The Three Arab Worlds

James E. Rauch and Scott Kostyshak

At the beginning of July 2002, the United Nations Development Program released the *Arab Human Development Report 2002,* the first in a continuing series. Written by Arab scholars, it was a no-holds-barred indictment of economic, social, and political backwardness in the Arab world. American and European audiences received the report with tremendous enthusiasm. *Time* magazine (December 30, 2002) called it "perhaps the most important volume published in 2002" (Elliott, 2002). In a review entitled "Self-Doomed to Failure," *The Economist* (July 6, 2002) asked, "What went wrong with the Arab world? Why is it so stuck behind the times?"

The authors of the *Arab Human Development Report 2002* did not claim to be making a balanced assessment of human development in Arab countries, even going so far as to construct an "alternative human development index" designed to show the "deficits" of the Arab world. Nevertheless, their view has become the basis of conventional wisdom regarding Arab development performance and prospects. Given the attention currently focused on the Arab world, in part as a result of adjustments in U.S. foreign policy, a fresh look at Arab socioeconomic performance is in order.

The Arab world is defined by language rather than ethnicity. The League of Arab States, formed in 1945, consists of all countries in which (a dialect of) Arabic is the spoken language of the majority. It is useful to compare the human development diversity of the Arab world to that of Latin America, another vast geo-

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graphic area defined by language and culture. To be consistent, we use a linguistic definition of Latin America, including all Western Hemisphere countries in which a language from the Iberian Peninsula (Portuguese or Spanish) is predominant and excluding countries such as Haiti. For each indicator used to compute the Human Development Index (HDI) produced by the United Nations Development Program, we compare the range of values for Arab League countries to the range of values for Latin American countries in 2006. The range of Arab values is more than double the range of Latin American values for life expectancy, more than 25 percent higher for literacy, more than triple for school enrollment, and more than six times greater for income (adjusted for purchasing power).

From a socioeconomic point of view, then, the Arab world is too diverse to be a useful aggregate. The source of its tremendous human development diversity is easily identified. The Arab world includes both destitute sub-Saharan African countries and countries with fabulous per capita oil and natural gas resources: Qatar vies with Luxembourg for the title of world's richest country on the basis of per capita income. Moreover, both sub-Saharan Africa and fuel-endowed countries are well known for poor socioeconomic performance. Easterly and Levine (1997), for example, have written about "Africa's growth tragedy" and Collier and Gunning (1999) ask, "Why has Africa grown so slowly?" (By "Africa," both articles mean "sub-Saharan Africa.") The problems of fuel-exporting economies have given rise to a literature on the "oil curse" (Gelb, 1988), which is a more wicked form of the "natural resource curse" (Sachs and Warner, 2001). Our strategy in this article is therefore to disaggregate the Arab world into Arab sub-Saharan Africa, Arab fuel-endowed economies, and a remainder we call the Arab Mediterranean, and to compare these three Arab worlds to non-Arab sub-Saharan Africa, non-Arab fuel-endowed economies, and the rest of the non-Arab world. We will evaluate Arab socioeconomic progress from 1970 to as close to the present as the data allow. (We will note the cases where starting from 1960 would qualitatively change our results; but starting in 1970 allows us to include data for more countries in our analysis.)

Table 1 shows the 2007 populations of the three Arab worlds and Figure 1 shows their locations on a map. We have omitted the territory labeled "Palestine" on the Arab League web site and "West Bank and Gaza" by the World Bank since we will drop all territories that are not United Nations member states from our analysis below. Figure 1 is potentially misleading in that the Arab Mediterranean contains nearly half the Arab population, but only 14 percent of Arab land area. We have grouped Yemen with Arab sub-Saharan Africa: it is at the same latitude and separated from sub-Saharan Africa only by a strait less than 30 kilometers wide.

How did we identify the fuel-endowed economies? It is standard in the literature to indicate fuel endowment by the ratio of fuel exports to total exports or fuel exports to GDP. However, either of these criteria tends to select countries for failure to develop alternative sources of exports, which is tantamount to selecting them for failure to develop. We instead took a more direct approach to measuring fuel endowment and used "proven fuel reserves per capita." In identifying fuel-endowed countries, we used fuel reserves data as close to the beginning of our

Table 1

Population of Arab States, 2007

(in thousands; total ≈ 324 million)

Sub-Saharan Africa		Fuel-endowed countries		Remainder ("Arab Mediterranean")	
Comoros	626	Algeria	33,853	Egypt	75,467
Djibouti	833	Bahrain	753	Jordan	5,719
Mauritania	3,121	Iraq[a]	28,221	Lebanon	4,097
Somalia	8,696	Kuwait	2,663	Morocco	30,861
Sudan	38,556	Libya	6,156	Syrian Arab Republic	19,891
Yemen	22,383	Oman	2,600	Tunisia	10,248
		Qatar	836		
		Saudi Arabia	24,196		
		United Arab Emirates	4,365		
Total	**74,215**	**Total**	**103,643**	**Total**	**146,283**
	(23%)		**(32%)**		**(45%)**

Source: World Development Indicators Online, 2008, ⟨http://go.worldbank.org/6HAYAHG8H0⟩.
[a] The source for the Iraq population is CIA World Factbook (July 2008 est.).

Figure 1

The Three Arab Worlds
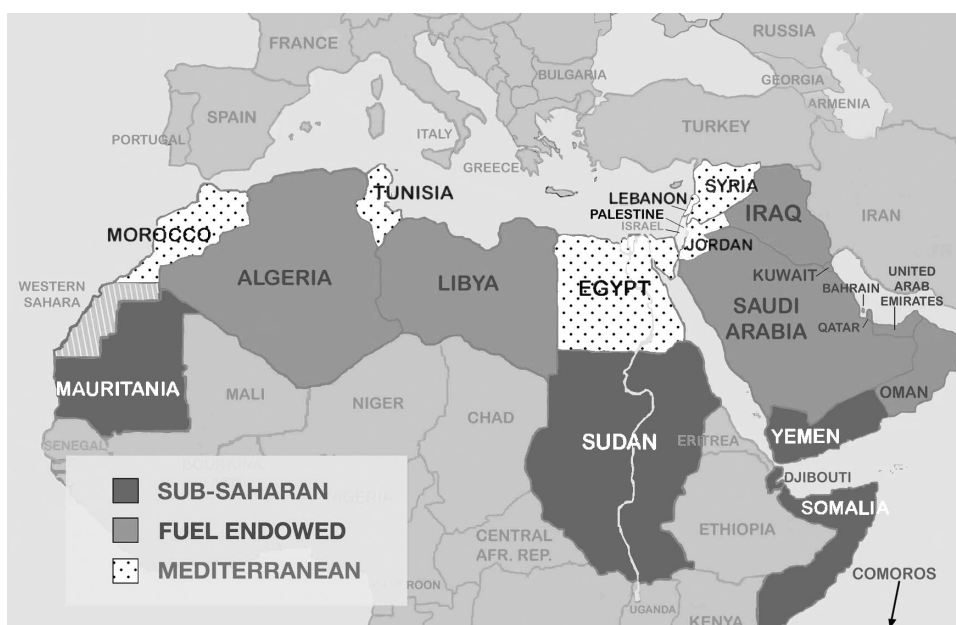
evaluation period as possible, since it would not make sense to classify a country as fuel-endowed for the purpose of evaluating its socioeconomic performance begin-ning in 1970 if its reserves were only discovered in 2000. The authoritative data

source is the annual BP *Statistical Review of World Energy,* which publishes cross-country comparable estimates of oil and natural gas reserves dating back to 1980. A minor issue arises regarding how to aggregate oil and natural gas reserves. We converted the oil and natural gas into BTUs (British thermal units) using standard conversion factors and computed 1980 BTU reserves per capita. This procedure yielded a ranking with a clean break at Algeria, which has 69 percent more reserves per capita than the next country down and nearly five times more reserves than the next Arab country down. The Arab countries identified as fuel endowed by this ranking are the same as those identified using the Global Development Network Growth Database criterion. Under this criterion, a country is fuel endowed if fuels accounted for more than 50 percent of total exports of goods and services for the period 1988–1992. The non-Arab countries identified as fuel endowed by this criterion are Brunei, Iran, Norway, Trinidad and Tobago, and Venezuela. For comparison, using the export-based criterion from the Global Development Network Growth Database would drop Norway from this list and add Angola, Republic of the Congo, Gabon, Nigeria, and Turkmenistan. Not surprisingly, use of the latter group of non-Arab fuel exporters typically results in more favorable comparisons for the Arab fuel-endowed economies.

In the next section, we begin our comparisons between the three Arab worlds and their non-Arab counterparts with indicators for health, educational attainment, and income, which are the components of the United Nations Development Program's Human Development Index. In the following sections we extend our comparisons to population growth, gender gaps, and democracy, three areas in which the Arab countries are widely believed to be among the world's worst performers.[1] We then draw conclusions from our findings.

Arab Human Development in Comparative Perspective

We measure Arab progress in human development by separately examining each component of the Human Development Index (HDI). The HDI was introduced by the United Nations Development Program in 1990. It gives equal weight to life expectancy at birth, educational attainment and effort, and per capita income. Measurement for the latter two components has changed since 1990. Currently, the education component gives two-thirds weight to literacy and one-third weight to school enrollment and the income component uses the logarithm of per capita income measured in international (purchasing power parity or PPP) dollars.

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[1] The United Nations Development Programme's *Arab Human Development Report 2002* (and later years) also strongly emphasized the "knowledge deficit" of the Arab world as measured by number of patents and related indicators. This has not been mentioned by economists with whom we have discussed previous drafts of this article, presumably because they are not surprised that countries behind the technological frontier would specialize in imitation rather than innovation.

Symmetry would suggest that we consider three pairs of country groups: Arab and non-Arab sub-Saharan Africa, Arab and non-Arab fuel-endowed economies, and the remainders of the Arab and non-Arab worlds. However, the remainder of the non-Arab world is simply too diverse to make a satisfactory comparison group for the Arab Mediterranean on its own. We therefore supplement it with two narrower country groups: Latin America (minus its fuel-endowed economy, Venezuela) and southern Europe, in which we include the United Nations Geographical Region of the same name minus the formerly communist countries. These southern European countries, chiefly Greece, Italy, Portugal, and Spain, represent the aspirations of the Arab Mediterranean. Both country groups were part of the Roman Empire. More importantly, all of the Arab Mediterranean countries have concluded Euro-Mediterranean Association Agreements with the European Union (except Syria whose agreement is only initialed). The clear intention of the "Barcelona Process," of which these agreements are a part, is to extend the developmental pull of the European Union across to the south side of the Mediterranean in the hopes of repeating the earlier developmental success with the countries on the north side.

For each indicator and country group, we compute the population-weighted average in 1970 and in the most recent available year, and the change or growth rate between the two years. Countries are included in the statistics only if they have data for both years. We discuss in the text any cases for which use of the median country instead of the population-weighted average qualitatively changes the comparison between an Arab country group and a corresponding non-Arab country group.

We begin with life expectancy. Panel A of Table 2 shows that the three Arab worlds all had lower life expectancies than the comparison country groups in 1970. By 2006, life expectancies in Arab sub-Saharan Africa and the Arab fuel-endowed economies were both higher than in the comparison country groups. Life expectancy in the Arab Mediterranean (rest of Arab world) was also higher than in the remainder of the non-Arab world in 2006, but was still lower than in Latin America or southern Europe. Nevertheless, the Arab Mediterranean had closed the life expectancy gap with Latin America and with southern Europe by seven and ten years, respectively.

The fact that by 2006 the population-weighted average life expectancy in Arab sub-Saharan Africa exceeded that in non-Arab sub-Saharan Africa by more than eight years raises the question of whether the Arab countries suffered from the same disease environment as the rest of sub-Saharan Africa. Gallup and Sachs (2001) developed a malaria index that has proved to be a powerful explanatory variable for socioeconomic performance. We examined the values of the index in 1965 to obtain a sense of the disease environment in these countries at the start of our time period. Except for Djibouti, every Arab sub-Saharan country including Yemen was in the highest category for malaria, as were all non-Arab sub-Saharan countries except Lesotho, South Africa, and Swaziland.

Next we compare progress in education. Unfortunately, literacy data in 1970

Table 2

Arab Human Development in Comparative Perspective

A: Life Expectancy

	Life expectancy (years)		
	1970	*2006*	*Change 1970–2006*
Arab sub-Saharan Africa	**42.4**	**58.3**	**15.9**
Non-Arab sub-Saharan Africa	45.1	50.0	4.9
Arab fuel-endowed countries	**53.3**	**72.8**	**19.4**
Non-Arab fuel-endowed countries	58.8	72.1	13.2
Rest of Arab world	**52.0**	**71.4**	**19.4**
Rest of non-Arab world	60.6	70.8	10.1
Latin America	60.4	73.1	12.7
Southern Europe	71.4	80.6	9.2

Source: World Development Indicators Online, 2008, ⟨http://go.worldbank.org/6HAYAHG8H0⟩.

Notes: **Arab sub-Saharan Africa:** Djibouti, Mauritania, Somalia, Sudan, Yemen. **Non-Arab sub-Saharan Africa:** Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Democratic Republic of the Congo, Republic of the Congo, Cote d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe. **Arab fuel-endowed countries:** Algeria, Bahrain, Kuwait, Libya, Oman, Qatar, Saudi Arabia. **Non-Arab fuel-endowed countries:** Brunei Darussalam, Iran, Norway, Trinidad and Tobago, Venezuela. **Rest of Arab World:** Egypt, Lebanon, Morocco, Syrian Arab Republic. **Rest of non-Arab world:** Albania, Argentina, Armenia, Australia, Austria, The Bahamas, Bangladesh, Barbados, Belarus, Belgium, Bhutan, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Cambodia, Canada, Chile, China, Colombia, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, El Salvador, Estonia, Fiji, Finland, France, Georgia, Germany, Greece, Guatemala, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, North Korea, South Korea, Lao People's Democratic Republic, Latvia, Lithuania, Luxembourg, Macedonia, Malaysia, Maldives, Malta, Mauritius, Mexico, Federated States of Micronesia, Moldova, Mongolia, Montenegro, Myanmar, Nepal, Netherlands, New Zealand, Nicaragua, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Samoa, Singapore, Slovenia, Solomon Islands, Spain, Sri Lanka, St. Lucia, St. Vincent and the Grenadines, Suriname, Sweden, Switzerland, Tajikistan, Thailand, Timor Leste, Tonga, Turkey, Turkmenistan, Ukraine, United Kingdom, United States, Uruguay, Uzbekistan, Vanuatu, Vietnam. **Latin America:** Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay. **Southern Europe:** Greece, Italy, Malta, Montenegro, Portugal, Spain.

are too sparse to provide useful comparisons of increases in literacy between 1970 and the present. Instead we use average years of education for the population aged 25 and older as our education indicator. This indicator has been computed by Robert Barro and Jong-Wha Lee (2000) for every fifth year starting in 1960 and ending in 2000.

Panel B of Table 2 shows that, as with life expectancy, the three Arab worlds all had lower average years of education than the comparison country groups in 1970. By 2000, the Arab fuel economies and Arab Mediterranean (rest of Arab world) had

(Table 2 continued)
B: Education

	Average years of education (for the population aged 25 and older)		
	1970	*2000*	*Change 1970–2000*
Arab sub-Saharan Africa	**0.4**	**1.9**	**1.5**
Non-Arab sub-Saharan Africa	1.6	3.7	2.1
Arab fuel-endowed countries	**0.9**	**4.7**	**3.8**
Non-Arab fuel-endowed countries	2.1	5.3	3.2
Rest of Arab world	**1.4**	**5.5**	**4.1**
Rest of non-Arab world	4.4	6.3	2.0
Latin America	3.4	5.7	2.3
Southern Europe	4.8	7.0	2.2

Source: Robert J. Rauch and Jong-wha Lee, "International Comparisons of Educational Attainment," ⟨http://www.cid.harvard.edu/ciddata.html⟩.

Notes: **Arab sub-Saharan Africa:** Sudan. **Non-Arab sub-Saharan Africa:** Benin, Botswana, Cameroon, Central African Republic, Democratic Republic of the Congo, Ghana, Kenya, Lesotho, Liberia, Malawi, Mali, Mozambique, Niger, Rwanda, Senegal, Sierra Leone, South Africa, Swaziland, Togo, Uganda, Zambia, Zimbabwe. **Arab fuel-endowed countries:** Algeria, Bahrain, Iraq, Kuwait. **Non-Arab fuel-endowed countries:** Iran, Norway, Trinidad and Tobago, Venezuela. **Rest of Arab world:** Jordan, Syrian Arab Republic, Tunisia. **Rest of non-Arab world:** Argentina, Australia, Austria, Bangladesh, Barbados, Belgium, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cyprus, Denmark, Dominican Republic, Ecuador, El Salvador, Fiji, Finland, France, Germany, Greece, Guatemala, Guyana, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, South Korea, Malaysia, Malta, Mauritius, Mexico, Myanmar, Nepal, Netherlands, New Zealand, Nicaragua, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Singapore, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Turkey, United Kingdom, United States, Uruguay. **Latin America:** Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay. **Southern Europe:** Greece, Italy, Malta, Portugal, Spain.

caught up with the comparison country groups substantially, with the Arab Mediterranean almost equaling the educational attainment of Latin America. Arab sub-Saharan Africa, on the other hand, fell further behind non-Arab sub-Saharan Africa, though in this case due to limited data Arab sub-Saharan Africa is represented by only one country, Sudan.[2] The lower levels of educational attainment for the Arab and non-Arab fuel economies relative to the remainders of the Arab and non-Arab worlds, respectively, are consistent with one of the common explanations for the oil/natural resource curse: abundant natural resources lower the return to obtaining an education by increasing wages for unskilled workers (Asea and Lahiri, 1999; Gylvason, 2001).

[2] Using literacy data does not help, because these are also only available for Sudan. Beginning in 1975 instead of 1970 adds Egyptian data to the Arab Mediterranean group but does not qualitatively change the results.

(Table 2 continued)
C: GDP per Capita

	GDP per capita (in international dollars)		
	1970	*2007*	*Average annual growth rate*
Arab sub-Saharan Africa	**1,122**	**2,076**	**1.7**
Non-Arab sub-Saharan Africa	2,266	2,202	−0.1
Arab fuel-endowed countries	**10,040**	**14,093**	**0.9**
Non-Arab fuel-endowed countries	9,712	13,328	0.9
Rest of Arab world	**1,884**	**5,100**	**2.7**
Rest of non-Arab world	2,580	10,899	4.0
Latin America	5,254	9,744	1.7
Southern Europe	13,484	30,015	2.2

Source: World Development Indicators Online, 2008. Available at ⟨http://go.worldbank.org/6HAYAHG8H0⟩.

Notes: International dollars are purchasing power parity dollars. **Arab sub-Saharan Africa:** Mauritania, Sudan. **Non-Arab sub-Saharan Africa:** Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of the Congo, Republic of the Congo, Cote d'Ivoire, Gabon, The Gambia, Ghana, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Swaziland, Togo, Zambia. **Arab fuel-endowed countries:** Algeria, Libya, Saudi Arabia. **Non-Arab fuel-endowed countries:** Iran, Norway, Trinidad and Tobago, Venezuela. **Rest of Arab world:** Egypt, Morocco, Syrian Arab Republic, Tunisia. **Rest of non-Arab world:** Argentina, Australia, Austria, Bangladesh, Belgium, Belize, Bolivia, Brazil, Canada, Chile, China, Colombia, Costa Rica, Denmark, Dominican Republic, Ecuador, El Salvador, Fiji, Finland, France, Georgia, Greece, Guatemala, Guyana, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Kiribati, South Korea, Latvia, Luxembourg, Malaysia, Mexico, Nepal, Netherlands, New Zealand, Nicaragua, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Portugal, Seychelles, Singapore, Solomon Islands, Spain, Sri Lanka, St. Vincent and the Grenadines, Sweden, Switzerland, Thailand, Turkey, United Kingdom, United States, Uruguay. **Latin America:** Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay. **Southern Europe:** Greece, Italy, Portugal, Spain.

Of the three components of the Human Development Index, educational attainment is most under the control of government. Given the diversity of colonial powers and independent governments during the two generations prior to 1970, the uniformly low average years of education attained by that year across the Arab countries is a puzzle worthy of study by historians, as is the exceptionally rapid rise in educational attainment thereafter.

The last indicator we examine is per capita GDP in international dollars. These data are not available prior to 1980 from the World Bank's *World Development Indicators,* so we construct the 1970 population-weighted average for each country group by applying the ratio of the 1970 to 2007 population-weighted average of constant U.S. dollar per capita GDP to the 2007 population-weighted average of current international dollar per capita GDP. Since economists are conditioned to think in terms of annual growth rates when the subject is per capita income, we

show these instead of absolute changes in the levels in Panel C of Table 2. We see that sub-Saharan African countries and fuel-endowed countries grew more slowly than the rest of the world on average, consistent with the literature cited in the introduction.

The per capita income comparisons of Arab to non-Arab country groups need to be discussed cautiously because they are more sensitive than were the comparisons for life expectancy and average years of education to our use of the population-weighted average rather than the median country and to starting in 1970 rather than 1960. Panel C of Table 2 shows that Arab sub-Saharan Africa has grown much faster than non-Arab sub-Saharan Africa, with the result that by 2007 Arab sub-Saharan per capita income has almost caught up to non-Arab sub-Saharan per capita income. For the median country, however, Arab sub-Saharan per capita income is already higher than non-Arab sub-Saharan per capita income in 1970. The Arab and non-Arab fuel economies have grown equally since 1970, with Arab per capita income remaining slightly higher. This changes if we examine median countries, with the median non-Arab fuel economy more than $1000 (in international dollars) poorer than the median Arab fuel economy in 1970 but more than $3,000 richer in 2007. On the other hand, staying with the population-weighted average but starting in 1960 yields a higher growth rate for the Arab fuel economies, 1.5 versus 0.8 percent. Finally, the Arab Mediterranean countries (rest of Arab world) have grown more slowly than the broad comparison group but faster than either of the two narrow comparison groups. Use of the median country cuts the growth rate of the broad comparison group in half, from 4.0 to 2.0 percent, while leaving the Arab Mediterranean growth rate unchanged at 2.7 percent (and the Latin American and southern European growth rates virtually unchanged as well). This comparison mainly shows the huge influence of China: just dropping it from the population-weighted average for the broad comparison group reduces the growth rate of that country group to 2.6 percent. Starting in 1960 still leaves the Arab Mediterranean growth rate at 2.7 percent but raises the southern European growth rate to 2.9 percent.

The results starting in 1960 show that there has been a lack of long-run convergence of Arab Mediterranean per capita income to that of its natural target to the north. This is a signal failure of Arab human development and a cause of frustration (and emigration) for Arabs in the region. What are the prospects for convergence in the coming decades? Let us assume that southern Europe has largely completed its own convergence to northern Europe and that its per capita income will grow at an annual rate of 2 percent for the foreseeable future. To achieve noticeable convergence in a generation, per capita income in the Arab Mediterranean would have to grow at an annual rate of, say, 3 percent. Is this feasible?

Of the four Arab Mediterranean countries with populations greater than ten million, per capita incomes in Egypt and Tunisia grew at 3.1 and 3.2 percent, respectively, and per capita incomes in Morocco and Syria grew at 2.1 and 2.2 percent, respectively, during the period 1960–2007. For Egypt and Tunisia to grow

faster would require their growth rates to reach the (South-) East Asian miracle level: the per capita income growth rates of Indonesia, Malaysia, and Thailand from 1960 to 2007 were 3.6 percent, 3.9 percent, and 4.7 percent, respectively. This may be possible for Tunisia, which has the highest level of manufactured exports as a share of GDP of all the Arab countries (it is roughly equal to that of Israel) and a government that has proven its abilities to implement reforms and adapt to shocks (Nabli and Nugent, 2008). However, such a long-term growth acceleration is doubtful for Egypt, which has none of the typical markers of a high-growth economy. Since Morocco and Syria together have five times the population of Tunisia, their per capita income growth will therefore have to increase to nearly 3 percent.

A long-term growth acceleration for Syria will probably require a peace deal with Israel and the United States that will remove U.S. sanctions, leading to economic liberalization and a surge of foreign direct investment. Moroccan per capita income growth has already accelerated, to 3.8 percent annually since 2000. True, this was a boom period for the world economy, but the terms of trade for Morocco actually deteriorated by 14 percent from 2000 to 2006 (2007 data are not yet available). The Moroccan economy has also been undergoing a gradual transformation as indicated by the increase in its manufacturing share of merchandise exports from 50 to 68 percent during the decade 1996–2006.

We have sketched a scenario for long-run convergence across the Mediterranean in which Egypt maintains its historical growth performance; Tunisia fulfills its "star" potential, Syria successfully concludes its on-again, off-again negotiations with Israel; and Morocco retains about half of its recent growth acceleration. It is a plausible scenario in our view, but one would have to be a risk lover to bet on it.

About to Run Aground? Population Growth and Water Scarcity

The absolute and relative progress in human development achieved by the Arab worlds could be threatened by runaway population growth. Is Arab population growth exceptionally fast? Panel A of Table 3 shows the population growth rates for each country group for the period 1970–2007. Except in sub-Saharan Africa, Arab population growth has been substantially higher than in the comparison country groups. At annual rates in excess of 3 percent, population growth in the Arab fuel-endowed countries would seem to be particularly alarming.

However, these figures do not reflect the steep declines in Arab fertility. In 1970, fertility was uniformly high across the Arab worlds: from 6.5 to 7.3 births per woman, consistently higher than in the comparison country groups as seen in Panel B of Table 3. By 2006, Arab fertility was below three births per woman in the Arab Mediterranean and fuel-endowed country groups, and below five births per woman in Arab sub-Saharan Africa, placing it lower than the comparison country group in the latter case and only 0.6 and 0.7 births higher in the Arab fuel-endowed economy and Arab Mediterranean cases, respectively. As a result, the United

Table 3

Population and Water Scarcity

A: Population Growth

	Population growth 1970–2007 (annual rate)
Arab sub-Saharan Africa	**2.9**
Non-Arab sub-Saharan Africa	2.8
Arab fuel-endowed countries	**3.2**
Non-Arab fuel-endowed countries	2.4
Rest of Arab world	**2.2**
Rest of non-Arab world	1.4
Latin America	1.9
Southern Europe	0.5

Source: World Development Indicators Online, 2008. Available at ⟨http://go.worldbank.org/6HAYAHG8H0⟩.

Notes: **Arab sub-Saharan Africa:** Djibouti, Mauritania, Somalia, Sudan, Yemen. **Non-Arab sub-Saharan Africa:** Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Democratic Republic of the Congo, Republic of the Congo, Cote d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe. **Arab fuel-endowed countries:** Algeria, Bahrain, Kuwait, Libya, Oman, Qatar, Saudi Arabia, United Arab Emirates. **Non-Arab fuel-endowed countries:** Brunei Darussalam, Iran, Norway, Trinidad and Tobago, Venezuela. **Rest of Arab world:** Egypt, Jordan, Lebanon, Morocco, Syrian Arab Republic, Tunisia. **Rest of non-Arab world:** Albania, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, The Bahamas, Bangladesh, Barbados, Belarus, Belgium, Belize, Bhutan, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Cambodia, Canada, Chile, China, Colombia, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominica, Dominican Republic, Ecuador, El Salvador, Estonia, Fiji, Finland, France, Georgia, Germany, Greece, Grenada, Guatemala, Guyana, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Kazakhstan, Kiribati, North Korea, South Korea, Kyrgyz Republic, Lao People's Democratic Republic, Latvia, Lithuania, Luxembourg, Macedonia, Malaysia, Maldives, Malta, Marshall Islands, Mauritius, Mexico, Federated States of Micronesia, Moldova, Mongolia, Montenegro, Myanmar, Nepal, Netherlands, New Zealand, Nicaragua, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Samoa, Seychelles, Singapore, Slovak Republic, Slovenia, Solomon Islands, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Sweden, Switzerland, Tajikistan, Thailand, Timor-Leste, Tonga, Turkey, Turkmenistan, Ukraine, United Kingdom, United States, Uruguay, Uzbekistan, Vanuatu, Vietnam. **Latin America:** Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay. **Southern Europe:** Greece, Italy, Malta, Montenegro, Portugal, Spain.

Nations forecasts of Arab population growth rates for the period 2005–2050, shown in Panel C of Table 3, are dramatically lower than those in Panel A. Over the next 40 years, Arab population growth is expected to be the same as in the comparison country group for sub-Saharan Africa, but still substantially higher than the rates of the comparison country groups for the Arab fuel-endowed economies and Arab Mediterranean. To put the forecast population growth rate of the Arab Mediter-

(Table 3 continued)

B: Births per Woman

	1970	2006	Change 1970–2006
Arab sub-Saharan Africa	**7.2**	**4.9**	**−2.3**
Non-Arab sub-Saharan Africa	6.8	5.3	−1.5
Arab fuel-endowed countries	**7.3**	**2.8**	**−4.5**
Non-Arab fuel-endowed countries	5.8	2.2	−3.6
Rest of Arab world	**6.5**	**2.8**	**−3.7**
Rest of non-Arab world	4.6	2.1	−2.5
Latin America	5.3	2.4	−2.9
Southern Europe	2.6	1.4	−1.2

Source: World Development Indicators Online, 2008, Available at: ⟨http://go.worldbank.org/6HAYAHG8H0⟩.

Notes: **Arab sub-Saharan Africa:** Djibouti, Mauritania, Somalia, Sudan, Yemen. **Non-Arab sub-Saharan Africa:** Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Democratic Republic of the Congo, Republic of the Congo, Cote d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe. **Arab fuel-endowed countries:** Algeria, Bahrain, Kuwait, Libya, Oman, Qatar, Saudi Arabia, United Arab Emirates. **Non-Arab fuel-endowed countries:** Brunei Darussalam, Iran, Norway, Trinidad and Tobago, Venezuela. **Rest of Arab world:** Egypt, Jordan, Lebanon, Morocco, Syrian Arab Republic, Tunisia. **Rest of non-Arab world:** Albania, Argentina, Armenia, Australia, Austria, Azerbaijan, The Bahamas, Bangladesh, Barbados, Belarus, Belgium, Belize, Bhutan, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Cambodia, Canada, Chile, China, Colombia, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, El Salvador, Estonia, Fiji, Finland, France, Georgia, Germany, Greece, Guatemala, Guyana, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Kazakhstan, North Korea, South Korea, Kyrgyz Republic, Lao People's Democratic Republic, Latvia, Lithuania, Luxembourg, Macedonia, Malaysia, Maldives, Malta, Mauritius, Mexico, Federated States of Micronesia, Moldova, Mongolia, Montenegro, Myanmar, Nepal, Netherlands, New Zealand, Nicaragua, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Samoa, Singapore, Slovak Republic, Slovenia, Solomon Islands, Spain, Sri Lanka, St. Lucia, St. Vincent and the Grenadines, Suriname, Sweden, Switzerland, Tajikistan, Thailand, Timor Leste, Tonga, Turkey, Turkmenistan, Ukraine, United Kingdom, United States, Uruguay, Uzbekistan, Vanuatu, Vietnam. **Latin America:** Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay. **Southern Europe:** Greece, Italy, Malta, Montenegro, Portugal, Spain.

ranean countries in a different perspective, however, 1.1 percent was the population growth rate for the United States from 1955 to 2005.

The sharp reduction in fertility shown in Panel B of Table 3 has brought Arab population growth under control, yet one can argue that even the population growth rates forecast in Panel C threaten crises in the Arab countries because of ubiquitous water scarcity. In the period 1998–2002, the Middle East and North Africa region withdrew 73 percent of its total renewable water resources, compared to only 25 percent for the next most water-scarce region, South Asia (World Bank,

(Table 3 continued)

C: Forecast Population Growth Rates

	2005–2050 (annual growth rate)
Arab sub-Saharan Africa	**1.9**
Non-Arab sub-Saharan Africa	1.9
Arab fuel-endowed countries	**1.2**
Non-Arab fuel-endowed countries	0.8
Rest of Arab world	**1.1**
Rest of non-Arab world	0.5
Latin America	0.7
Southern Europe	0.0

Source: UN World Population Prospects: The 2006 Revision Population Database (medium variant), ⟨http://esa.un.org/unpp/⟩.
Notes: The same countries are used as for population growth 1970–2007 (Panel A).

2007, Table A1.2). The Middle East and North Africa region is mostly congruent with the Arab world, the main addition being Iran and the main subtraction being Sudan.

One logical place to look for signs of impending water shortages is population access to an improved water source. The *World Development Indicators* define access to improved water sources as the percentage of population with reasonable access to an adequate amount of water from an improved source such as household connection, public standpipe, borehole, protected well or spring, or rainwater collection. Unimproved water sources include vendors, tanker trucks, and unprotected wells and springs. Reasonable access is defined as the availability of at least 20 liters per person per day from a source within one kilometer of the dwelling.[3] Are the Arab countries unable to continue to increase this access?

Panel D of Table 3 shows the percentages of population with access to an improved water source for the Arab worlds and comparison country groups for 1990 and 2006. The increase for Arab sub-Saharan Africa is substantial and broad-based, though access in the rest of sub-Saharan Africa is catching up. In contrast, water access appears to be already in crisis for the Arab fuel-endowed countries. However, the decline in access for the Arab fuel-endowed economies is driven entirely by the war-torn countries Algeria and Iraq—in fact, these are the only Arab countries with complete data for which access to an improved water source has been decreasing (although Yemen, for which data do not start until 1995, shows a decline as well). The Arab Mediterranean has continued to increase water access robustly despite scarce renewable water resources, with the relatively slow increase in population-weighted average access due to the fact

[3] Definitions are provided in technical notes at ⟨http://go.worldbank.org/1BJE04D3T0⟩.

(Table 3 continued)

D: Population with Access to Improved Water Source

	Percent with access		
	1990	*2006*	*Percentage point change 1990–2006*
Arab sub-Saharan Africa	**62.9**	**69.9**	**7.1**
Non-Arab sub-Saharan Africa	47.9	58.4	10.5
Arab fuel-endowed countries	**89.9**	**82.7**	**−7.2**
Non-Arab fuel-endowed countries	97.3	98.7	1.4
Rest of Arab world	**87.7**	**93.4**	**5.7**
Rest of non-Arab world	78.2	90.5	12.3
Latin America	84.2	91.9	7.8
Southern Europe	98.6	99.8	1.2

Source: World Development Indicators Online, 2008, Available at ⟨http://go.worldbank.org/6HAYAHG8H0⟩.

Notes: **Arab sub-Saharan Africa:** Comoros, Djibouti, Mauritania, Sudan. **Non-Arab sub-Saharan Africa:** Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Democratic Republic of the Congo, Cote d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Ghana, Guinea, Kenya, Liberia, Madagascar, Malawi, Mali, Namibia, Niger, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Togo, Uganda, Zambia, Zimbabwe. **Arab fuel-endowed countries:** Algeria, Iraq, Qatar, United Arab Emirates. **Non-Arab fuel-endowed countries:** Norway, Trinidad and Tobago. **Rest of Arab world:** Egypt, Jordan, Lebanon, Morocco, Syrian Arab Republic, Tunisia. **Rest of non-Arab world:** Argentina, Australia, Austria, Azerbaijan, Bangladesh, Barbados, Belarus, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, Chile, China, Colombia, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, El Salvador, Estonia, Fiji, Finland, Georgia, Germany, Greece, Guatemala, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Israel, Jamaica, Japan, Kazakhstan, Kiribati, Latvia, Luxembourg, Malaysia, Maldives, Malta, Mauritius, Mexico, Federated States of Micronesia, Mongolia, Myanmar, Nepal, Netherlands, Nicaragua, Pakistan, Papua New Guinea, Paraguay, Peru, Philippines, Portugal, Romania, Russian Federation, Samoa, Singapore, Slovak Republic, Solomon Islands, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, Sweden, Switzerland, Thailand, Tonga, Turkey, United Kingdom, United States, Uruguay, Uzbekistan, Vietnam. **Latin America:** Argentina, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay, Peru, Uruguay. **Southern Europe:** Greece, Malta, Portugal, Spain.

that access was already 94 percent in Egypt in 1990 (increasing to 98 percent in 2006). The World Bank explains (2007, p. xxiv), "Middle East and North Africa is home to some of the best hydraulic engineers in the world, the region manages sophisticated irrigation and drainage systems, and has spearheaded advances in desalination technology." The World Bank goes on to suggest that economic growth in the Middle East and North Africa region might help to solve the problem of water scarcity in the future (2007, p. xxvii):

> Household, commercial, and industrial water uses represent only 10 to 15 percent of a country's water needs, with agriculture and the environment accounting for the rest. Almost every country of the region, therefore, has

sufficient water to supply its population with drinking water, even given burgeoning urban populations. Economic diversification and growth could lead to more employment opportunities outside agriculture, and allow the region's farmers to consolidate and concentrate on high-value crops. By importing a larger share of food needs, countries could release more water into the environment, reducing pressure on aquifers and maintaining basic environmental services.

Gender Gaps

Arab countries have a reputation for high levels of discrimination against girls and women. Could this reputation be outdated? In the previous section we saw that in at least one important respect the lives of Arab women outside of sub-Saharan Africa have been transformed since 1970: Arab women have reduced their average child-bearing from seven to less than three, from far above to slightly above the levels of the comparison country groups. (Women in Arab sub-Saharan Africa have reduced their fertility to below the level of non-Arab sub-Saharan Africa, but they still have between four and five children.) Have Arab women converged towards non-Arab women in other aspects of their lives?

We will discuss gender gaps in education and labor force participation, for which data are available for many countries for an adequate period of time. From the list of possible education indicators, we choose the female percentages of total school enrollment at the primary, secondary, and tertiary levels (as defined by the International Standard Classification of Education) because they fully reflect current practice rather than acting as lagging indicators, as would any comparisons of female to male educational attainment. We recognize, of course, that any indicator of this type can miss important qualitative features of educational discrimination.

Panel A of Table 4 shows the female shares of total school enrollment for 1970 and circa 2005. The figures show clearly that, for this particular indicator, the Arab reputation for educational discrimination against girls/women stems from comparison with the rest of the world that is not fuel-endowed nor sub-Saharan Africa. In 1970, the Arab Mediterranean (rest of Arab word) female enrollment shares were 7.3, 8.4, and 9.1 percentage points lower than the shares for the broad comparison group at the primary, secondary, and tertiary levels, respectively. The differences relative to Latin America and southern Europe were even more dramatic. In contrast, the female enrollment shares in the Arab fuel-endowed economies in 1970 were lower than the shares in non-Arab fuel-endowed economies by much smaller margins, and the shares of Arab sub-Saharan African countries in 1970 were roughly the same as in non-Arab sub-Saharan African countries. Panel A of Table 4 also shows that the Arab reputation for this aspect of educational discrimination against girls/women is somewhat outdated. By 2005, the female school enrollment shares in the Arab

Table 4
Gender Gaps

A: Female School Enrollment

	Female enrollment as percent of total enrollment		
	1970	*2005*	*Percentage point change 1970–2005*
Arab sub-Saharan Africa			
primary	**37.8**	**45.6**	**7.9**
secondary	**28.2**	**47.5**	**19.3**
tertiary	**12.9**	**47.2**	**34.2**
Non-Arab sub-Saharan Africa			
primary	37.1	45.5	8.5
secondary	29.9	42.6	12.7
tertiary	13.2	35.3	22.1
Arab fuel-endowed countries			
primary	**34.2**	**45.9**	**11.7**
secondary	**29.1**	**45.5**	**16.4**
tertiary	**22.8**	**47.6**	**24.8**
Non-Arab fuel-endowed countries			
primary	37.6	53.3	15.7
secondary	35.4	47.3	11.9
tertiary	26.3	51.6	25.2
Rest of Arab world			
primary	**35.8**	**47.0**	**11.2**
secondary	**28.5**	**46.9**	**18.4**
tertiary	**18.5**	**48.4**	**29.9**
Rest of non-Arab world			
primary	43.1	47.2	4.1
secondary	36.9	46.2	9.3
tertiary	27.6	45.3	17.7
Latin America			
primary	48.9	48.2	−0.7
secondary	47.3	51.2	3.9
tertiary	32.7	53.4	20.7
Southern Europe			
primary	48.9	48.3	−0.6
secondary	43.6	49.2	5.6
tertiary	34.2	55.0	20.8

Source: Girls Enrollment in Primary, Secondary, and Tertiary School, *Education Statistics Version 5.3,* 2008, ⟨http://go.worldbank.org/ITABCOGIV1⟩.

Notes: **Arab sub-Saharan Africa:** Sudan. **Non-Arab sub-Saharan Africa:** Burkina Faso, Burundi, Cameroon, Ethiopia, Ghana, Guinea, Lesotho, Madagascar, Mali, Nigeria, Rwanda, Swaziland. **Arab fuel-endowed countries:** Algeria, Bahrain, Iraq, Kuwait. **Non-Arab fuel-endowed countries:** Iran, Norway, Trinidad and Tobago. **Rest of Arab world:** Jordan, Morocco, Tunisia. **Rest of non-Arab world:** Argentina, Austria, Belgium, Brazil, Bulgaria, Chile, Colombia, Costa Rica, Cyprus, Czech Republic, Fiji, Finland, Greece, Guatemala, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, South Korea, Lao People's Democratic Republic, Luxembourg, Mexico, Netherlands, Pakistan, Panama, Paraguay, Peru, Poland, Portugal, Romania, Spain, Sweden, Thailand, Turkey, United Kingdom. **Latin America:** Argentina, Brazil, Chile, Colombia, Costa Rica, Guatemala, Mexico, Panama, Paraguay, Peru. **Southern Europe:** Greece, Italy, Portugal, Spain.

(Table 4 continued)

B: Gender Gap in Labor Force Participation

	Difference between male and female labor force participation rates in percent		
	1980	*2006*	*Percentage point change 1980–2006*
Arab sub-Saharan Africa	**47.5**	**44.5**	**−3.0**
Non-Arab sub-Saharan Africa	20.7	22.2	1.5
Arab fuel-endowed countries	**63.5**	**51.6**	**−11.8**
Non-Arab fuel-endowed countries	55.3	29.5	−25.7
Rest of Arab world	**58.5**	**53.5**	**−5.0**
Rest of non-Arab world	30.0	25.3	−4.7
Latin America	50.9	27.1	−23.9
Southern Europe	44.6	22.1	−22.5

Source: World Development Indicators Online, 2008. Available at: ⟨http://go.worldbank.org/ 6HAYAHG8H0⟩.

Notes: **Arab sub-Saharan Africa:** Comoros, Djibouti, Mauritania, Somalia, Sudan, Yemen. **Non-Arab sub-Saharan Africa:** Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Democratic Republic of the Congo, Republic of the Congo, Cote d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe. **Arab fuel-endowed countries:** Algeria, Bahrain, Kuwait, Libya, Oman, Qatar, Saudi Arabia, United Arab Emirates. **Non-Arab fuel-endowed countries:** Brunei Darussalam, Iran, Norway, Trinidad and Tobago, Venezuela. **Rest of Arab world:** Egypt, Jordan, Lebanon, Morocco, Syrian Arab Republic, Tunisia. **Rest of non-Arab world:** Albania, Argentina, Armenia, Australia, Austria, Azerbaijan, The Bahamas, Bangladesh, Barbados, Belarus, Belgium, Belize, Bhutan, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Cambodia, Canada, Chile, China, Colombia, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, El Salvador, Estonia, Fiji, Finland, France, Georgia, Germany, Greece, Guatemala, Guyana, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Kazakhstan, North Korea, South Korea, Kyrgyz Republic, Lao People's Democratic Republic, Latvia, Lithuania, Luxembourg, Macedonia, Malaysia, Maldives, Malta, Mauritius, Mexico, Moldova, Mongolia, Myanmar, Nepal, Netherlands, New Zealand, Nicaragua, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Samoa, Singapore, Slovak Republic, Slovenia, Solomon Islands, Spain, Sri Lanka, St. Lucia, St. Vincent and the Grenadines, Suriname, Sweden, Switzerland, Tajikistan, Thailand, Timor Leste, Tonga, Turkey, Turkmenistan, Ukraine, United Kingdom, United States, Uruguay, Uzbekistan, Vanuatu, Vietnam. **Latin America:** Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay. **Southern Europe:** Greece, Italy, Malta, Portugal, Spain.

Mediterranean countries had caught up to or passed those in the broad comparison group, though they were still substantially behind Latin America and southern Europe at the secondary and tertiary levels. The performance of Arab sub-Saharan Africa was clearly superior to that of non-Arab sub-Saharan Africa by 2005, but Arab fuel-endowed economies only kept pace with the

increase in female enrollment shares by non-Arab fuel-endowed economies and hence remained behind them.[4]

Panel B of Table 4 shows the difference between male and female labor force participation rates in 1980 and 2006. We use 1980 instead of 1970 because this is the earliest year for which these data are available from the *World Development Indicators.* We see that at present the Arab gender gaps exceed those in the comparison country groups across the board, and by extraordinarily large margins. Latin America, southern Europe, and the non-Arab fuel economies all reduced their labor force participation gender gaps since 1980 far more than any of the Arab worlds. Arab convergence in the near future seems unlikely.

Have we identified a genuine case of Arab exceptionalism, or is the large and persistent Arab gender gap in labor force participation explained by the fact that all Arab countries are predominantly Muslim? The latter seems plausible in light of historic practices of secluding women in their homes that are associated with Islam, notably the *harem* and *purdah.* It is straightforward to check this hypothesis using cross-country data, since Arabs account for less than 30 percent of the world's Muslims.

In column (1) of Table 5, we regress the gender gap in labor force participation on the Muslim percentage of a country's population.[5] This column predicts that a country that is 100 percent Muslim will have a gender gap that is 18.3 percentage points higher than a country that is zero percent Muslim. In column (2) we add an indicator for Arab countries, and percentage Muslim becomes insignificant—the Arab effect explains the Islam effect, rather than the other way around! This result is robust to inclusion of many variables thought to influence female labor force participation, including per capita GDP, various measures of women's education, and fertility.[6] Using an indicator for majority Muslim instead of percent Muslim lowers the explanatory power of the regressions without qualitatively changing the results.

If Islam does not explain the exceptional Arab gender gap in labor force participation, what does? The answer is important, because it affects the welfare interpretation of this phenomenon. Given the facts that Arab women are having fewer children and have greatly increased their levels of education, yet have only slightly increased their propensity to work outside their homes, standard economic

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[4] Use of the median country instead of the population-weighted average reverses this ranking because many small Gulf countries have very high female school enrollment shares circa 2005.

[5] For the Arab countries this percentage ranges from 59.3 for Lebanon to 99.1 for Mauritania and Yemen. The source of these data is the World Christian Database (⟨http://worldchristiandatabase.org/wcd/⟩), used by McCleary and Barro (2006).

[6] The result is qualitatively unchanged if we use female labor force participation instead of the gender gap as our dependent variable. Our finding is consistent with a study of Arab-American women by Read (2004). She finds that the labor force participation rate of Arab-American women is unusually low, but that Muslim religious identification is not a statistically significant explanatory variable. (Most Arab-American women are Christian.) In contrast, marriage to a husband of Arab descent is associated with significantly lower labor force participation, which may indicate that the woman has more traditional values or that she is subject to greater pressure to stay at home.

Table 5

Regressions for Gender Gap in Labor Force Participation

(gender gap in percent)

	(1)	(2)
Muslim (percent)	0.183***	0.050
	(0.029)	(0.036)
Arab		21.69***
		(3.899)
R^2	0.192	0.317
Number of countries	172	172

Sources: Data for Muslim percentage is taken from the World Christian Database, ⟨http://worldchristiandatabase.org/wcd/⟩; data for labor force participation is taken from the World Development Indicators Online, 2008, ⟨http://go.worldbank.org/6HAYAHG8H0⟩.

Notes: The "Muslim" variable is defined as a percent. The Arab variable takes the value 1 if a country is considered Arab and 0 otherwise. Standard errors are in parentheses.

***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

theory suggests that they are choosing to spend their time raising higher-quality children and enjoying leisure rather than working. The question, of course, is whether this outcome is indeed their choice or whether it is being forced upon them, either by workplace discrimination or social pressure.

Arab countries have laws prohibiting discrimination against women in the workplace that look more or less like laws in other countries (United Nations Development Fund for Women, 2004, p. 227), so discrimination would have to be established *de facto* rather than *de jure,* requiring careful studies that to our knowledge have not been done. For the record, no Arab country except Saudi Arabia forbids women to drive, leave their heads uncovered in public, or vote (neither men nor women can vote in the United Arab Emirates, where all government officials are appointed). Not surprisingly, Saudi Arabia has the lowest rate of female labor force participation in our sample. Our sense is that the presence of women in the workplace is not objectionable in most of Arab society, but also that the expectation that married women should be financially supported by their husbands and should stay home to care for their children remains very strong.

Investigating the labor force participation of Arab women is an intriguing topic for future research. One approach to uncovering social pressure might be to examine whether the Arab gender gaps in labor force participation are smaller relative to comparison groups of countries for single adults than for married adults. Another angle is suggested by Lisa Anderson, Provost at the American University of Cairo, who believes that there is a boom in telecommuting by professional Arab

women who want to reconcile their careers with their roles as wives and mothers. Again, we hope that future research will reveal how common this practice might be in Arab countries and whether it biases labor force participation statistics.

Democracy

There are two widely used measures of democracy, the Freedom House Index and the composite Polity index. The former does not begin until 1972, so we only use the latter, which also allows us to check the robustness of our results against a 1960 start date. The composite Polity index, which we will denote by *polity,* is from the Polity IV dataset and equals Polity's Democracy index minus Polity's Autocracy index. Since each of these indices ranges from zero to ten, *polity* ranges from ten to minus ten.

Table 6 shows the population-weighted average values *and* the median country values of *polity* for the three Arab worlds and the comparison country groups in 1970 and 2006. We report the median country values because they differ so often and so greatly from the population-weighted average values, and change the qualitative picture completely for the non-Arab fuel economies. Nevertheless, with regard to comparisons between the Arab and non-Arab country groups, the two sets of figures tell a consistent story. Arab countries have become more democratic (or less autocratic) since 1970, but their gains have been small compared to the waves of democratization that have transformed the polities of non-Arab sub-Saharan Africa, Latin America, and southern Europe. The Arab reputation for lack of democracy is well-founded.

As with the gender gap in labor force participation, we must ask whether we have identified an instance of Arab exceptionalism. Again, a "horse race" between percentage Muslim and an Arab indicator seems appropriate. Percentage Muslim has been found to be significantly negative in democracy regressions by Barro (1999) and Acemoglu, Johnson, Robinson, and Yared (2008). Columns 1 and 2 of Table 7 repeat the exercise of Table 5 for *polity*. The results are the opposite of those in Table 5: the Arab indicator is statistically insignificant when percentage Muslim is present. This finding is robust to the addition of variables normally included in democracy regressions in the literature, including per capita GDP, indicators of former colonial status (such as British colony, French colony, and the like), and an indicator for fuel-oriented economies.

The results in Table 7 notwithstanding, in 2007 there existed six Muslim democracies according to Polity IV: Albania, Comoros, Indonesia, Lebanon, Senegal, and Turkey. All made the transition (from *polity* less than 7 to *polity* 7 or more)[7] in the preceding ten years except Turkey, which has been coded as a democracy since 1983. Can any Arab country join Comoros and Lebanon by making the same

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[7] The Polity IV Country Report 2006 for Turkey describes it as "a competitive multiparty democracy." Since Turkey's *polity* score is 7, we use that as our cutoff for defining "democracy."

Table 6

Democracy

(the Polity IV project composite Polity index)

Population-weighted average				Median country			
	Polity index		Change		Polity index		Change
	1970	2007	1970–2007		1970	2007	1970–2007
Arab sub-Saharan Africa	**−3.2**	**−2.8**	**0.4**	**Arab sub-Saharan Africa**	**−7**	**0**	**7**
Non-Arab sub-Saharan Africa	−5.4	3.4	8.7	Non-Arab sub-Saharan Africa	−7	2.5	9.5
Arab fuel-endowed countries	**−9.1**	**−3.7**	**5.4**	**Arab fuel-endowed countries**	**−9**	**−7**	**2**
Non-Arab fuel-endowed countries	−3.2	−2.2	1.0	Non-Arab fuel-endowed countries	8.5	7.5	−1
Rest of Arab world	**−7.3**	**−4.0**	**3.4**	**Rest of Arab world**	**−8.5**	**−3.5**	**5**
Rest of non-Arab world	0.4	3.6	3.3	Rest of non-Arab world	1	9	8
Latin America	−5.2	7.6	12.8	Latin America	−4	8	12
Southern Europe	1.5	10.0	8.5	Southern Europe	−7	10	17

Source: Polity IV Project, ⟨http://www.systemicpeace.org/polity/polity4.htm⟩.
Notes: The composite Polity index is from the Polity IV dataset and equals Polity's Democracy index minus Polity's Autocracy index. Since the Democracy and Autocracy indices range from zero to ten, the Polity index ranges from ten to minus ten. The Polity Democracy index is derived from coding the competitiveness of political participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive. The Polity Autocracy index is similarly constructed based on competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive. **Arab sub-Saharan Africa:** Mauritania, Somalia, Sudan. **Non-Arab sub-Saharan Africa:** Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of the Congo, Republic of the Congo, Cote d'Ivoire, Equatorial Guinea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe. **Arab fuel-endowed countries:** Algeria, Kuwait, Libya, Oman, Saudi Arabia. **Non-Arab fuel-endowed countries:** Iran, Norway, Trinidad and Tobago, Venezuela. **Rest of Arab world:** Egypt, Jordan, Lebanon, Morocco, Syrian Arab Republic, Tunisia. **Rest of non-Arab world:** Albania, Argentina, Australia, Austria, Belgium, Bhutan, Bolivia, Brazil, Bulgaria, Cambodia, Canada, Chile, China, Colombia, Costa Rica, Cuba, Cyprus, Denmark, Dominican Republic, Ecuador, El Salvador, Fiji, Finland, France, Greece, Guatemala, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, North Korea, South Korea, Lao People's Democratic Republic, Malaysia, Mauritius, Mexico, Mongolia, Myanmar, Nepal, Netherlands, New Zealand, Nicaragua, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Singapore, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Turkey, United Kingdom, United States, Uruguay. **Latin America:** Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay. **Southern Europe:** Greece, Italy, Portugal, Spain.

transition in the coming ten years? Some scholars have argued that this can be achieved through the accession to power of "moderate Islamist" political parties (for example, Hamzawy, 2005). The idea is that this formula will reconcile democratic processes with the Arab cultural heritage of exercise of political authority in

Table 7
Regressions for "*Polity*"

	(1)	(2)
Muslim (percent)	−0.095***	−0.078***
	(0.013)	(0.017)
Arab		−2.73
		(1.84)
R^2	0.265	0.275
Number of countries	156	156

Source: Polity IV Project, ⟨http://www.systemicpeace.org/polity/polity4.htm⟩.
Notes: The "Muslim" variable is defined as a percent. The Arab variable takes the value 1 if a country is considered Arab and 0 otherwise.
Notes: Standard errors are in parentheses.
***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

the name of Islam. This argument has been bolstered by the apparent success of the Justice and Development Party (AKP) in Turkey since 2003, though it came to power within an already functioning democracy. One could say that, of the Muslim democracies, Turkey is the most appropriate model for the Arab world.[8] Through the Ottoman Empire, Turks ruled for four centuries over most of the territory outside of sub-Saharan Africa that became today's Arab countries.

At time of writing, moderate Sunni Islamist parties exist in at least five Arab countries but are legal in only two, Jordan and Morocco. A major obstacle to legalization of the other parties is their past association (or alleged association) with political violence. For example, the most important illegal moderate Sunni Islamist party in the Arab world is the Egyptian Muslim Brotherhood. The first of three incidents (as of 2005) of Islamist political violence in the Arab world large enough to qualify as an armed conflict—to make the threshold of 25 "battle deaths" per year set by the Armed Conflict Dataset—was the uprising led in 1982 by a branch of the Muslim Brotherhood centered in Hama, Syria, in which 5,000 to 25,000 people were killed.[9] The Brotherhood does not appear to have been

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[8] Turkey is a more appropriate comparison than Lebanon, which is *sui generis* in the Arab world by virtue of having no majority religious group if the Shi'ite and Sunni branches of Islam are counted as different religions. It is possible that the Lebanese experience is of relevance to Iraq (and vice versa!), but Iraq has not been assigned a *polity* score since the U.S. invasion and falls outside the scope of our analysis. As for Comoros, it seems too small and remote to serve as a model. (Omitting Comoros from the regressions in Table 7 has no qualitative impact.)

[9] From the dataset codebook: "An armed conflict is a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths. The . . . dataset defines battle deaths as deaths resulting directly from violence inflicted through the use of armed force by a party to an armed

connected with either of the other two incidents, though former Brothers may have been involved: the struggle between the Egyptian government and the Islamic Group and its allies, which lasted from 1992 to 1999 and killed over 1300 people; and the civil war that began in 1992 when the Algerian military canceled elections that looked likely to bring (nonmoderate) Islamist parties to power, which has killed over 91,000 people to date. Whether these violent incidents provoke legitimate fear of moderate Islamist parties by Arab governments or just provide them a convenient excuse to repress a popular opposition is an open question. In either case, we do not foresee democracy coming to any Arab country via moderate Islamist parties in the next five years, and perhaps not even in the next ten.

Conclusions

In 1970, an observer of the Arab world noting its nearly universal backwardness in socioeconomic indicators might have concluded that there was something fundamentally wrong with Arab "institutions." Nearly four decades later, we believe it is clear from the evidence presented in this article that this conclusion would have been a mistake. Arab sub-Saharan Africa is surging ahead or rapidly catching up to the rest of sub-Saharan Africa for every indicator we examined except average years of education, despite (according to the most widely used measure) being handicapped by the same tropical disease environment. Arab fuel-endowed economies and the Mediterranean remainder of the Arab world have converged or are rapidly converging to the averages for their non-Arab counterparts, except for income, where they are keeping pace.

One important exception to this summary picture is that across the three Arab worlds the gender gaps in labor force participation remain exceptionally large, despite the fact that efforts to raise educational attainment nearly eliminated Arab gender gaps in school enrollment. All three Arab worlds also remain politically backward despite their socioeconomic progress. In this respect the Arab countries mirror the larger Muslim world, whereas with regard to female labor force participation something specific to Arab culture appears to be present.

Our analysis begs the question of why the Arab countries were so far behind in 1970. One possible answer is the Ottoman Empire and British, French, and Italian colonialism. Yet by 1970, many Arab countries had experienced one to two decades or more of political independence. Perhaps recognition of the rapid progress that

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conflict during contested combat. . . . Contested combat excludes the sustained destruction of soldiers or civilians outside of the context of any reciprocal threat of lethal force . . ." The current conflict in Somalia, which involves Islamist groups, occurs after the most recent year for which data are available. All battle death estimates in the text are from the Armed Conflict Dataset. The dataset and code book are available at ⟨http://www.prio.no/CSCW/Datasets/Armed-Conflict/Battle-Deaths/The-Battle-Deaths-Dataset-version-20⟩.

has occurred since 1970 will spur greater interest in identifying what changed to make that progress possible.

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