training, instruction approaches, and assessment methods at all levels in such a way that the system works in harmony rather than at distinct unrelated stages. Moreover, following years of neglect, it is now recognized that the quality of education in the region has suffered mainly because "teaching" has lost its once highly-valued social status. Thus, the perceived decline in the quality of education must mean that the quality of teachers has declined over time. This, in turn, means that the teaching profession lacked the resources needed to sustain it as an attractive social occupation or that it was deserted by high quality teachers due to the same factors relating to its neglect. A crucial policy reorientation in this respect will have to deal with an incentive structure that would make teaching an attractive occupation once again. In a knowledge-oriented production structure this should not be a very difficult problem to resolve. Added to the above strategies is the obvious recommendation of increasing the use of information technology in teaching at all levels. This, of course, is a capital-intensive proposition that will have obvious resource implications. There is also the possibility of social exclusion, though countries may wish to ponder the challenge presented by this option, each according to its initial conditions and resource constraints.

(iii) The desire to increase private sector participation in the provision of educational services: a number of educational systems in the region have had the historical presence of privately provided educational services, both with profit and non-profit orientation. More recently, the profit-oriented private provision of educational

services at all levels has emerged in a number of countries backed by legal and regulatory frameworks that are themselves evolving and learning from experience. A challenge in the creation of a long-term development framework, is the countries' ability to appropriately measure supply and demand for the services of the education sector with regard to the overall concern for the quality of the human capital being built in the country. Not surprisingly, the quality of the teaching staff at some of the educational levels served by the private sector has raised serious questions for the regulators.

(iv) The need for improved internal efficiency: although the resources made available to the educational systems in the region could be judged as sufficient, they are being used in an inefficient way. Internal efficiency relates to the cost of producing a unit of educational output inclusive of its quality. In this respect, it is noted that inefficient utilization of the educational sector's resources include paying salaries for teachers, some of whom are not teaching; investing in school construction without regard to location considerations of students; producing students who are not sufficiently trained in relevant subjects to the changing production conditions (e.g., modern mathematics and science); and producing students without teaching them "how to learn on their own." Noting that most countries in the region have achieved relatively high participation at the basic educational level, the challenge of improving the internal efficiency of the educational system is becoming more important as countries respond to the increasing demand for secondary and higher education. Available options for optimizing unit costs include the increased participation of the private sector in the provision of educational services, and distance learning using information technology. The latter option, however, has already been noted to be capital intensive.[23]

(v) The need to build a regular modality for the exchange of information about the state and performance of the educational system: it is observed that virtually all

[23] An example of the range of costs for the initial stages of information technology distance learning was provided by the University of Tourism and Culture for Peace, which is designated as a non-profit institute, based in Marseilles, France. For 1998, it is estimated that the cost of satellite time was $40 per hour; the capital costs of specially equipped classrooms (inclusive of the classrooms, engineering, and antennas) was $300,000 per site and the running cost was $40,000 per year.

researchers and practitioners of education interact and exchange views as to the state of the educational system, its performance, and changes needed to improve the quality of education. Such interaction requires relevant information about the educational system be made available in the public domain. In this respect, it is observed that such networks do not exist in most of the countries of the region. As such, the sectoral development framework, in the context of which educational reforms will be undertaken, should give precedence to the establishment of such networks to promote the exchange of information on and garner support for the desired direction of reforms, as well as for subsequent monitoring and evaluation. Technical assistance for establishing such networks at the national and regional levels could be sought from existing global and regional organizations.

In conclusion, the evidence presented in this paper shows that the Arab countries have accorded education a relatively high priority since the 1960s and, as a result, education expanded at the highest rate among all world regions. Their achievements in terms of human capital accumulation, as measured by the average years of schooling of the adult population, places these countries at a turning point where it is expected that education will provide increasing returns to the production processes.

Regarding the effect of education on development, the evidence shows that (a) the Arab countries have not yet integrated the frontiers of technology, a critical characteristic for a growth-and-development society. The only consolation for the Arab countries is that such mastery is usually long-term in nature; (b) like many other countries around the world, the Arab countries' expansion in human capital, brought about by the increase in education, does not seem to be related to output increases. Within these limits, the marginal productivity of human capital is not significantly different from zero. Therefore, it seems that there is surplus education in the Arab countries, a conclusion that does not correspond with the level of development (as measured by educational achievement) in these countries compared to other regions of the world; (c) with regard to the rate of return on education, there is evidence that such rates are relatively low in Arab countries and that they seem to increase with the level of education. While more work needs to be done, such results will have important implications for the allocation of public resources among various sectors in the economy and sub-sectors in the educational system; and (d) over the past 20 years, in all sub-groups of the Arab world (except the GCC countries), unemployment seems to have emerged as a serious development

challenge. While there is no robust regular evidence relating unemployment to educational levels, there are indications that an inverted u-shaped relation between the two exists in some countries, so much so that unemployment rates are highest for workers with intermediate levels of education.

The disparity between the impressive achievements in education in the Arab countries and the marginal contributions to the development process, could be sufficient justification for concerns about the quality of education in the region.[24] These concerns, however, are shared all over the world. This is not surprising given the massive technological changes that have taken place during the second half of the last century. In view of these changes, conventional views about education have also changed. According to UNESCO (2000), over the past half-century a learner and learning-centered way of looking at education has gained ground. Instead of the "elementary and fundamental" stages of education noted in the Universal Declaration of Human Rights, it is now "basic" education that is emphasized, meaning education designed to meet "basic learning needs." Under such a learning-centered view of education, the world's overall progress toward education for all is not as impressive as the literacy and enrollment ratios indicate. Many of the adults to whom the relevant ratios refer have acquired rudimentary literacy skills, but the extent to which they can be considered functionally literate in their respective societies remains uncertain. The same observation applies to the Arab countries despite their impressive achievements and their relatively high political commitment to education as conventionally defined.

On the basis of the above, it is perhaps not surprising that there is wide agreement on the direction that education reform can take. The reform process should: adopt a comprehensive, long-term development framework in which educational reform could be formulated; focus on results by devising monitoring indicators; increase the participation of the private sector in the provision of educational services; improve internal efficiency; and build a regular modality for the exchange of information about the state and performance of the educational system.

[24] According to a recent articulation of such concerns, the quality of education in the region is negatively impacted due to the politicization of education. "Indoctrination replaced free and critical thinking, and authoritarian values permeated every educational tool and practice: the curriculum, the textbooks, and the methodology" (Ridha, 1998: 3-4).

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