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JAD CHAABAN

THE MIDDLE EAST YOUTH INITIATIVE
WORKING PAPER



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THE COSTS OF YOUTH EXCLUSION IN THE MIDDLE EAST

There is no doubt that youth exclusion in Middle Eastern countries is imposing high costs on their societies, and quantifying such costs is extremely important for making a case for investing in youth as an economically sound approach for Middle Eastern governments to take.

ABSTRACT

This paper explores the costs associated with youth exclusion in the Middle East by providing estimates of the economic costs to society related to youth unemployment, youth joblessness, school dropouts, adolescent pregnancy, and youth migration. The paper provides country-specific estimates of the costs of youth exclusion by using the human capital approach to valuing economic costs. In addition, the paper develops a new empirical methodology that benchmarks the costs of youth exclusion in Middle Eastern countries against a common hypothetical international “best-practice frontier” in

which the overall costs of youth exclusion are comparable across countries. Results show that youth exclusion poses major economic costs to Middle Eastern societies, reaching in 2006 as high as US\$53 billion in Egypt and about US\$1.5 billion in Jordan. Moreover, Middle Eastern countries are among the group furthest away from the best practice frontier as it relates to reducing youth exclusion, and their performance has deteriorated in recent years. Middle Eastern countries could decrease youth exclusion by at least 60 percent if they were to use their available resources more efficiently.

I. INTRODUCTION

Countries in the Middle East face their largest youth cohort in modern history. Young men and women in these countries are encountering increased social exclusion and marginalization. They face rising unemployment rates, higher exposure to health risks, and a precarious educational system. There is no doubt that youth exclusion in Middle Eastern countries is imposing high costs on their societies, and quantifying such costs is extremely important for making a case for investing in youth as an economically sound approach for Middle Eastern governments to take.

The costs of neglecting youth can be measured in terms of a depletion of human and social capital. Most of the costs are the opportunity costs of youth exclusion, namely lost productivity because of limited work lives, low human capital accumulation, and the absence of opportunities. There is a substantial loss of economic growth possibilities, which only increase as this large cohort ages and is without experience in the work force. Lifetime economic costs of youth exclusion, both for the individual and the society as a whole, can thus be quantified.

To date, there are no studies on the costs of youth exclusion in the Middle East. There are a few studies that try to measure the costs of youth exclusion in other countries and regions around the world. Notably, the World Bank recently released two reports demonstrating that the risky behaviors of young persons are costly not only to the youth themselves but to society generally. According to the study *Caribbean Youth Development: Issues and Policy Directions* (World Bank 2003), risky adolescent behavior has the following estimated costs: Youth crime and violence in St. Lucia generates, for instance, over US\$3 million in social indirect costs and US\$7.7 million in private indirect costs annually. Female youth unemployment in Jamaica generates an annual loss of 2.9 percent of gross domestic product (GDP). A similar exercise was undertaken as part of the study *Young People in South Eastern Europe: From Risk to Empowerment* (World

Bank 2004). This study finds that at the national level in Kosovo, for example, the report estimates that the cost of not investing in youth in Kosovo is 204 million euros (or one-third of the budget).¹

The main objective of this paper is to fill in the knowledge gap regarding the costs of youth exclusion in the Middle East by providing scientific estimates of the economic costs to society related to youth unemployment, youth joblessness, school dropouts, adolescent pregnancy, and youth migration in as many Middle Eastern countries as data permit. The paper seeks to provide country-specific estimates of the costs of youth exclusion by using a methodology similar to the one implemented by the World Bank in Latin American and southeastern European countries. In addition, the paper develops a new empirical methodology to benchmark the costs of youth exclusion in Middle Eastern countries against a common hypothetical “best-practice frontier,” in which the overall cost of youth exclusion would be comparable across countries. The country-specific and region-wide cost estimates are intended to provide policy makers concerned with the Middle East with powerful evidence to convince decision makers in the region to channel investments to youth and to start focusing on the challenges facing them.

Youth exclusion is multidimensional and may include other fields such as poverty, poor health status, and exclusion from health care, drug usage, and low access to decent housing, the Internet, and political participation. These other fields were excluded from the analysis either because of lack of data (for indicators related to health, digital divide, and housing access) or because the effect of a given indicator on GDP is not found to be conclusive in the literature (for instances of poverty and political participation). Therefore, the cost estimates herein only should be seen as a lower bound since the impossibility of fully measuring a human life is recognized.

II. METHODOLOGY

The paper first will build on the methodology developed in the World Bank (2003, 2004) to generate the economic costs of youth exclusion relative to specific dimensions: youth unemployment, youth joblessness, school dropouts, adolescent pregnancy, and youth migration. The cost of migration has not been evaluated previously, so an empirical model based on the erosion of human capital and productivity will be developed to provide an estimate for the cost of youth migration in terms of forgone GDP. The overall methodology attempts to measure the productive value of the individual and the measurable costs associated with various dimensions. The costing methodology adopts simple models of labor and education markets by focusing on the first order effects of the impacts of youth exclusion on economic costs to society. A more detailed picture of the dynamics of youth unemployment effects, for instance, would require adaptation to country specificities—youth skills and other labor market adjustment dynamics—that are not estimated here. The goal of the adopted methodology is to provide a lower bound on the economic costs of youth exclusion since it would be unrealistic to obtain a full characterization for all Middle Eastern countries of the real costs of youth exclusion.

Country-specific data essential for the cost estimation is drawn from various sources, including country-based household surveys, living conditions measurement surveys, Pan-Arab Project for Family Health (PAPFAM) surveys, labor surveys, and other poverty/income surveys. Data on wages and unemployment for youth are drawn from the ILO (2006). Data on health conditions are from UNICEF (2006) and Shepard and DeJong (2005). Macroeconomic and social development data are found in the

IMF International Financial Statistics, the World Bank's World Development Indicators, and ESC-WA statistical abstract databases. Youth migration data are from the Euro-Mediterranean Consortium for Applied Research on International Migration (www.carim.org). Additional data are drawn from the review paper by Chaaban (2007). The present paper defines the youth category as comprising individuals aged between 15 and 29.² Appendix B summarizes data availability by Middle East country.³

In the second part, the paper develops a methodology to provide cross-country estimates of the costs of youth exclusion across Middle Eastern states. Though single, country-specific cost indicators provide useful information, it is difficult to rank countries in terms of their youth exclusion costs according to these indicators. Several cross-country studies exist on the impact of investing in human capital,⁴ yet more often than not, one country does not dominate another country in all dimensions of youth development. There is, therefore, a need for synthetic measures that merge several indicators into a single statistic. We would like indicators that are obtained by unequally weighing the different youth inclusion objectives, with the weight of each objective being determined by the priority that is given to it. Data Envelopment Analysis (DEA) appears particularly well suited to obtain such synthetic indicators. As such, it allows for a full ranking of countries on the basis of their relative performance. The paper builds on recent innovative uses of DEA in Cherchye (2001) and Cherchye and Kuosmanen (2004) to estimate the aggregate costs of youth exclusion and compute estimates and rankings across Middle East countries.

III. COUNTRY-SPECIFIC COST ESTIMATES

In this section, we estimate the cost of youth unemployment in countries from the Middle East region following the methodology developed in World Bank (2003). The estimate captures the cost of youth unemployment in regard to lost wages due to unemployment. This exercise is conducted for the total youth population as well as for male and female youths. The costs are estimated using data from countries where unemployment and wage data are available.

In order to estimate the cost of unemployment, three target (or ideal) rates of youth unemployment are included. The first is set equal to zero unemployment for youth, the second sets the youth unemployment target equal to the adult unemployment rate, and the third sets the target equal to the youth unemployment rate of the United States. The first target zero youth unemployment rate is set as a purely hypothetical situation in which a country would have no unemployment. The second target set is to assume that the youths in a particular economy are not excluded from the labor market, as is the case in reality. The third target is set equal to the United States in line with the assumptions of World Bank (2003) and because the United States has one of the lowest youth unemployment rates among major developed economies.

COST OF YOUTH UNEMPLOYMENT

In the analysis, several assumptions are adopted. First, it is assumed that females earn 25 percent less than males, for consistency since some countries do not have detailed wage statistics. Second, for countries where youth wages are not present, we assume that youths earn only 80 percent of mean adult or total wages. Third, all wages are adjusted for inflation using the inflation rate from the GDP deflator.

The assumption that youth earn 80 percent of adult wages follows assumptions made by World Bank (2003) that youths are less experienced in the labor market. Also, raw micro-level wage data from Egyptian, Syrian, and Jordanian surveys confirm this assumption.

Equation (1) below is used throughout the estimation in order to calculate the cost as foregone output to the economy:

$$\text{Cost} = \frac{(UR_y - UR_y^*) \times LF \times w_y}{GDP} \quad (1)$$

Where UR_y is youth unemployment rate; UR_y^* is the target youth unemployment rate; LF_y is the number of youth labor force participants; w_y is real youth wage, and GDP is gross domestic product. Data for the number of youth labor force participants are drawn from the ILO's Key Indicators of the Labor Market (KILM) database, which projects employment data based on country-specific models. Mean annual wages used are as reported by the ILO and country-specific household surveys as well as mean annual youth wages for countries where available. GDP is drawn in current US dollars from the World Development Indicators database (World Bank), and inflation is calculated using the GDP deflator from the World Development Indicators. Appendix A summarizes these various variables.

Tables 3.1a through 3.1c below report the estimation results for the cost of youth unemployment in terms of the percentage of GDP in both US dollars (adjusted for purchasing power parity [PPP]) and local currency units (LCU). Costs obviously are greatest when we assume a youth unemployment

target rate of zero and vary according to a target rate equal to that of adults or to the U.S. youth unemployment rate. For the 11 Middle East countries included in the analysis, the average cost of youth unemployment when assuming a zero target is 2.32 percent of GDP, with the highest costs in Morocco (6.86 percent) and West Bank and Gaza (6.63 percent). The costs of male youth unemployment are higher than those of females since there are fewer females in the labor force in Middle East countries. Also note that Gulf region countries (Saudi Arabia, Qatar, and Bahrain) have low costs of unemployment. This is because these countries' labor markets have a high share of foreign workers. Even

though unemployment rates for young Gulf nationals are high, results did not differ much from the ones reported here when cost estimates were based on unemployment among nationals alone as the labor force shrank markedly when foreign workers were excluded, thus reducing the impact on GDP.

Total costs of youth unemployment for the selected group of Middle East countries reached close to US\$ 25 billion, if one were to assume reducing youth unemployment to zero. Female youth unemployment costs Egypt nearly US\$2.6 billion while male youth unemployment is highest in Morocco with a figure reaching US\$6.3 billion.

Table 3.1a: Cost of Youth Unemployment (% of GDP)

	Target Unemployment Rate = 0			Target Unemployment Rate = Adult			Target Unemployment Rate = US		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Algeria (2004)	2.60%	1.93%	0.66%	1.76%	1.32%	0.44%	1.87%	1.36%	0.50%
Bahrain (2001)	0.69%	0.45%	0.24%	0.63%	0.41%	0.21%	0.37%	0.20%	0.17%
Egypt (2004)	1.50%	0.63%	0.87%	1.38%	0.57%	0.80%	-0.18%	-0.72%	0.53%
Jordan (2002)	2.56%	1.87%	0.69%	1.84%	1.29%	0.54%	1.47%	0.99%	0.47%
Lebanon (2004)	1.70%	1.24%	0.45%	1.07%	0.82%	0.25%	0.73%	0.47%	0.25%
Morocco (2002)	6.86%	5.57%	1.29%	3.60%	3.06%	0.54%	2.40%	1.90%	0.49%
Qatar (2004)	0.13%	0.10%	0.03%	0.13%	0.10%	0.03%	-0.22%	-0.23%	0.01%
Saudi Arabia (2000)	1.22%	0.90%	0.32%	1.15%	0.85%	0.30%	0.59%	0.36%	0.22%
Syria (2004)	2.66%	1.46%	1.19%	2.36%	1.32%	1.04%	0.74%	0.01%	0.74%
West Bank and Gaza (2004)	6.63%	6.00%	0.63%	1.69%	1.24%	0.45%	4.53%	4.05%	0.47%
Yemen (2004)	2.90%	1.67%	1.22%	1.21%	0.63%	0.57%	1.53%	0.58%	0.95%
Total	2.32%	1.59%	0.73%	1.66%	1.11%	0.55%	0.85%	0.41%	0.45%

COST OF YOUTH JOBLESSNESS

The exercise above can be repeated using the youth joblessness rate instead of unemployment. The reason for this is to capture the labor force participation gap between males and females since female labor force participation rates are much lower than those for males in the region; unemployment rates do not capture this discrepancy. The definition of the joblessness rate is the summation of the unemployment rate and the inactivity rate of youths who are not in school. The same assumptions are used as above and data sources for inactivity rate are from KILM and from the national statistical agency of the observed country. The results of the estimation are summarized in the tables below.⁵

As expected, youth joblessness exacerbates the magnitude of welfare losses to society, especially for young females. Losses for female youth joblessness are between 2 to 7 percent of GDP higher than those under the scenario above in which only youth employment is taken into account.

EARLY SCHOOL LEAVING

Following World Bank (2003) and Cunningham and García-Verdú (2007), measuring the loss in potential earnings because of lower educational attainment is performed in two steps. First, an age-earnings profile is constructed using household

surveys for Jordan (2002), Egypt (2004), and Syria (2004). Taking the mean annual wage of each age group and each educational level of wage earners does this. Five-year age intervals are used for the construction of the age earnings profile. All wages reported as monthly are multiplied by twelve. It is assumed that after a certain age, labor force participants are forced out of the labor market, depending on the country's legal retirement age. In some cases, wage information is limited by data availability. At the same time, it is assumed that wage earning starts at the age of 15 for primary and secondary degree holders while earnings begin in the 20 to 24 age bracket for people with a university degree.

This exercise shows that the age-earnings relationship is not linear in all countries (See figures 1-3 in Appendix A); yet a Mincer-type earnings equation still can be generated from the available data.⁶ We also total the lifetime earnings at a certain level of educational attainment and subtract from it the total lifetime earnings at a lower level of education. This is done for males and females as well as on the general level.⁷

The equation used to generate the foregone earnings of having a higher degree is:

$$E = \sum_{t=t^s}^{t_s} \left(\frac{e_{i,t}^s}{(1+r)^t} \right) \quad (2)$$

Table 3.2a: Cost of Youth Joblessness (% of GDP)

	Target Unemployment Rate = 0			Target Unemployment Rate = Adult		
	Total	Male	Female	Total	Male	Female
Egypt (2004)	7.56%	1.59%	5.91%	7.29%	1.53%	5.66%
Jordan (2002)	5.33%	1.48%	3.84%	4.14%	0.88%	3.31%
Lebanon (2004)	3.69%	0.87%	2.65%	2.74%	0.43%	2.03%
Qatar (2004)	0.57%	0.12%	0.38%	0.57%	0.12%	0.38%
Syria (2004)	8.66%	1.22%	7.83%	9.09%	1.19%	8.08%
Total	6.95%	1.39%	5.56%	6.60%	1.28%	5.26%

where E is total lifetime earnings with education level E ; $e_{i,t}$ are the earnings of an individual with E educational level, t is the age at which this individual begins work depending on his/her educational attainment and T_i is the age at which this individual will retire, and r is the discount rate. The foregone earnings are computed as the difference between total lifetime earnings of $E+1$ and E (i.e., having an upper educational level). Finally, to calculate the total loss in earnings for all youth who were not in school in the observation year, we multiply the relative marginal gains (which are calculated above) by the number of students in the labor force who did not continue their education.

The data for this exercise are wages by age and educational level from the household surveys of Syria, Jordan, and Egypt, the number of students who did

not finish each level of education and school age population from EdStats (World Bank), and labor force participation data from KILM (ILO).

Table 3.3a reports the number of school dropouts by various categories and Table 3.3b contains the discounted lifetime earnings for each school leaver. These range between US\$18,000 to US\$45,000 according to gender and education level, with females earning less than males on average. Higher education seems to be consistently rewarded in all three countries, with lifetime earnings increasing by more than 50 percent as individuals increase their educational level.

Table 3.3c reports the net discounted lifetime earnings relative to primary education, with tertiary education in Jordan having the highest earnings profile relative to having a primary education.

Table 3.2b: Cost of Youth Joblessness in US Dollars (PPP, Thousands)

	Target Unemployment Rate = 0			Target Unemployment Rate = Adult		
	Total	Male	Female	Total	Male	Female
Egypt (2004)	23,124,892	4,875,735	18,077,616	22,307,581	4,675,885	17,328,033
Jordan (2002)	1,164,149	324,381	838,599	903,695	191,278	722,541
Lebanon (2004)	767,447	181,007	551,707	569,543	88,664	421,253
Qatar (2004)	181,460	37,878	121,945	180,196	37,135	121,065
Syria (2004)	5,939,636	836,449	5,371,682	5,656,269	738,383	5,031,823
Total	31,177,583	6,255,449	24,961,549	29,617,283	5,731,345	23,624,716

Table 3.2c: Cost of Youth Joblessness in Local Currency Units (Thousands)

	Target Unemployment Rate = 0			Target Unemployment Rate = Adult		
	Total	Male	Female	Total	Male	Female
Egypt (2004)	36,999,827	7,801,175	28,924,186	35,692,129	7,481,416	27,724,853
Jordan (2002)	354,553	98,793	255,404	275,229	58,256	220,057
Lebanon (2004)	1,011,571,538	238,585,192	727,204,593	750,714,438	116,868,162	555,254,229
Qatar (2004)	825,641	172,345	554,851	819,891	168,965	550,844
Syria (2004)	98,003,991	13,801,402	88,632,755	93,328,434	12,183,322	83,025,084

ADOLESCENT PREGNANCY AND YOUNG MOTHERS

Recent evidence suggests that the average nuptial age in the Middle East has risen considerably in recent years. And because nonmarital pregnancies are relatively rare in the relatively conservative societies of the Middle East, adolescent pregnancy is not the policy problem that it is in other parts of the world. That said, however, young marriage remains a problem in many parts of the Middle East, particularly in rural areas and countries such as Egypt, Mauritania, Morocco, West Bank and Gaza, Oman, Syria, and Yemen. As noted in Chaaban (2007), these countries have the highest adolescent fertility rates and the highest proportion of young women who gave birth before age 18.

Computing the costs linked to adolescent pregnancies is divided into four steps:

- Adolescent mother's foregone annual income
- Annual governmental child support
- Government income transfers and subsidies to adolescent mothers
- Medical care for mother and child

For the first part of this section, the equation used to generate the foregone annual earnings of an adolescent mother is:

$$I = w_F \times Emp_F - (w_{yF} \times Emp_{yF}) \quad (3)$$

where I is forgone annual earnings, w_f is mean adult female wage, Emp_f is adult female employment rate, w_{yF} is mean youth female wage, and Emp_{yF} is youth female employment rate.

For measuring annual child support that the adolescent mother receives relative to adult mothers, information about the proportion of annual wage that is dedicated to child support would be required. This data is lacking in the region, and assumptions would be needed about the value of child support as a percentage of annual wages and how much the adolescent mother receives in child support as a percentage of annual wages.⁸

Government transfers are defined in this context as the amount of government subsidies directed to adolescent mothers in terms of social assistance programs and funds. In the Middle East, this type of data also is unavailable. Instead, data from government expenditures by functionality could be used, but the functionalities do not break down into more detailed accounts. Therefore, government transfers are not included in this exercise.

The final part of the costs associated with adolescent pregnancy is the health care expenditure for each person; the data are available from the World Bank

Table 3.3a: Number of Out-of-School Individuals

		Egypt 2004	Jordan 2002	Syria 2004
Total	Primary	337,129	51,655	138,260
	Secondary	1,892,841	129,585	1,123,103
	Tertiary	8,220,650	553,920	2,410,432
Male	Primary	124,389	27,586	38,361
	Secondary	865,365	66,101	544,109
	Tertiary	4,218,067	281,432	1,212,671
Female	Primary	211,878	24,037	100,068
	Secondary	1,025,173	55,343	579,216
	Tertiary	4,002,658	271,774	1,197,752

HNPstats. According to World Bank (2003), adolescent mothers require 28.8 percent additional health care costs. This assumption also is used here.

All of the above costs correspond to the average costs of early pregnancy. Therefore, the average cost a year would be their summation. For measuring the total cost a year, the average cost must be

multiplied by the number of adolescent births in the observation year. Finally, to get the total lifetime cost, the following equation is applied:

$$TC = (ac \times 25) + TI \times (65-25-15) \quad (4)$$

where TC is total lifetime cost, ac is average cost, and TI is the mother's lifetime income. The age at

Table 3.3b: Discounted Lifetime Earnings per School Leaver

		US Dollars			Local Currency Units		
		Egypt 2004	Jordan 2002	Syria 2004	Egypt 2004	Jordan 2002	Syria 2004
Total	Primary Education	22,948	18,217	20,839	142,050	12,752	1,041,968
	Secondary Education	25,762	22,582	21,078	159,467	15,808	1,053,901
	Tertiary Education	38,453	40,586	29,247	238,026	28,410	1,462,340
Male	Primary Education	25,430	19,170	21,801	157,413	13,419	1,090,040
	Secondary Education	27,969	24,575	22,096	173,128	17,203	1,104,777
	Tertiary Education	40,732	44,765	30,902	252,131	31,336	1,545,122
Female	Primary Education	19,634	11,220	15,572	121,536	7,854	778,624
	Secondary Education	23,196	18,914	21,027	143,580	13,240	1,051,332
	Tertiary Education	34,833	34,174	27,961	215,617	23,921	1,398,071

Note: Discount rate = 6 percent as in World Bank (2003).

Table 3.3c: Net Discounted Lifetime Earnings Relative to Primary Education per School Leaver

		US Dollars			Local Currency Units		
		Egypt 2004	Jordan 2002	Syria 2004	Egypt 2004	Jordan 2002	Syria 2004
Total	Secondary	2,814	4,365	239	17,417	3,055.37	11,933
	Tertiary	15,505	22,369	8,407	95,976	15,658.01	420,372
Male	Secondary	2,539	5,406	295	15,714	3,784.00	14,737
	Tertiary	15,302	25,596	9,102	94,717	17,916.91	455,082
Female	Secondary	3,561	7,694	5,454	22,043	5,385.53	272,708
	Tertiary	15,199	22,953	12,389	94,081	16,067.32	619,447

Table 3.4a: Average and Total Cost of Adolescent Pregnancy per Year

	Average Cost per Year		Total Cost per Year	
	USD PPP	LCU	USD PPP	LCU
Algeria (2004)	2,174	74,942	29,827,734	1,028,126,687
Bahrain (2001)	4,382	1,389	2,160,135	684,719
Egypt (2004)	4,088	6,541	652,304,701	1,043,687,522
Jordan (2002)	2,559	780	20,165,936	6,141,737
Lebanon (2004)	2,709	3,570,566	15,343,060	20,223,687,670
Morocco (2002)	3,930	13,754	266,969,131	934,391,957
Qatar (2004)	4,529	19,801	2,273,631	9,940,272
Saudi Arabia (2000)	8,790	29,143	318,284,321	1,055,241,659
Syria (2004)	1,641	27,081	61,282,456	1,011,160,519
Yemen (2004)	601	81,138	69,191,694	9,347,797,815

Table 3.4b: Average and Total Lifetime Cost of Adolescent Pregnancy

	Average Cost of Lifetime		Total cost of Lifetime	
	USD PPP	LCU	USD PPP	LCU
Algeria (2004)	81,884	2,871,462	1,123,360,001	39,393,583,349
Bahrain (2001)	165,066	53,475	81,377,297	26,363,188
Egypt (2004)	153,192	245,108	24,443,213,634	39,109,141,815
Jordan (2002)	86,706	26,407	683,157,333	208,062,397
Lebanon (2004)	92,104	121,401,875	521,675,306	687,620,220,808
Morocco (2002)	145,441	509,042	9,880,654,109	34,582,289,381
Qatar (2004)	173,672	770,050	87,183,303	386,565,292
Saudi Arabia (2000)	354,921	1,187,432	12,851,331,752	42,995,707,478
Syria (2004)	68,840	1,135,862	2,570,421,205	42,411,949,875
Yemen (2004)	22,821	3,083,057	2,629,110,171	355,192,784,165

Note: This cost is for each cohort.

which the mother leaves the labor force is 65, the number of years the child lives at home is 25, and the age at which the mother enters the labor market is 15.⁹ Appendix A contains summary statistics about all variables used in computing the cost of adolescent pregnancy.

The yearly total cost of young adolescent mothers is reported in Table 3.4a. This cost ranges from US\$2.1 million in countries such as Bahrain to a high of US\$652.3 million in Egypt. Morocco and Egypt exhibit high costs of adolescent pregnancy because of the large number of young adolescent mothers. Saudi Arabia also has a high cost, chiefly because of high female wage rates (which are forgone by pregnant mothers).

The lifetime total cost of adolescent pregnancy that includes forgone future earnings, as shown in table 3.4b, reached a high of around US\$24.4 billion in Egypt, US\$12.8 billion in Saudi Arabia and US\$9.8 billion in Morocco. The high cost borne by Egypt is because of the high rate of adolescent pregnancies prevailing there, especially in rural areas.

YOUTH MIGRATION

In addition to the cost estimates above, we have estimated the cost of having high rates of youth migration out of countries in the Middle East region. This is carried out by calculating probabilities associated with being economically inactive and being in the labor force in home countries. The probability of migrating is drawn from national migration surveys based on reasons for migrating. The *net* foregone income because of a smaller labor force is calculated as follows: the number of migrants in the age group (15 to 29) less the average remittances for each migrant sent to the country of origin. The total cost of youth migration is then given by the following equation:

$$TC_M = M \times LF \times Emp \times (w_y - rem) \quad (5)$$

where TC_M is the total cost of youth migration, M is the number of youth migrants ages 15 to 29, LF is the labor force participation rate, Emp is the employment rate, w_y is average youth annual wage (USD PPP), and rem is average remittances for each youth migrant (in US dollars, PPP).

Table 3.5a: Cost of Youth Migration in US Dollars (PPP) and as a Share of GDP
Assuming returns migrant follow local labor market conditions

Assumption 1: Youth send 50% of average remittances		
	USD PPP	% GDP
Egypt 2000	1,030,957,394	0.34%
Jordan 2004	11,573,266	0.05%
Morocco 1998	9,163,303	0.01%
Assumption 2: Youth send the same as average remittances		
	USD PPP	% GDP
Egypt 2000	766,004,673	0.25%
Jordan 2004	8,828,739	0.04%
Morocco 1998	-7,933,147	-0.01%

Assuming returns migrant follow local labor market conditions

The cost of youth migration here only provides a lower bound approximation to the true costs (or benefits), which include the positive effects migrants have on the current account balance through remittance transfers. In countries such as Morocco or Tunisia, migrant remittances are the first source of foreign currency. Moreover, some positive spillovers can come from educated workers through network effects, technological transfers, and foreign direct investment attraction. All of these effects are

difficult to quantify, yet they are surely important in analysing the net effects of youth migration.

Data on migrations by age group are drawn from the Euro-Mediterranean Consortium for Applied Research on International Migration (CARIM). Mean wages by age group are from the national household surveys. Total migrant stock data are drawn from the UN world migration prospects and workers' remittances data are from the World Development Indicators. See Appendix A for a summary of these variables.

Table 3.5b: Cost of Youth Migration in US Dollars (PPP) and as a Share of GDP
Assuming all return migrants are employed

Assumption 1: Youth send 50% of average remittances		
	USD PPP	% GDP
Egypt 2000	3,173,860,897	1.04%
Jordan 2004	33,320,278	0.15%
Morocco 1998	26,154,712	0.03%
Assumption 2: Youth send the same as average remittances		
	USD PPP	% GDP
Egypt 2000	2,358,188,897	0.77%
Jordan 2004	25,418,583	0.12%
Morocco 1998	-22,643,492	-0.02%

Assuming all return migrants are employed

Table 3.6: Total Cost of Youth Exclusion for Egypt and Jordan

	Egypt	Jordan
Cost of unemployment	1.51%	2.57%
Cost of joblessness	7.559%	5.329%
Cost of early school leaving	6.947%	1.447%
Cost of adolescent pregnancy	7.99%	3.13%
Cost of youth migration	1.037%	0.153%
Total cost of youth exclusion*	17.48%	7.29%

** The total cost of youth exclusion excludes the cost of unemployment since this is already counted under joblessness*

The total cost of youth exclusion, as measured by this paper, can reach a staggering 17.4 percent of GDP in Egypt and nearly 7.3 percent of GDP in Jordan.

The estimate of the costs of youth migration was made using two scenarios. First, the assumption was that all returning youth migrants follow the same local labor market conditions when they come home and, therefore, not all of them are employed. Second, an assumption is made, as a theoretical benchmark, that all of them are employed. Table 3.5a reports results for Jordan, Egypt, and Morocco under the first assumption and Table 3.5b makes the second assumption.

The cost of youth migration in these three countries appears to be quite low, mostly because of the significant impact of remittances compared to the prevailing wages in the sending countries. The cost is even negative in Morocco if one assumes that young Moroccans send the same amount of remittances as their adult counterparts. It should be stressed that the cost of migration only uses the direct comparison between the monetary values of earnings against remittances and does not include other non-monetary costs of migration linked to

possible poor health, bad living conditions, and psychological stress. The monetary cost is therefore only a lower bound on the true cost of youth migration.

TOTAL COST OF YOUTH EXCLUSION IN EGYPT AND JORDAN

The costs of youth unemployment, early school leaving, adolescent pregnancy, and youth migration can be aggregated for countries that have a cost for each field. Unfortunately, data availability constrained this aggregation to Egypt and Jordan. Table 3.6 summarizes the cost of youth exclusion in each of these fields. The total cost of youth exclusion, as measured by this paper, can reach a staggering 17.4 percent of GDP in Egypt and nearly 7.3 percent of GDP in Jordan. The cost of youth exclusion in Egypt is as high as the total value-added of Egypt's agricultural sector, close to 17 percent of GDP.¹⁰

IV. CROSS-COUNTRY NONPARAMETRIC ESTIMATES

In addition to the monetary value assigned to each field of youth exclusion, it would be useful to have a cross-country comparison of the performance of Middle East governments to other countries around the world in improving the livelihood of their younger populations. Yet at least two constraints make this endeavor difficult. First, data availability about youth-related fields in countries around the world is a major issue. If estimates were made of the monetary cost of youth exclusion similar to the one for Egypt and Jordan above, a vast array of variables would have to be gathered. If one of them were missing, the country then would have to be dropped from the full analysis. Second is the issue of comparability of fields. The total cost of youth exclusion computed previously is a simple summation of the monetary cost of each field. Yet some researchers or policy makers might argue that one field is more important than the other and therefore might require an extra weight assigned to it. Assigning random weights to each field of youth exclusion is not accurate. One would therefore want a methodology that unequally weighs the different youth inclusion objectives, with the weight of each objective being determined by the priority that is given to it.

Data Envelopment Analysis (DEA) appears particularly well suited to obtain such an outcome. It allows for a full comparison among countries on the basis of their relative performance. The empirical model in this section builds on recent innovative uses of DEA in Cherchye (2001) and Cherchye and Kuosmanen (2004) to estimate the aggregate costs of youth exclusion and compute estimates across Middle East countries.

DEA uses piecewise linear programming to calculate the best practice frontier for a sample of decision-making units (DMUs). This technology frontier also envelops the less efficient units, with the distance between these units' positions and the calculated frontier providing an indicator of their relative inefficiency. DEA models can be input- or output-oriented. Input-oriented models typically seek to answer the following question: "By how much can input usage be proportionally reduced without changing the output quantities produced?" Output-oriented models deal with the question: "By how much can output levels be proportionally expanded

without modifying the input quantities used?" DEA chiefly has been used to evaluate the relative efficiency of productive firms. Recently, however, its use has been expanded to cover the measurement of efficiency in hospitals, universities, political campaigns, and human development.

In the context of cross-country comparison of the costs of youth exclusion, we model countries as decision-making units producing a set of "outputs" linked to youth exclusion by using a set of "inputs" linked to investments in human capital. The theoretical model underlying the estimation procedure, which is based on the axiomatic approach to modeling the production technology, constructs a weighted average of outputs and inputs with a view to maximize efficiency.¹¹

In the context of youth exclusion, we seek to model the "production" of youth inclusion by countries using a set of inputs. The question we seek to answer is: "If a country is using a given set of resources, by how much can it reduce youth exclusion compared to the 'best practice frontier' in reducing youth exclusion?" The DEA programming model helps to construct such a frontier and assign a score for each country indicating how far it lies from this hypothetical benchmark. In addition to this, the DEA empirical framework allows one to move away from international development benchmarking models based solely on outputs (like the Human Development Index) by combining resources and outcomes in an integrative framework. This is particularly well-suited for countries in the Middle East region which have diverse resource endowments. Looking at both inputs and outcomes allows for a better assessment of how Middle East countries are performing towards development goals in general, and youth inclusion in particular.

Cross-country data linked to youth exclusion is available only for three fields: youth unemployment (as an economic outcome), school dropouts (education outcome), and adolescent fertility rates (health outcome). We consider these three fields as the (negative) outputs that countries seek to minimize. For inputs, we use investment-to-GDP ratio as a proxy for a country's overall economic investment level, the share of labor force of the total population

as a proxy for a country's labor input, and public education and health total expenditures (as shares of GDP) as proxies for public investment in human capital. We seek to capture through these inputs the macroeconomic factors that closely affect youth exclusion since we do not have specific data by country on investments in youth-linked initiatives.

Moreover, to estimate the evolution of the cross-country costs of youth exclusion over time, data on all of these variables must be available for most countries in several time periods. In this regard, data from the World Development Indicators, the IMF's Global Financial Statistics, and the Penn World Tables allow a homogeneous sample of fifty-four countries (with seven countries from Middle East) grouped in two time periods each spanning four years: 1995-1999 and 2000-2004.

It should be noted here that the goal of this cross-country empirical exercise is not to suggest a definitive shape of the optimal 'production function' for youth inclusion. Rather, the non-parametric DEA estimation in the context of youth inclusion should be viewed as a first attempt to provide a robust integrative framework for the analysis of the multi-dimensionality of the factors involved in achieving positive development outcomes for the younger generation.

Table 4.1 below summarizes the findings of the cross-country, non-parametric linear programming estimation.¹² Many countries in the Organization

for Economic Cooperation and Development and developed countries are on the frontier since they are not required to reduce youth exclusion (i.e., simultaneously decrease youth unemployment, school dropouts, and adolescent pregnancy). Not surprisingly, Middle East countries are among the furthest from the frontier. Using the same level of resources, Lebanon could have decreased youth exclusion by 82 percent in the period 1995-1999, a figure that somewhat improved to 78 percent in 2000-2004. Similarly, Saudi Arabia could have decreased youth exclusion by as much as 73 percent in the later period. Most Middle East countries included in the estimation could have decreased youth exclusion by using the same level of resources by at least 60 percent (with the notable exception of Tunisia), and some of them have witnessed deterioration in their distance compared to the top countries in recent years.

The cross-country results also show some interesting features for the Middle East region. It found that resource endowments do not really affect the country's rank relative to others: Notice that Morocco and Yemen are so close in their ranks while they have different resources at their disposal; and Saudi Arabia, a resource-rich country, is even lower in ranking. This clearly demonstrates that relative performance in achieving youth inclusion is mostly connected with the efficiency by which countries use their resources to obtain better outcomes.

Table 4.1: Potential Decrease in Youth Exclusion Compared to the “Best Practice” Frontier

Country	1995-1999	2000-2004
Denmark	0%	0%
Iceland	0%	0%
Japan	0%	0%
Korea, Rep.	0%	0%
Mexico	0%	0%
Netherlands	0%	0%
Norway	0%	0%
Sweden	0%	0%
Switzerland	0%	0%
Germany	0%	2%
Ireland	38%	6%
Slovenia	27%	14%
United Kingdom	34%	19%
Australia	41%	21%
New Zealand	41%	21%
Tunisia	28%	23%
Malaysia	43%	24%
Bolivia	0%	26%
Luxembourg	17%	31%
Belgium	54%	32%
United States	33%	34%
Italy	28%	38%
Hungary	50%	40%
Finland	41%	45%
El Salvador	68%	46%
France	55%	47%
Portugal	30%	47%
Ukraine	69%	48%
Estonia	43%	52%
Romania	67%	58%
Spain	48%	58%
Ecuador	83%	59%
Lithuania	67%	59%
Nicaragua	78%	59%
Israel	44%	60%
Brazil	71%	62%
Morocco	73%	62%
Greece	64%	65%
Trinidad and Tobago	77%	66%
Yemen, Rep.	66%	66%
Poland	70%	67%
Jamaica	74%	68%
Iran, Islamic Rep.	71%	69%
Peru	70%	71%
Croatia	69%	72%
Jordan	77%	72%
Dominican Republic	84%	73%
Saudi Arabia	58%	73%
Philippines	77%	75%
Lebanon	82%	78%
Panama	77%	78%
Argentina	76%	79%
Namibia	78%	81%
South Africa	84%	84%

V. CONCLUSION

This paper has shown that the costs of youth exclusion in the Middle East are pervasive, with the economic costs to society related to youth unemployment, youth joblessness, school dropouts, adolescent pregnancy, and youth migration reaching billions of dollars in many Middle Eastern countries. Moreover, using a new empirical methodology to benchmark the costs of youth exclusion in Middle Eastern countries against a common hypothetical “best practice frontier,” the paper finds that most Middle East countries lie low compared to other countries. This indicates that Middle East countries are inefficiently using their resources, especially public spending on health and education, when these resources are evaluated through a youth lens. Most Middle East countries could decrease youth exclusion by a range of 20 to 80 percent while maintaining the same levels of public spending. This points to inefficiencies inherent in the programs addressing youth development in the region since employment, educational, and health policies are not really addressing the concerns of the younger generations.

The country-specific cost estimates should be viewed not as a final and precise estimate of the

costs of youth exclusion since real costs extend beyond economic costs to include psychological and mental costs that are difficult to measure. In all cases, the costs reported in this paper represent a call to action since delaying reforms in institutions and programs addressing youth concerns is no longer sustainable. This is true in oil-rich countries and non-oil producers since the economic costs of youth exclusion carry with them a certain inertia that cannot be recouped from lucrative oil revenues.

The high costs of youth exclusion and the low ranking of Middle East countries relative to international best practices also represent a case for higher investment in youth-oriented policies. Small, well-targeted investments in youth employment initiatives, educational upgrading, and better health care would generate high potential returns when forgone costs are high. It is therefore up to policy makers in the Middle East region to engage in this unique opportunity to minimize youth exclusion and make the best uses of the untapped talents of their younger generation.

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APPENDIX A: VARIABLES USED IN THE COSTING ANALYSIS

Table A.1: Cost of Youth Unemployment:

Country	Year	Total youth unemployment (%)	Male youth unemployment (%)	Female youth unemployment (%)	Total adult unemployment (%)	Male adult unemployment (%)	Female adult unemployment (%)
Algeria	2004	43.40	42.80	46.30	13.90	13.60	15.30
Bahrain	2001	12.09	9.02	18.96	1.91	1.48	3.90
Egypt	2004	15.92	5.88	28.82	1.12	0.54	2.08
Jordan	2002	28.87	27.24	36.31	8.25	8.38	7.48
Lebanon	2004	19.72	18.51	22.45	7.03	6.27	9.85
Morocco	2002	19.08	19.45	18.01	9.18	8.76	10.40
Qatar	2004	5.45	3.91	13.05	0.10	0.09	0.25
Saudi Arabia	2000	14.38	12.60	21.44	1.02	0.88	2.05
Syria	2004	16.17	12.64	28.82	1.66	1.21	3.81
West Bank and Gaza	2004	39.80	38.90	44.80	28.25	30.86	12.38
Yemen	2004	23.83	19.37	48.69	13.91	11.99	25.92

Table A.1 (cont'd)

Country	Total youth labor force participants	Male youth labor force participants	Female youth labor force participants	Mean annual wage, USD (PPP)	Mean annual wage, LCU	GDP, USD millions (PPP)	Inflation (%)
Algeria	3,514,059	2,470,790	1,040,256	4,402.7	159,596.5	214,623	0.11
Bahrain	101,990	78,370	23,600	6,651.3	2,246.4	11,042	-0.05
Egypt	8,236,270	5,991,070	2,245,180	6,221.9	9,955.0	305,930	0.12
Jordan	760,200	555,620	204,560	2,732.8	832.3	21,845	0.01
Lebanon	454,130	324,500	129,600	4,336.9	5,716,440.0	20,802	0.00
Morocco	4,420,300	3,316,170	1,104,120	9,829.7	34,404.0	112,954	0.01
Qatar	107,030	96,420	10,610	10,011.4	45,552.0	31,734	0.12
Saudi Arabia	2,357,160	2,045,170	311,980	19,250.9	65,352.0	260,205	0.12
Syria	3,663,140	2,480,090	1,183,030	3,542.4	58,450.2	68,580	0.09
West Bank and Gaza	176,715	157,708	19,209	3,771.8	21,121.8	3,608	0.06
Yemen	2,616,390	1,884,530	731,830	1,181.4	159,600.9	21,581	0.16

Table A.2: Cost of Youth Joblessness

Country	Sex	Inactivity rate (%)	Unemployment to population ratio (%)	Rate of joblessness (%)	Labor force participation	Number of inactive youth	Youth population	Adult un-employment rate (%)
Egypt 2004	Total	23.97	7.59	31.57	8,236,270	5,079,346	21,186,500	1.12
	Male	7.24	5.86	13.10	5,991,070	775,077	10,705,600	0.54
	Female	40.93	9.35	50.28	2,245,180	4,290,005	10,480,900	2.08
Jordan 2002	Total	25.93	10.94	36.87	760,200	405,936	812,290	8.25
	Male	3.85	16.57	20.41	555,620	31,256	753,190	8.38
	Female	48.95	5.07	54.03	204,560	368,708	946,090	7.48
Lebanon 2004	Total	19.02	8.22	27.24	471,520	17,99,56	946,090	7.03
	Male	1.38	10.91	12.30	333,780	6,626	478,450	6.27
	Female	36.04	5.63	41.66	137,730	1,68,513	467,620	9.85
Qatar 2004	Total	11.71	3.35	15.06	114,322	21,766	185,811	0.10
	Male	1.35	3.06	4.42	95,282	1,646	121,560	0.09
	Female	31.31	3.87	35.18	19,040	20,120	64,251	0.25
Syria 2004	Total	27.48	7.38	34.86	3,663,140	1,635,802	5,951,860	1.66
	Male	1.43	8.88	10.31	2,480,090	43,292	3,018,200	1.21
	Female	54.33	5.84	60.17	1,183,030	1,593,821	2,933,650	3.81

Table A.2: (cont'd)

Country	Year	Youth mean annual wage, USD (PPP)	Youth mean annual wage, LCU	GDP, current USD in billions (PPP)	Inflation rate (%)
Egypt	2004	6,221.86	9,955	305,930	11.58%
Jordan	2002	2,732.83	832	21,845	0.92%
Lebanon	2004	4,336.88	5,716,440	20,802	0.30%
Qatar	2004	10,011.43	45,552	31,734	11.59%
Syria	2004	3,542.44	58,450	68,580	9.24%

Figure A.1a-A.1c: Early School Leaving in Egypt
Age earning profile by country and by sex

Figure A.1a

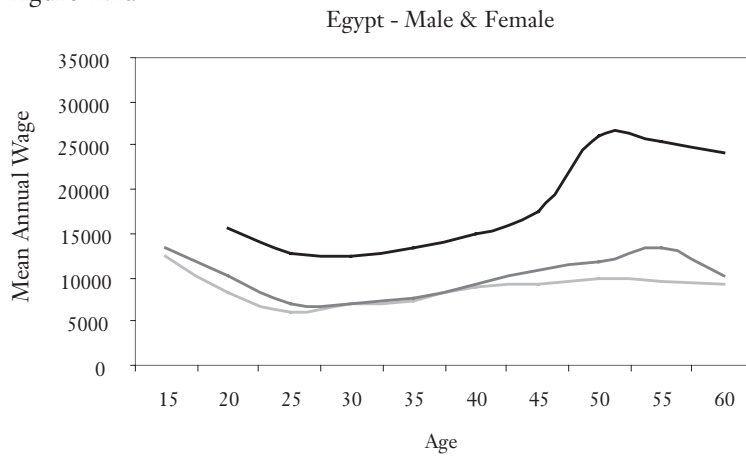


Figure A.1b



Figure A.1c



Figure A.2a – A.2c: Early School Leaving in Jordan
Age earning profile by country and sex

Figure A.2a



Figure A.2b



Figure A.2c

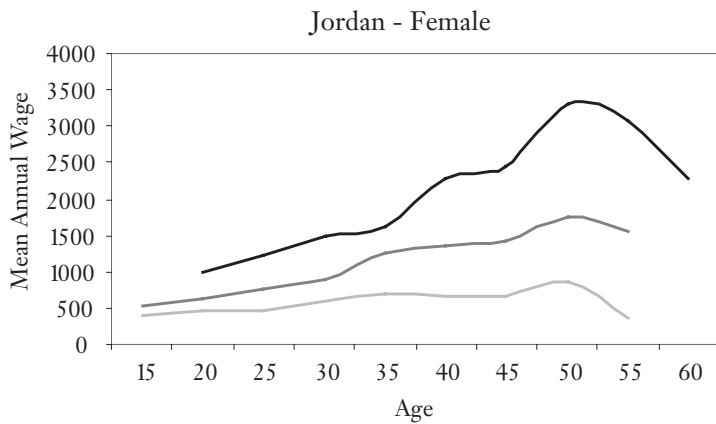


Figure A.3a-A.3c: Early School Leaving in Syria
Age earning profile by country and sex

Figure A.3a

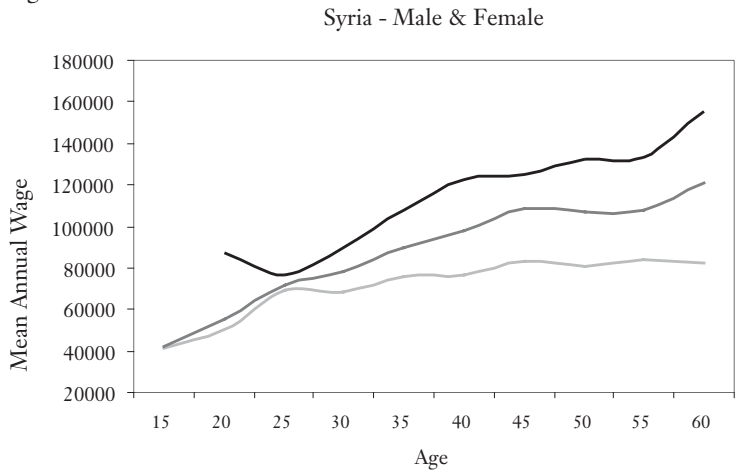


Figure A.3b

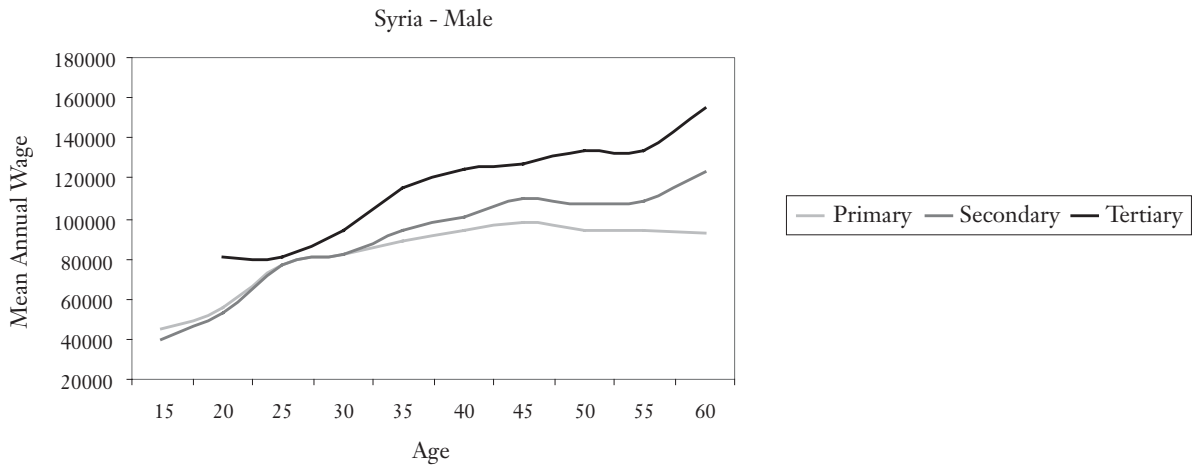


Figure A.3c



Table A.4a: Age Earning Profile in Egypt in LCU (2004)

	Age Bracket	Age									
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
Male	Primary	12,575	9,371	8,045	7,904	8,546	10,003	10,125	11,829	11,101	8,596
	Secondary	13,753	11,012	8,287	8,128	9,475	10,686	12,087	13,034	13,678	7,232
	Tertiary	-	15,359	12,750	12,962	15,356	16,956	19,606	30,862	28,724	24,242
Female	Primary	12,293	6,447	4,010	5,458	5,576	7,447	6,908	7,601	7,589	11,314
	Secondary	12,963	9,425	5,456	5,545	5,619	7,339	8,785	9,536	12,653	17,301
	Tertiary	-	15,658	12,727	11,569	10,922	12,437	13,495	17,932	19,817	23,436
Total	Primary	12,447	8,189	6,053	6,975	7,334	8,925	9,078	9,965	9,680	9,385
	Secondary	13,347	10,295	6,979	6,962	7,750	9,312	10,712	11,800	13,316	10,109
	Tertiary	-	15,513	12,740	12,343	13,397	15,083	17,635	25,990	25,496	24,042

Table A.4b: Age Earning Profile in Jordan in LCU (2002)

	Age Bracket	Age									
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
Male	Primary	472	760	932	1,072	1,067	1,233	1,174	1,294	1,146	1,007
	Secondary	607	872	1,064	1,250	1,424	1,612	1,837	2,081	1,634	1,929
	Tertiary	-	1,190	1,460	2,048	2,306	2,626	3,359	3,635	3,781	3,348
Female	Primary	382	456	468	582	705	662	677	856	360	-
	Secondary	541	637	768	891	1,247	1,346	1,411	1,750	1,544	-
	Tertiary	-	1,005	1,215	1,480	1,630	2,289	2,459	3,300	3,060	2,280
Total	Primary	466	737	896	1,033	1,034	1,205	1,143	1,288	1,133	1,007
	Secondary	595	812	992	1,141	1,378	1,547	1,759	2,047	1,628	1,929
	Tertiary	-	1,121	1,379	1,856	2,099	2,560	3,270	3,631	3,756	3,281

Table A.4c: Age Earning Profile in Syria in LCU (2004)

	Age Bracket	Age									
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
Male	Primary	45,561	55,986	76,279	82,105	88,692	93,533	97,701	93,875	94,002	92,358
	Secondary	39,497	53,426	77,083	82,738	94,042	100,243	110,136	107,107	108,669	122,897
	Tertiary	-	81,119	80,986	93,861	115,701	125,089	127,702	133,470	133,706	155,192
Female	Primary	36,056	40,637	50,002	54,740	63,374	68,899	76,370	77,022	87,713	71,100
	Secondary	50,463	57,844	63,494	72,164	84,547	94,653	103,684	106,699	102,635	72,000
	Tertiary	-	96,871	71,553	81,117	93,351	109,614	110,290	122,709	123,514	-
Total	Primary	44,796	55,147	74,406	80,011	86,721	91,661	96,419	93,203	93,700	91,444
	Secondary	41,920	55,491	71,379	78,422	89,833	98,223	108,597	107,024	107,976	121,200
	Tertiary	-	87,650	76,320	89,385	108,009	122,207	124,725	132,188	133,064	155,192

Note: Figures in Cells are mean annual wage per age bracket per educational attainment in current year local currency units

Table A.5a: Age Earning Profile in Egypt in US Dollars (2004)

	Age Bracket	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
Male	Primary	2,032	1,514	1,300	1,277	1,381	1,616	1,636	1,911	1,793	1,389
	Secondary	2,222	1,779	1,339	1,313	1,531	1,726	1,953	2,106	2,210	1,168
	Tertiary	-	2,481	2,060	2,094	2,481	2,739	3,167	4,986	4,640	3,916
Female	Primary	1,986	1,041	648	882	901	1,203	1,116	1,228	1,226	1,828
	Secondary	2,094	1,523	881	896	908	1,186	1,419	1,541	2,044	2,795
	Tertiary	-	2,530	2,056	1,869	1,764	2,009	2,180	2,897	3,201	3,786
Total	Primary	2,011	1,323	978	1,127	1,185	1,442	1,466	1,610	1,564	1,516
	Secondary	2,156	1,663	1,127	1,125	1,252	1,504	1,731	1,906	2,151	1,633
	Tertiary	-	2,506	2,058	1,994	2,164	2,437	2,849	4,199	4,119	3,884

Table A.5b: Age Earning Profile in Jordan in US Dollars (2002)

	Age Bracket	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
Male	Primary	675	1,086	1,331	1,532	1,524	1,761	1,678	1,849	1,638	1,438
	Secondary	868	1,246	1,520	1,785	2,035	2,302	2,624	2,973	2,335	2,755
	Tertiary	-	1,700	2,086	2,926	3,295	3,752	4,798	5,193	5,402	4,782
Female	Primary	545	652	668	831	1,007	946	968	1,223	514	-
	Secondary	772	909	1,098	1,273	1,782	1,923	2,016	2,500	2,206	-
	Tertiary	-	1,436	1,736	2,114	2,328	3,270	3,512	4,714	4,371	3,257
Total	Primary	665	1,052	1,280	1,476	1,478	1,721	1,633	1,840	1,618	1,438
	Secondary	849	1,160	1,418	1,630	1,968	2,210	2,513	2,925	2,326	2,755
	Tertiary	-	1,601	1,970	2,651	2,998	3,657	4,671	5,187	5,366	4,687

Table A.5c: Age Earning Profile in Syria in US Dollars (2004)

	Age Bracket	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
Male	Primary	911	1,120	1,526	1,642	1,774	1,871	1,954	1,877	1,880	1,847
	Secondary	790	1,069	1,542	1,655	1,881	2,005	2,203	2,142	2,173	2,458
	Tertiary	-	1,622	1,620	1,877	2,314	2,502	2,554	2,669	2,674	3,104
Female	Primary	721	813	1,000	1,095	1,267	1,378	1,527	1,540	1,754	1,422
	Secondary	1,009	1,157	1,270	1,443	1,691	1,893	2,074	2,134	2,053	1,440
	Tertiary	-	1,937	1,431	1,622	1,867	2,192	2,206	2,454	2,470	-
Total	Primary	896	1,103	1,488	1,600	1,734	1,833	1,928	1,864	1,874	1,829
	Secondary	838	1,110	1,428	1,568	1,797	1,964	2,172	2,140	2,160	2,424
	Tertiary	-	1,753	1,526	1,788	2,160	2,444	2,495	2,644	2,661	3,104

Table A.6: Adolescent Pregnancy

Country	Year	Mean adult female wage, USD (PPP)	Mean adult female wage, LCU	Adult female employment rate (%)	Mean youth female wage, USD (PPP)	Mean youth female wage, LCU	Youth female employment rate (%)	Health expenditure per person, USD	Health expenditure per person, LCU	Adolescent births
Algeria	2004	3,522	127,677	96.10	2,818	102,142	81.04	415	12,027	13,719
Bahrain	2001	5,321	1,797	84.70	4,257	1,438	53.70	1045	283	493
Egypt	2004	4,977	7,964	97.92	3,982	6,371	71.18	999	1599	159,559
Jordan	2002	2,186	666	92.52	1,749	533	63.69	1022	311	7879
Lebanon	2004	3,470	4,573,152	90.15	2,776	3,658,522	77.55	934	1,230,874	5664
Morocco	2002	7,864	27,523	89.60	6,291	22,019	81.99	651	2279	67,936
Qatar	2004	8,009	36,442	99.75	6,407	29,153	86.95	688	2504	502
Saudi Arabia	2000	15,401	52,282	97.95	12,321	41,825	78.56	798	2166	36,209
Syria	2004	2,834	46,760	96.19	2,267	37,408	71.18	74	1221	37,339
Yemen	2004	945	127,681	74.08	756	102,145	51.31	112	15,077	115,208

Table A.7: Cost of Youth Migration

	Egypt 2000	Jordan 2004	Morocco 1998
Number of migrants 15-29	641,212	15,084	93,045
Average remittances per migrant (USD, PPP)	2,544	1,048	1,049
Average annual wage (USD, PPP)	6,222	2,733	806
Unemployment rate (%)	15.92	28.87	35.00
Employment rate (%)	84.08	71.13	65.00
Labor force participation rate (%)	38.63	48.83	54.00

APPENDIX B: DATA AVAILABILITY

Table B.1: Youth Unemployment

	Youth unemployment	Youth labor force participation	Mean annual wage	GDP (current USD)	Inflation rate
Algeria	2004	2004	2004	2004	2004
Bahrain	2001	2001	2001	2001	2001
Egypt	2004	2004	2004	2004	2004
Iran	2005	2005	-	2005	2005
Jordan	2002	2002	2002	2002	2002
Kuwait	-	2000	2000	2000	2000
Lebanon	2004	2004	2001	2004	2004
Morocco	2003	2003	-	2003	2003
Qatar	2004	2004	2004	2004	2004
Saudi Arabia	2000	2000	2000	2000	2000
Syria	2004	2004	2004	2004	2004
West Bank/Gaza	2004	2004	2004	2004	2004
Yemen	2004	2004	2003	2004	2004

Note: Shaded cells indicate mismatching data years; “-” indicates missing data; “any year” indicates that data is available for any year depending on the missing data in the respective section.

Table B.2: Youth Joblessness

	Youth unemployment	Youth inactivity	Youth labor force participation	Mean annual wage	GDP (current USD)	Inflation rate
Algeria	2004	2004	2004	2004	2004	2004
Bahrain	2001	2001	2001	2001	2001	2001
Egypt	2004	2004	2004	2004	2004	2004
Iran	2005	2005	2005	-	2005	2005
Jordan	2002	2002	2002	2002	2002	2002
Kuwait	-	-	2000	2000	2000	2000
Lebanon	2004	2004	2004	2001	2004	2004
Morocco	2003	2003	2003	-	2003	2003
Qatar	2004	2004	2004	2004	2004	2004
Saudi Arabia	2000	2000	2000	2000	2000	2000
Syria	2004	2004	2004	2004	2004	2004
West Bank/Gaza	2004	2004	2004	2004	2004	2004
Yemen	2004	2004	2004	2003	2004	2004

Note: Shaded cells indicate mismatching data years; “-” indicates missing data; “any year” indicates that data is available for any year depending on the missing data in the respective section.

Table B.3: Early School Leaving

	Wages by age and education	Net enrollment rates	School age population	Labor force participation
Algeria	-	2004	2004	2004
Bahrain	-	any year	any year	any year
Egypt	2004	2004	2004	2004
Iran	-	any year	any year	any year
Jordan	2002	2002	2002	2002
Kuwait	-	any year	any year	any year
Lebanon	-	2004	2004	2004
Morocco	-	any year	any year	any year
Qatar	-	any year	any year	any year
Saudi Arabia	-	2000	2000	2000
Syria	2004	2004	2004	2004
West Bank/Gaza	-	any year	any year	any year
Yemen	-	2004	2004	2004

Note: “-” indicates missing data; “any year” indicates that data is available for any year depending on the missing data in the respective section.

Table B.4: Pregnancy and Young Mothers

	Mean adult female wage	Adult female unemployment	Mean youth female wage	Youth female unemployment	Gov’t social assistance programs	Healthcare expenditure
Algeria	-	2004	-	2004	-	2004
Bahrain	-	2001	-	2001	-	2001
Egypt	2004	2004	2004	2004	-	2004
Iran	-	2005	-	2005	-	2005
Jordan	2002	2002	2002	2002	-	2002
Kuwait	-	-	-	-	-	any year
Lebanon	-	2004	-	2004	-	2004
Morocco	-	2003	-	2003	-	2003
Qatar	-	2004	-	2004	-	2004
Saudi Arabia	-	2000	-	2000	-	2000
Syria	2004	2004	2004	2004	-	2004
West Bank/Gaza	-	2004	-	2004	-	2004
Yemen	-	2004	-	2004	-	2004

Note: “-” indicates missing data; “any year” indicates that data is available for any year depending on the missing data in the respective section.

Table B.4: Migration

	Migration by age group	Mean wages by age group	Total migrant stock	Workers' remittances
Algeria	-	-	any year	any year
Bahrain	-	-	any year	any year
Egypt	2000	2004	2000	2000
Iran	-	-	any year	any year
Jordan	2004	2004	2005	2004
Kuwait	-	-	any year	any year
Lebanon	-	2001	2001	2001
Morocco	1998	-	2000	1998
Qatar	-	-	any year	any year
Saudi Arabia	-	2000	2000	2000
Syria	-	2004	2004	2004
West Bank/Gaza	-	-	any year	any year
Yemen	-	-	2005	2004

Note: Shaded cells indicate mismatching data years; "-" indicates missing data; "any year" indicates that data is available for any year depending on the missing data in the respective section.

APPENDIX C: DATA SOURCES

Indicator	Country	Source	Date
Youth unemployment rate	Algeria	International Labor Organization	2004
	Bahrain	International Labor Organization	2001
	Egypt	National Household Survey data	2004
	Iran	Statistical Center of Iran	2005
	Jordan	Department of Statistics Household Survey	2002
	Lebanon	Central Agency for Statistics Household Survey	2001
	Morocco	Haut-Commissariat Au Plan	2003
	Qatar	International Labor Organization	2004
	Saudi Arabia	International Labor Organization	2000
	Syria	Central Bureau for Statistics Census	2004
	West Bank/Gaza	West Bank and Gaza Survey	2004
	Yemen	Yemen Central Statistical Organization	2004
Youth labor force participation	Algeria	KILM, 4th Edition	2004
	Bahrain	KILM, 4th Edition	2001
	Egypt	KILM, 4th Edition	2004
	Iran	KILM, 4th Edition	2005
	Jordan	KILM, 4th Edition	2002
	Lebanon	KILM, 4th Edition	2001
	Morocco	KILM, 4th Edition	2003
	Qatar	KILM, 4th Edition	2004
	Saudi Arabia	KILM, 4th Edition	2000
	Syria	KILM, 4th Edition	2004
	West Bank/Gaza	KILM, 4th Edition	2004
	Yemen	KILM, 4th Edition	2004
Mean annual wage	Algeria	Directorate of Statistics	2004
	Bahrain	International Labor Organization	2002
	Egypt	National Household Survey Data	2004
	Iran	Statistical Center of Iran	2005
	Jordan	Department of Statistics Household Survey	2002
	Lebanon	Choghig Kasparian	2001
	West Bank/Gaza	Palestinian Central Bureau of Statistics	2004
	Qatar	International Labor Organization	2004
	Saudi Arabia	Center Department of Statistics	2000
	Syria	Central Bureau for Statistics Census	2004
	GDP (current USD)	Algeria	World Bank World Development Indicators
Bahrain		World Bank World Development Indicators	2001
Egypt		World Bank World Development Indicators	2004
Iran		World Bank World Development Indicators	2005
Jordan		World Bank World Development Indicators	2002
Lebanon		World Bank World Development Indicators	2001
Qatar		World Bank World Development Indicators	2004
Saudi Arabia		World Bank World Development Indicators	2000
Syria		World Bank World Development Indicators	2004
West Bank/Gaza		World Bank World Development Indicators	2004
Inflation		Algeria	World Bank World Development Indicators
	Bahrain	World Bank World Development Indicators	2001
	Egypt	World Bank World Development Indicators	2004
	Iran	World Bank World Development Indicators	2005
	Jordan	World Bank World Development Indicators	2002
	Lebanon	World Bank World Development Indicators	2001
	Qatar	World Bank World Development Indicators	2004
	Saudi Arabia	World Bank World Development Indicators	2000
	Syria	World Bank World Development Indicators	2004
	West Bank/Gaza	World Bank World Development Indicators	2004

Indicator	Country	Source	Date
Youth inactivity rate	Algeria	KILM, 4th Edition	2004
	Bahrain	KILM, 4th Edition	2001
	Egypt	KILM, 4th Edition	2004
	Iran	KILM, 4th Edition	2005
	Jordan	KILM, 4th Edition	2002
	Lebanon	KILM, 4th Edition	2004
	Qatar	KILM, 4th Edition	2004
	Saudi Arabia	KILM, 4th Edition	2000
	Syria	KILM, 4th Edition	2001
	West Bank/Gaza	KILM, 4th Edition	2004
Wages by age and educational attainment	Egypt	National Household Survey Data	2004
	Jordan	Department of Statistics Household Survey	2002
	Lebanon	Central Agency for Statistics	2004
	Syria	Central Bureau for Statistics Census	2004
Net enrollment rates	Egypt	World Bank EdStats	2004
	Jordan	World Bank EdStats	2002
	Lebanon	World Bank EdStats	2004
	Syria	World Bank EdStats	2004
School age population	Egypt	World Bank EdStats	2004
	Jordan	World Bank EdStats	2002
	Lebanon	World Bank EdStats	2004
	Syria	World Bank EdStats	2004
Labor force participation	Egypt	KILM, 4th Edition	2004
	Jordan	KILM, 4th Edition	2002
	Lebanon	KILM, 4th Edition	2004
	Syria	KILM, 4th Edition	2004
Mean adult female wage	Egypt	National Household Survey Data	2004
	Jordan	Department of Statistics Household Survey	2002
	Lebanon	Central Agency for Statistics	2004
	Syria	Central Bureau for Statistics Census	2004
Adult female unemployment rate	Egypt	National Household Survey Data	2004
	Jordan	Department of Statistics Household Survey	2002
	Lebanon	Central Agency for Statistics	2004
	Syria	Central Bureau for Statistics Census	2004
Mean youth female wage	Egypt	National Household Survey Data	2004
	Jordan	Department of Statistics Household Survey	2002
	Lebanon	Central Agency for Statistics	2004
	Syria	Central Bureau for Statistics Census	2004
Youth female unemployment rate	Egypt	National Household Survey Data	2004
	Jordan	Department of Statistics Household Survey	2002
	Lebanon	Central Agency for Statistics	2004
	Syria	Central Bureau for Statistics Census	2004
Healthcare Expenditure	Egypt	World Bank HNPStats	2004
	Jordan	World Bank HNPStats	2002
	Lebanon	World Bank HNPStats	2004
	Syria	World Bank HNPStats	2004
Migration by age group	Egypt	Euro-Mediterranean Consortium for Applied Research on International Migration (CARIM)	2000
	Jordan	Euro-Mediterranean Consortium for Applied Research on International Migration (CARIM)	2004
	Morocco	Euro-Mediterranean Consortium for Applied Research on International Migration (CARIM)	1998
Total migrant stock	Egypt	UN world migration prospects	2000
	Jordan	UN world migration prospects	2004
	Morocco	UN world migration prospects	1998
Worker's Remittances	Egypt	KILM, 4th Edition	2000
	Jordan	KILM, 4th Edition	2004
	Morocco	KILM, 4th Edition	1998

ENDNOTES

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1. Estimating costs for youth exclusion also has led to the development of a cost-benefit approach for evaluating specific projects investing in youth development (See Knowles and Behrman 2003 for further information.).
 2. Most studies on youth-related development issues focus on the 15-24 age bracket. We have chosen to extend the age bracket to 29 in order to better reflect the economic challenges facing the youth population in MENA.
 3. Data used in the costing estimations are all based on the latest available indicators, especially in relation to the latest wage data. Since many of the newer data available on wages are in wage brackets, they therefore cannot be used because exact or point wage data for the exercise are needed.
 4. See Baldacci et al (2004), Bils and Klenow (2000) Bloom et al (2004), Gemmell (1996), Temple (1999, 2001).
 5. Note that losses due to joblessness may be overestimated since target unemployment rates are assumed to be rather low and search costs that youth face are assumed to be zero. In fact, youth unemployment rates may be higher because job search costs for young persons are high.
 6. Mincer's earnings regression, due to Jacob Mincer, captures how the labor market rewards productive attributes such as schooling and work experience.
 7. As in the previous computations, general equilibrium considerations are ruled out in order to simplify the analysis and focus on the "lower bound" costs to youth exclusion.
 8. This is given by: Annual foregone child support = {annual wage * value of child support (percent of annual wage)} - (annual wage * value of child support) * the proportion of child support received by adolescent mothers. Following World Bank (2003) we assume that the value of child support is 18 percent of annual wage and the proportion of child support received by adolescent mothers is 32 percent.
 9. The assumption that children live twenty-five years at home is drawn from estimates of the age at first marriage in the MENA region published by the Population Council.
 10. The total cost of youth exclusion should include either the cost of unemployment or the cost of joblessness, not both. Double counting should not be an issue for other categories, since all other costs are of different sources and therefore should add up to each other.
 11. More formally, let $x \in \mathfrak{R}_+^N$ denote a vector of inputs and $y \in \mathfrak{R}_+^M$ the resulting output vector. Assume that there are $k = 1, \dots, K$ countries so that the data is given by: $(x^k, y^k) \ k = 1, \dots, K$. There are, among others, two equivalent ways to express the type of reference technology to be evaluated: the *Input Requirement Set* $L(y)$, which shows all the combinations of inputs that can be used to produce the output vector y ; and the *Output Possibility Set* $P(x)$, which shows all the combinations of outputs that can be produced by the input vector x . Only $P(x)$ is considered in this present exposition. The *Farrell Output-Oriented Measure of Technical Efficiency* is formally defined by: $F_o(x, y) = \max \{\theta : \theta y \in P(x)\}$ where $P(x)$ is the output possibility set. Inefficient countries have output efficiency scores greater than one and efficient countries have scores equal to one. Therefore, a country is technically "output efficient" if: $F_o(x, y) = 1$. Otherwise, the country is technically output inefficient. For example, a country with a score of 1.40 could increase its output by 40 percent if it were operating on the best practice frontier.
 12. The estimation is done by using the ONFRONT software developed by R. Fare and S. Grosskopf.

ABOUT THE MIDDLE EAST YOUTH INITIATIVE

Our Mission

To develop and implement a regional action plan for promoting the economic and social inclusion of young people in the Middle East.

Creating Alliances for Maximum Progress

The Middle East Youth Initiative's objective is to accelerate the international community's ability to better understand and respond to the changing needs of young people in the Middle East. By creating an international alliance of academics, policymakers, youth leaders and leading thinkers from the private sector and civil society, we aim to develop and promote a progressive agenda of youth inclusion.

The Middle East Youth Initiative was launched in July 2006 by the Wolfensohn Center for Development at Brookings and the Dubai School of Government.

Connecting Ideas with Action

The initiative blends activities in an attempt to bridge the divide between thinkers and practitioners and utilizes robust research as a foundation for effective policy and programs. The initiative has three complementary pillars:

Research and Policy: Pathways to Inclusion

With this initiative, cutting-edge research advances the understanding of economic and social issues affecting young people. The main target group is youth 15 to 29 years old, with a special focus on young men and women who live in urban areas and have secondary or post-secondary education. In addition to addressing needs of older youth, the initiative will also focus on strategies for promoting development of youth 15 years and under in areas such as primary education, skills development and community participation.

The research framework focuses on youth making two major transitions to adulthood: i) the transition from education to employment; and ii) the transition to household formation (marriage and family). Research will concentrate on strategies to achieve inclusion in:

- Quality education
- Quality employment

- Marriage
- Housing
- Civic participation

Our goal is to examine the relationship between economic and social policies and generate new recommendations that promote inclusion.

Advocacy and Networking: Creating Vital Connections

The initiative aspires to be a hub for knowledge and ideas, open to all stakeholders who can make change happen. Strong partnerships with policymakers, government officials, representatives from the private sector and civil society organizations, donors and the media will pioneer forms of dialogue that bridge the divide between ideas and action. By bringing in the voice and new perspectives of young people, the initiative will revitalize debate on development in the Middle East.

Practical Action: Life-Changing Impact

Outcomes matter. With a focus on areas with the greatest potential for innovation and impact, the initiative will mobilize partners for practical action that can improve young people's lives. The initiative will help develop policies and program interventions which provide youth with skills, expand opportunities for employment and facilitate access to credit, housing and civic participation.

ABOUT THE WOLFENSOHN CENTER FOR DEVELOPMENT

The Wolfensohn Center for Development at the Brookings Institution was founded in July 2006 by James D. Wolfensohn, former president of the World Bank and member of the Brookings Board of Trustees.

The Wolfensohn Center for Development analyzes how resources, knowledge and implementation capabilities can be combined toward broad-based economic and social change in a four-tier world.

The following principles guide the center's work:

- A focus on **impact, scaling-up and sustainability** of development interventions
- Bridging the gap between **development theory and practice** to bring about action
- Giving **voice** to developing countries, with high-level policy engagement and
- broad networking
- A **rigorous, independent research** approach that draws from multiple disciplines
- Working in **partnership** with others

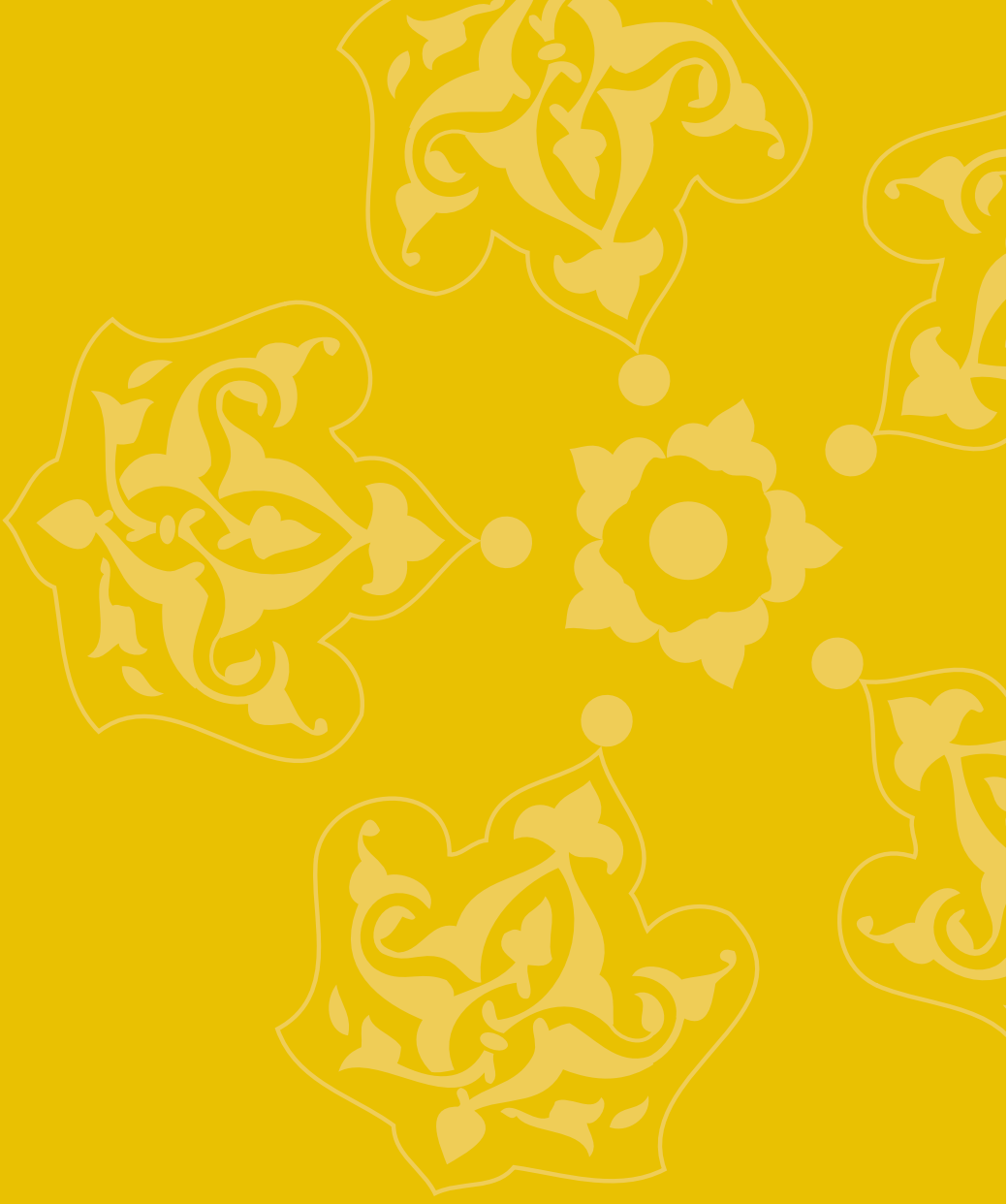
ABOUT THE DUBAI SCHOOL OF GOVERNMENT

The Dubai School of Government is a research and teaching institution focusing on public policy in the Arab world. Established in 2004 under the patronage of HH Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the United Arab Emirates and Ruler of Dubai, the school aims to promote good governance by enhancing the region's capacity for effective public policy.

Toward this goal, the Dubai School of Government collaborates with international institutions such as Harvard University's John F. Kennedy School of Government and the Lee Kuan Yew School of Public Policy in its research and training programs. In addition, the school organizes policy forums and international conferences to facilitate the exchange of ideas and promote critical debate on public policy in the Arab world.

The school is committed to the creation of knowledge, the dissemination of best practice and the training of policy makers in the Arab world. To achieve this mission, the school is developing strong capabilities to support research and teaching programs including:

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