

Oil and Patriarchy

Prof. Michael Ross
UCLA Department of Political Science
Box 951472
Los Angeles, CA 90095
mlross@polisci.ucla.edu
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Comments welcome

Abstract:

The production of oil has a harmful effect on the economic and political status of women. Oil production reduces the participation of women in the labor force by crowding out the economic sectors that tend to employ women. Since fewer women work outside the home, they are less able to organize politically, less likely to lobby for expanded rights, and less likely to gain representation in government. As a result, oil-producing states are left with atypically strong patriarchal institutions. This argument is supported by global data on oil production and female work patterns, female political representation, and public opinion about gender relations. The link between oil production and female status has implications for our understanding of Islam and the Middle East, modernization theory, and the economic and political ailments of resource-rich states.

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In developing countries, the entry of women into the nonagricultural work force has profound social consequences. Even though they typically receive lower wages than men, when women earn their own incomes it affects their decisions about education, marriage, and childbearing; their ability to organize politically and advance their rights in the workplace, and society at large; and the beliefs that both men and women hold about gender relations.

The production of oil tends to reduce the participation of women in the work force, by producing growth in economic sectors that tend to employ men (like construction, heavy industry, and retail), while crowding out sectors that tend to employ women (like export-oriented light industry and agricultural processing). Since fewer women enter the work force, women in oil-rich states tend to have less economic, social, and political influence than their counterparts in oil-poor states; as a result, oil-producing states are left with atypically strong patriarchal cultures and political institutions.¹

I develop this argument below using a simple economic model, and by showing that oil production is robustly correlated with variations in the economic and political status of women within states over time, between 1960 and 2002; across states in the most recent ten year period; and among states in the Middle East region.

The link between oil production and the status of women has special implications for our understanding of the Middle East. Figure 1 displays the relationship between income per capita and female labor force participation for each of the world's regions, and Figure 2 shows the relationship between income and female representation in national legislatures. In both cases, women in the Mideast rank far behind their counterparts in other parts of the globe, including women in South Asia and Sub-Saharan Africa, where incomes are far lower.

Many observers attribute the unusually low status of women in the Middle East to the region's patriarchal culture [Youssef 1971; Sharabi 1988; Clark et al. 1991; World Bank 2004]. Some argue that the status of women is the issue that most profoundly divides the Islamic world from the West [Landes and Landes 2001; Lewis 2002; Fish 2002; Inglehart and Norris 2003a, 2003b; Adams and Orloff 2005;].

These criticisms of Arab or Islamic culture are misplaced. One hundred years ago, many traditional cultures in Latin America, East Asia, and South Asia were as patriarchal – probably even more patriarchal – than the traditional cultures of the Middle East [Park 1990; Lewis 2002]. Yet in Latin America, East Asia, and South Asia, economic growth has led to rapid improvements in the status of women, while similar or higher growth rates in the Middle East have produced few if any gains. Why has economic growth diluted the strength of patriarchal culture in other regions, but not the Middle East? I suggest that patriarchal traditions are more likely to endure when economic growth is driven by oil production; and that once oil production is taken into account, cultural

¹ Here and elsewhere, the term “oil” refers to both oil and natural gas; and the terms “work force” and “labor force” to refer to non-agricultural wage labor that is both outside the home and in the formal sector.

explanations for the persistence of Mideast patriarchy lose much of their explanatory power.

The argument also has implications for modernization theory. Modernization theory holds that economic growth in low-income countries should transform the status of women, who will enter the formal market for wage labor, bear fewer children, achieve higher literacy rates, and gain the same rights as men. Modernization should also transform “ancient behavioral routines” and archaic beliefs, including the belief – common in traditional societies – that women are inferior by nature [Lerner 1958; Inkeles and Smith 1974; Inglehart and Norris 2003a].

Many of the predictions of modernization theory were accurate: for the last five decades, increases in income have been strongly correlated with improvements in female welfare [Forsythe et al. 2000; World Bank 2001; Inglehart and Norris 2003a].² Yet this pattern fails to hold for states whose economies are based on the extraction of oil and gas – not only in much of the Middle East, but in mineral-rich countries like Azerbaijan, Botswana, Chile, Gabon, Mauritania, Nigeria, and Russia, where female labor force participation and female political representation are lower than we would expect simply based on their income levels.

I suggest this is because economic growth only triggers the social and political transformations we call “modernization” when large numbers of women move out of household work and into the formal market for nonagricultural wage labor – a process that typically occurs through the development of export-oriented manufacturing industries.³ Oil and gas production tends to crowd out these industries, shutting women out of the labor force. Economic growth that is propelled by oil and gas extraction hence tends to retard social, cultural, and political modernization.

This argument also broadens our understanding of the “resource curse,” a term that refers to the political and economic ailments of mineral-producing states. Earlier studies found that states that produce oil tend to have more frequent civil wars [Fearon and Laitin 2003; Collier and Hoeffler 2004; Ross 2006]; less democracy [Ross 2001; Jensen and Wantchekon 2004; Ulfelder forthcoming]; weaker state institutions [Karl 1997; Ross 2001; Sala-i-Martin and Subramanian 2003]; and possibly, slower economic growth [Sachs and Warner 1995, 2001]. This study looks at how the production of oil and gas – and potentially, other minerals – influences a country’s social structure, a topic that has received little attention.⁴ In doing so it seeks to explain what might be the most striking feature of many oil-rich states: the juxtaposition of great material wealth with archaic social structures.

² On feminist critiques of, and amendments to, modernization theory, see Jaquette [1982]; Adams, Clemens, and Orloff [2005].

³ While this holds true for capitalist states, socialist states – like Cuba and the states of the former Soviet Bloc – brought women into blue and white collar jobs through administrative fiat.

⁴ For insightful exceptions, see Isham, Woolcock, Pritchett and Busby [forthcoming], and Frederiksen [2006].

The first section of this paper summarizes several earlier studies on the causes and consequences female labor force participation. The second develops a model of female labor supply in an open economy where industries are segregated by gender; it shows how a rise in oil production can reduce female labor force participation through the Dutch Disease and other mechanisms. The paper's methods and variables are explained in section three, and the results of several estimations are presented in section four. Section five shows how different levels of oil production can explain differences in the status of women within the Middle East. The conclusion summarizes the argument and discusses some of its implications.

1. Female Labor Force Participation and Modernization

The movement of women into the nonagricultural labor force is widely viewed as a key step in the process of economic, social, and political development [Inkeles and Smith 1974; World Bank 2001]. Higher female labor force participation is strongly associated with lower fertility rates: as income-earning opportunities for women increase, so does the opportunity cost of child-rearing. This gives women an incentive to delay the onset of parenthood, and to bear fewer children over their reproductive lifetimes [Hirschman 1994; Brewster and Rindfuss 2000]. Labor force participation also helps raise female school enrollment and female literacy: when families know that girls will eventually be able to earn their own income – and contribute to household income – it encourages them to invest in their health and education [Michael 1985].

Female labor force participation may also affect gender relations more broadly. Studies of female garment workers in Bangladesh – who typically come from poor rural areas, and are hired when they are young and single – have found that factory work helps them gain self-confidence, develop new social networks, acquire skills in negotiating contracts and wages with men, and gain exposure to new information about health and contraception [Amin et al. 1998; Kabeer and Mahmud 2004]. When married women in Indonesia have an independent source of income, they gain greater influence over family decisions on prenatal and child health [Beegle, Frankenberg, and Thomas 2001; Thomas, Contreras, and Frankenberg 2002]. Studies in the U.S. have found that female labor force participation contributes to the formation of “egalitarian views of women’s roles” held by women themselves [Thornton, Alwin, and Camburn 1983].⁵

There is also evidence that the entry of large numbers of women into the labor force enhances female political influence. According to Chhibber [2003], Indian women are more likely to participate in politics and elect female representatives when they have established an identity outside the household, often through work. Moghadam [1999] shows that in many countries where women work in low-wage manufacturing – including Guatemala, Taiwan, Hong Kong, India, Indonesia, Tunisia and Morocco – they have formed organizations to protect their interests; often these organizations lobby for much broader reforms in the status of women.

⁵ Burns, Verba, and Schlozman [2001] use data on US families to explore more subtle and variegated ways that conditions in women’s private lives – including their employment status – influences their participation in politics.

In South Asia, Southeast Asia, East Asia, and Latin America, many women have entered the labor force by taking jobs in labor-intensive manufacturing firms that export items like textiles, garments, and processed agricultural goods [Horton 1999; Kabeer and Mahmud 2004]. In 2000, female workers accounted for about 83 percent of workers in the garment industry globally [World Bank 2001].

Export-oriented firms employ women at a higher rate than firms that produce goods for domestic markets [Standing 1999; Ozler 2000; Başlevent and Onaran 2004]. International competition appears to give firms an incentive to use women because they can be paid less, and are more flexible and reliable. Firms that produce domestic goods (particularly in protected markets) face less price competition, enabling them to use their traditional labor source – men – even when male workers are more costly and less reliable.

South Korea provides a good illustration of the ways that export-oriented manufacturing is linked to female labor force participation, which in turn is linked to female political influence. At the turn of the 20th century, Korea had a strongly patriarchal culture: girls were separated from boys and men beginning at age six; women were banished from the streets of Seoul during the day; and females were not given their own names, and were instead referred to as the daughter, sister, or wife of a male relative. In 1930, 90 percent of Korean women were illiterate [Park 1990].

When South Korea industrialized in the 1960s, women were rapidly drawn into the work force as a source of low-wage labor in export-oriented firms – producing textiles, garments, rubber and plastics, electronic goods, shoes, and dishware. By 1975, these female-dominated industries accounted for 70 percent of South Korea's export earnings [Park 1993]. Between 1960 and 1980, the female share of the labor force rose from 26 to 39 percent.

Although there were women's organizations in Korea in the 1950s and 1960s, they were socially conservative and often government-sponsored, and focused on issues like charity work, consumer protection, and classes for housewives and brides-to-be [Yoon 2003]. Beginning in the 1970s, however, women working in export industries began to mobilize for both labor rights and gender equality, even though Korea's authoritarian government was unsympathetic.

In 1987, female organizers took advantage of South Korea's democratic opening to found the Korean Women's Associations United (KWAU); unlike earlier women's organizations, it worked for improved labor conditions and women's rights, and took a more confrontational stance towards the government [Moon 2002].⁶ At the same time, more traditional women's groups began to take up issues of women's rights [Palley 1990].

In the mid-1990s, women's organizations (including KWAU) began to push for greater female representation at all levels of government. Despite Korea's strong patriarchal

⁶ Women also played an important role in South Korea's move towards democracy. See Nam [2000].

traditions, they made substantial gains: the number of female representatives in the national assembly rose from eight in 1992-96 to 16 in 2000-04; female membership on policy-setting government committees increased from 8.5 percent in 1996 to 17.6 percent in 2001; and the percentage of female judges rose from 3.9 percent in 1985 to 8.5 percent in 2001 [Yoon 2003].

The lobbying strength of the women's movement, and the growing number of women in government, has led to a series of landmark reforms, including the Gender Equality Employment Act (1987), revisions to the family laws (1989), the Mother-Child Welfare Act (1989), the Framework Act on Women's Development (1995), and a bill stipulating that political parties must set aside for women at least 30 percent of their national constituency seats (2000) [Park 1993; Yoon 2003].

2. Female Labor Supply, Occupational Segregation, and the Dutch Disease

A model that combines three well-understood phenomena – female labor supply, occupational segregation, and the Dutch Disease – illustrates how a booming oil sector can reduce the size of the female labor force.

Consider an open economy with three sectors: a home sector, a traded sector, and a non-traded sector. Occupations are segregated by gender. Women work in the home sector, men work in the non-traded sector, and both work in the traded sector. This approximates the conditions in many developing economies where women outside the home sector work in the traded sector (in export-oriented light industry and agricultural processing) and men work in both the traded sector and the non-traded sector (in construction, retail, and domestically-oriented heavy industry).

According to standard models of female labor supply, two factors will influence a woman's decision to move out of the home sector and into the formal labor force – in this case, into the tradeable sector [Becker 1981, Mammen and Paxson 2000]. One is the opportunity cost of her time, which is equal to the wage she can earn in the marketplace. As female wages rise, she gains an incentive to shift her time away from home work and towards the formal labor market.⁷ The other factor is her “unearned” income, meaning the income that accrues to her family but that she does not earn directly. When her unearned income rises, she gains an incentive to stay out of the labor market and consume more leisure.

Now consider the impact of a boom in oil production. Rising oil exports lead to the Dutch Disease, characterized by a rise in the real exchange rate, the expansion of the non-traded sector, and the contraction of the traded sector [Corden and Neary 1982; Neary and van Wijnbergen 1986]. Men who lose work in the lagging traded sector will shift to jobs in the booming non-traded sector. Women who work in the traded sector, however, cannot shift to the non-traded sector because of occupational segregation. As a result, female wages fall and women shift back to the home sector.

⁷ For women already in the labor force, rising wages also produce a countervailing incentive to reduce work hours and consume more leisure. If a woman has not yet entered the labor force, a rise in wages will not produce a change in her income, making this effect irrelevant.

The oil boom also raises women's unearned income, through two routes. One is by raising male wages: as long as the supply of male labor is not perfectly elastic, a boom in the non-traded sector will produce an increase in male wages. The other is through government transfers: a boom in oil production will produce a boom in government revenues, some of which will be passed on to households through transfers. The combination of falling female wages and rising unearned income should encourage women to withdraw from (or remain out of) the labor market.

Of course, governments with booming oil sectors can (and do) try to protect their tradeable sectors with tariffs or subsidies. But these measures will not increase female labor force participation, since industries that supply protected domestic markets are no longer compelled to find low wage workers to remain competitive. Without a strong economic incentive to hire women – who typically make up the low wage work force – firms in patriarchal societies are more likely to rely on men, their traditional source of labor.

This model implies,

H₁: Controlling for income, a rise in the value of oil production tends to reduce female participation in the labor force.

The earlier discussion suggests that female political influence is largely a function of female labor force participation: when women move into the labor market, they are more likely to form organizations that advance their interests, to participate in political life, and to gain public office. If an increase in oil production reduces the number of women in the labor force, it implies

H₂: Controlling for income, a rise in the value of oil production reduces female political influence.

3. Data and Methods

To explore these hypotheses I carry out two sets of estimations: one uses a first-differences model with country fixed-effects, and employs pooled time-series cross-sectional data for all states between 1960 and 2002; the other uses a cross-national model with a between estimator, and covers all states in the most recent ten-year period (1993-2002). The first-differences model with fixed effects measures variations over time within states, while the cross-national model measures variations across them. For both sets of tests, I use a dataset that includes all 169 states that were sovereign in 2000 and had populations over 200,000.

The first-differences model with country fixed effects can be written as:

$$Y_{i,t} - Y_{i,t-1} = \alpha_i + \beta(x_{i,t} - x_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1})$$

where i is the country, t is the year, and x is a series of explanatory variables.

The first-differences model with fixed effects has some useful properties. Most models used with time-series cross national data are static, since they look at whether the *levels* of the explanatory variables are linked to the level of the dependent variable; the first-differences model is dynamic, since it looks at whether *changes* in the explanatory variables can account for changes in the dependent variable. Because it focuses on changes, not levels, the model helps control for country heterogeneity. It also helps correct for trending in the dependent variable, which is a concern with female labor force participation. The model includes country fixed-effects to allow these trends to vary from country to country. I use an AR1 process to control for autocorrelation.

The disadvantage of the first-differences model with fixed effects is that it cannot tell us much about the influence of variables that change slowly or not at all, like a country's religious traditions, or its presence in a larger region. To capture the role of these fixed and "sluggish" variables, cross-national tests are also valuable.

The between estimator produces a cross-national test that compares the mean values of the explanatory variables with the mean values of the dependent variable, over some period of time. It may be written as:

$$\bar{Y}_i = \alpha + \beta \bar{x}_i + \varepsilon_i$$

where i is the country, x is a series of explanatory variables, and values are averaged over several years. Using the mean value of each variable over a ten year period (1993-2002) helps reduce measurement error.

Variables

The independent variable in all of the models is *Oil Rents per capita*, which is a country's total rents from oil and gas divided by its midyear population. Like the other economic variables, it is measured in constant 2000 dollars.

Past studies of the 'resource curse' have measured a country's oil wealth as "oil exports divided by GDP" [Sachs and Warner 1995, 2001; Ross 2001; Collier and Hoeffler 2004]. This measure has two problems. First, it is imprecise. Most theories about the resource curse suggest that mineral production is harmful because it generates rents in the economy, or revenues for the government. The value of oil exports not a good measure of either rents or revenues, since it does not include oil that is produced but consumed domestically; and it does not account for extraction costs, which vary widely from country to country.

The second problem is that the oil-exports-to-GDP measure contains a lot of hidden information about the rest of the economy that could bias any estimations. The ideal measure of a country's oil wealth should be uninfluenced by all other variables of interest. The oil-exports-to-GDP ratio contains biases in both its numerator and its denominator that tend to inflate its value in countries that are poorer, more corrupt, and more conflict-ridden.

Even if two countries produce the same quantity of oil, the numerator – a country’s oil exports – will typically be larger in poorer countries. Most oil-producing countries use a fraction of their oil domestically and export the surplus. Rich countries will consume more of their own oil, while poor countries will consume less of it, and hence, export more. For example, the US produces more oil than Angola or Nigeria (per capita), but Angola and Nigeria export more than the US, because the US is wealthier than Angola or Nigeria.

A similar problem occurs in the denominator. Even if two countries export the same quantity of oil, the poorer country will have a smaller GDP, and hence, higher oil-exports-to-GDP ratio. This opens the door to a panoply of endogeneity problems. For example, having a high oil exports-to-GDP ratio might cause slow economic growth (or corruption, or civil war), but it could also be a result of these ailments, since they tend to reduce a country’s GDP.

To avoid these problems, I measure oil and gas production instead of oil and gas exports; use the total value of petroleum rents (i.e., the value of production minus the country-specific extraction costs, including the cost of capital) instead of the total value of production or exports; and use a country’s population, not its total exports or GDP, to normalize the value of these rents.

The resulting measure, *Oil Rents per capita*, also has a more intuitive meaning than the oil exports-to-GDP ratio. If two countries with identical populations produce identical quantities of oil and gas – such as Denmark and Papua New Guinea – they will have identical levels of *Oil Rents per capita*, even though they will have different oil-exports-to-GDP ratios.

Of course, the amount of petroleum that a country produces is not completely exogenous to other variables of interest: it is in part a function of the capital invested in exploration and production, which in turn may reflect a country’s economic health, social stability, and government quality. But this probably biases the variable towards disconfirming the hypotheses, since countries with better conditions for women (i.e., wealthier and more westernized countries) are also more likely to attract investment.

There are two sets of dependent variables. To explore the effects of oil rents on female work patterns I use *Female Labor Force Participation*, which measures the fraction of the formal labor force that is made up by women.⁸ To look at how the oil-female labor relationship influences public attitudes about gender relations, I use several variables constructed from the 1999-2004 World Values Survey. The first is based on responses to a question about the “ideal” number of children in a family; the variable, *Many Kids*, is the fraction of the population that prefers three or more children. The other variable,

⁸ This includes, unfortunately, women who work in agricultural jobs. I construct a more precise measure that includes only women who work in nonagricultural jobs, but it only contains data for recent years so I can only use it for the cross-national tests. In any case, the two measures produce almost identical results.

Boys Education, is the fraction of the population that agrees “a university education is more important for a boy than a girl.”

To examine the effect of oil rents on female political influence, I use three variables: *Female Seats 2002* and *Female Seats 1995*, which measure the fraction of seats in each country’s parliament (or in bicameral systems, the lower house) held by women during the specified year.⁹ I also use *Female Ministers*, which is the fraction of ministerial positions held by women in 2002. Although they are crude measures of female political influence, these variables are available for a large number of countries and have been widely used in other studies [Rule 1987; Reynolds 1999; Inglehart and Norris 2003; Chhibber 2003].

The models include up to four control variables:

- *Income*, which is the log of GDP per capita, is controlled for in all of the models;
- *Income Squared*, which is the log of income squared, is added to the regressions for *Female Labor Force Participation* to capture the U-shaped relationship produced by the opposing effects of rising income on female wages (which encourages female labor participation) and unearned household income (which discourages female labor participation) [Mammen and Paxson 2000].
- *Middle East* is a dummy variable for the 17 states of the Middle East and North Africa, as defined by the World Bank.
- *Communist* is a dummy variable for the 34 states that had communist legal systems at some point since 1960. It is included in some cross-national tests to capture the lasting influence of communist policies on female employment.

All of the right-hand side variables in the first-differences model are lagged by one year.

Robustness

I test the robustness of the models in three ways.

To determine how sensitive they are to influential observations, I rerun each model after dropping the two most influential countries from the dataset. To see if the results of the cross-national regressions are specific to the period covered (1993-2002), I run the same model for each decade in the dataset.

Finally, to see whether the cross-national models are biased by the exclusion of important cultural or regional effects, I test both *Islam*, a variable that measures the Muslim fraction of each country’s population, and a set of regional dummy variables (for Latin America, Sub-Saharan Africa, South Asia, East Asia, Former Soviet Union, and the OECD states). Both Islam and regional cultures are sometimes cited as sources of strong patriarchal traditions, which conceivably may affect the status of women.

⁹ 1995 is the earliest year for which data are widely available.

4. Results

All of the variables are standardized to facilitate comparisons.

Female Labor Force Participation

Oil Rents has a strong negative impact on *Female Labor Force Participation*. In the first-differences estimations (table 1), *Oil Rents* is the only variable significantly linked to changes in *Female Labor Force Participation*. It is highly significant in the full sample (column 1), and remains significant at the .05 level even after the two most influential countries – Kuwait and Saudi Arabia – are dropped from the sample (column 2).

Oil Rents has a similar effect in the cross-national estimations (table 2). *Female Labor Force Participation* is also reduced by *Middle East*, and increased by *Communist*. *Oil Rents* has a significant effect, similar in size to the effect of *Middle East*. The inclusion of *Oil Rents* reduces the *Middle East* coefficient by about one-third.¹⁰

The cross-national results are robust. If the two most influential countries (Qatar and Kuwait) are dropped from the estimations, *Oil Rents* remains highly significant. Controls for *Latin America* and *Africa* are statistically significant, but they have little impact on the *Oil Rents* variable. *Oil Rents* has the same effect on *Female Labor Force Participation* in each decade in the dataset. These results are consistent with H₁, which suggests that mineral extraction will reduce female labor force participation.

Some of the implications of the link between oil and female labor force participation can be explored with survey data. If oil production increases the number of women who remain at home, it may also affect public attitudes about the merits of childbearing. Data on this topic are available for 77 countries from the World Values Survey. The regressions in table 3 (columns 1 and 2) show that the number of men who prefer three or more children is weakly influenced (i.e., at the .10 level) by the *Middle East* variable. *Islam* has no effect. But when the *Oil Rents* variable is added to the model, *Middle East* loses all statistical significance.¹¹

This suggests that petroleum extraction causes men to prefer more children – a pattern found in both the Middle East (such as Saudi Arabia, Iraq, and Algeria) and elsewhere (such as Nigeria, Venezuela, Indonesia, and Norway). Perhaps this occurs because women in oil-rich countries have fewer opportunities to contribute to household income, which leads men to prefer wives who stay at home and can raise many children. It could also be caused by higher levels of government transfers, which enable men to more easily support large families on a single income.

Oil wealth is similarly correlated with both male and female views about education. If oil production reduces income-earning opportunities for women, then more parents should

¹⁰ In this and all subsequent regressions, adding *Oil Rents* increases the size of the *Income* coefficient. This implies that income derived from oil, and income derived from non-oil sources, have opposing effects on the dependent variable. Once the confounding effect of oil-based income is controlled for, the undiluted effect of non-oil income becomes apparent.

¹¹ Neither *Oil Rents* nor *Middle East* is linked to female preferences on family size.

place a higher value on (i.e., expect a greater return from) education for boys than girls. The estimations in table 3 (columns 3 and 5) show that both *Income* and *Middle East* are linked to an increased fraction of both men and women who agree with the statement, “a university education is more important for a boy than a girl.” Once again, *Islam* has no effect. When *Oil Rents* is added to these models (columns 4 and 6), however, the value of the *Mideast* variable drops by about 20 percent for men, and 35 percent for women – in the latter case, losing all statistical significance. For both men and women, the substantive effect of *Oil Rents* is larger than the substantive effect of *Mideast*; for women, it is even larger than the impact of *Income*.

Again, a closer look at the data shows that support for girls’ education is unusually low in oil-producing states both in the Middle East (Saudi Arabia, Iran, and Iraq) and outside it (Nigeria, Mexico, Azerbaijan, and Russia).

Female Representation

In cross-national regressions, both *Income* and *Middle East* are strongly correlated with *Female Seats 2002* (table 4). *Islam* is also linked to *Female Seats 2002*, although it is only significant at the .10 level. When *Oil Rents* is included in the model, however, the *Middle East* coefficient drops by a quarter and the *Islam* variable loses statistical significance. The impact of *Oil Rents* on *Female Seats 2002* is robust: it is unaffected by the exclusion of the two most influential cases, and the inclusion of regional dummies.

Oil Rents has the same effect on both *Female Seats 1995* (table 5) and *Female Ministers* (table 6) as it does on *Female Seats 2002*. *Islam* has even less effect on *Female Seats 1995* and *Female Ministers* than it does on *Female Seats 2002*. Even though the vast majority of states showed increases in female representation from 1995 to 2002, oil-producing states like Kazakhstan, Algeria, Norway, Russia – all of which enjoyed a sharp rise in oil revenues – saw a fall in female representation.

These results are consistent with H_2 , which suggests that petroleum production will reduce female political influence.

A closer look at the causal link between oil extraction and female political influence suggests that female labor force participation plays a key role. *Female Labor Force Participation* is strongly linked to *Female Seats 2002* and *Female Seats 1995*, and its inclusion in these models produce a large drop in the *Oil Rents* coefficients (tables 4 and 5, column 4). *Female Labor Force Participation* has a similar impact on *Female Ministers*, although the effect is smaller (table 6, column 4). This is consistent with my claim that oil production reduces female political influence by reducing female labor force participation.

Discussion

After controlling for income, higher oil rents are robustly linked to lower rates of female labor force participation and fewer female legislators and cabinet members. Oil rents also seem to affect people’s views about gender in ways that are consistent with these

patterns: in states that gain more profits from oil and gas, men prefer larger families, and both men and women place less importance on a university education for women.

These correlations are not caused by the concentration of petroleum in the Middle East or in Islamic countries: they are robust to the inclusion of dummy variables for both the Middle East and Islam. In fact, *Oil Rents* has a larger impact on female labor force participation and female representation than *Islam*, and a larger effect on public attitudes than either the *Middle East* or *Islam*. In several cases, the inclusion of *Oil Rents* causes *Middle East* or *Islam* to lose statistical significance. This implies that the low status of women in the Islamic Middle East can be at least partly explained by the region's oil wealth; and that at times, oil is a better explanation than Islamic or Middle Eastern traditions.

Interpreting the substantive results of these tests is somewhat complicated, because a rise in *Oil Rents* – which has a harmful effect – will also produce a rise in *Income* – which has a favorable effect. The net impact of any change in *Oil Rents* will be sum of these two effects.

Take, for example, the impact of *Oil Rents* on *Female Seats 2002*. A rise in *Oil Rents* of one standard deviation – about \$1020 per capita, which is roughly equivalent to the difference in 2002 oil production between Mexico and Norway, or between Norway and Oman – is directly associated with a 1.94 percent drop in the fraction of parliamentary seats held by women (with a 95 percent confidence interval of -.97 to 2.86 percent). But if a country gains \$1020 in new *Oil Rents per Capita*, it will also gain at least \$1020 in income per capita. For a country whose income was at the sample mean, a \$1020 rise in *Income* would produce a 0.39 percent rise in *Female Seats*. The *net* effect of a one standard deviation rise in *Oil Rents* would hence be a drop of about 1.5 percent in the total percentage of parliamentary seats held by women (with a 95 percent confidence interval of -.41 to -2.65).¹²

This is not a trivial effect. For a country at the sample mean, just 12.5 percent of all legislative seats were occupied by women in 2002; a drop of 1.5 percent in *Female Seats* would mean a 12 percent loss in the number of female legislators. The impact of *Oil Rents* on *Female Seats* is larger than the impact of *Islam*. Moreover, as a country's oil wealth rises, its marginal effect on female political influence should also rise.¹³

Oil and Middle East Exceptionalism

According to the *Arab Human Development Report* (UNDP 2002, 98), “Arab women remain marginalized and underutilized in all areas, notably in terms of their economic, intellectual and leadership capabilities.” A 2004 World Bank study of the Middle East and North Africa found that

¹² In order for the harmful effects of oil extraction to be fully offset by an increase in wealth, the \$1020 per capita rise in *Oil Rents* would have to produce a gain in *Income* of about \$5500, for a country at the mean income level.

¹³ This is because the offsetting impact of increases in *Income* will drop off, due to the logarithmic transformation.

Indicators such as female education, fertility, and life expectancy show that (the region's) progress in those areas in recent decades has been substantial. Where (the region) falls considerably short is on indicators of women's economic participation and political empowerment [World Bank 2004, 1].

The most common explanation for the unusually low status of women in the Middle East is Islamic or Arab culture¹⁴ [Youssef 1971; Sharabi 1988; Clark et al. 1991; World Bank 2004]. According to Moghadam [2004], Middle Eastern women are heavily disadvantaged by the region's "traditional gender paradigm," which has four elements: the family, not the individual, is the main unit of society; the man should be the family's sole breadwinner; women must adhere to a "code of modesty" to protect the family's honor; and men control decision-making in both the family and the public sphere. Scholars have used these attributes to explain both the dearth of Middle East women in the formal labor market [Boserup 1970; Tzannatos and Kaur 2003], and their scarcity public office [Reynolds 1999; Inglehart and Norris 2003].

Survey evidence confirms that Middle East residents hold more traditional, and more patriarchal, views about family and education than residents of other regions [Inglehart and Norris 2003]. Figure 3 is a scatterplot that locates countries based on responses to the World Values Survey: the X axis represents the fraction of respondents in each country who stated the ideal number of children in a family is three or more; the Y axis is the fraction of respondents who agreed that "a university education is more important for a boy than a girl." The Middle East countries in general – and the Arab countries in particular – lie in the upper right-hand side of the distribution, indicating exceptionally broad support for larger families and preferential treatment for boys.

Yet there is considerable variation in the status of women within the Middle East, which cannot be easily explained by the region's culture. Table 7 shows the year women first achieved the right to vote, the fraction of parliamentary seats held by women, and the fraction of women in the nonagricultural workforce, in each Middle Eastern country. The variation is striking: in some countries, women achieved suffrage in the 1940s, while in others they had not achieved it by 2006; women hold over twenty percent of all parliamentary seats in some states, and none in others; and female labor force participation ranges from more than thirty percent to less than three percent.

Oil production helps explain much of this intra-regional variation. Figures 4, 5, and 6 are scatterplots that show the relationship between oil rents per capita (averaged over 1993-2002) and the first year of female suffrage, female (nonagricultural) labor force participation, and the fraction of parliamentary seats held by women, for each state in the region. In general, the states that are richest in oil (Saudi Arabia, Qatar, Bahrain, United Arab Emirates, and Oman) have been the most reluctant to grant female suffrage, have the fewest women in their parliaments, and have the fewest women in their

¹⁴ Some Muslim feminists suggest that the Koran is not intrinsically patriarchal, but has been wrongly interpreted as such (e.g., Hussein 1984). For an excellent summary of these and other views on Islam, Arab culture, and women, see Moghadam [2004].

nonagricultural workforce. States with little or no oil (Morocco, Tunisia, Lebanon, Syria, Djibouti) were the first to grant female suffrage and tend to have more women in parliament and the workplace.

The region's oil wealth has also had an indirect influence on women in some of the oil-poor states. Even though Yemen, Egypt, and Jordan have little or no oil, they have fewer women in the labor force [figure 5] and parliament [figure 6] than we might expect. These anomalies may be partly the result of labor remittances: from the 1970s to the 1990s, these countries were the largest exporters of labor to the oil-rich countries of the Persian Gulf, and received large remittances from them in turn. Between 1974 and 1982, official remittances made up between 22 and 69 percent of Yemen's GDP, between 10 and 31 percent of Jordan's GDP, and between 3 and 13 percent of Egypt's GDP; unofficial remittances were probably much larger [Choucri 1986].

Remittances tend to have the same effects as oil on the supply of female labor, by raising unearned household income; they may also have a similar effect on the demand for female labor by raising the exchange rate and making low-wage, export-oriented manufacturing uncompetitive. Yemen is farther below the trend lines for female labor and female representation than any other Mideast country; it has also received more remittances (as a fraction of GDP) than any other country.

A closer look at the states of the Maghrib – Morocco, Tunisia, and Algeria – illustrates how oil extraction has affected both female work patterns and female political representation.¹⁵ All three states were French colonies that gained independence in the late 1950s or early 1960s. Morocco and Tunisia have the two highest rates of female labor force participation, and the first (Tunisia) and third (Morocco) highest rates of female political representation, in the Middle East. They also have little or no oil, and are the only states in the region to develop large export sectors based on low-wage manufacturing, particularly in textiles and garments. In both countries, women provide most of the labor force for these industries. While women in other Mideast countries tend to be concentrated in government jobs, in Morocco and Tunisia they are concentrated in the private sector [Assaad 2004].

The high rate of female labor participation in Morocco and Tunisia appears to be linked to each country's unusually vigorous and well-organized movement for women's rights. Unlike other Middle East countries, Morocco and Tunisia have women's organizations that focus on female labor issues, including the right to maternity leave, raising the minimum work age, sexual harassment, and gaining rights for domestic workers. Women's organizations in other Middle East states tend to be more conservative [Moghadam 1999].

Groups that advocate women's rights have been especially successful in Morocco, where they helped push through a new labor code that recognizes gender equality in the workplace and criminalizes sexual harassment; a landmark 2004 reform of the family

¹⁵ On the historical and tribal roots of women's rights in the early postcolonial years in the Maghrib, see Charrad 2001.

laws that gives women new rights in marriage, divorce, child custody, and inheritance; and an informal 20 percent female quota for political parties in parliament. These reforms, coupled with the strength of the women's movement, led to a rise in the fraction of parliamentary seats held by women from 0.6 percent in 1995 to 10.8 percent in 2003, and to a tripling in the number of women running for local office from 1997 to 2002 [World Bank 2004].

Oil-rich Algeria provides a telling contrast to oil-poor Morocco. A naïve observer might expect Algeria to have more women in the labor force and in parliament than Morocco: Algerian incomes are substantially higher, and Algeria has had a series of socialist governments; Moroccan incomes are lower, and Morocco has been ruled by a monarchy with strong tribal roots. Yet in 2000, Algeria had both fewer women in the nonagricultural labor force (about 12 percent versus 33 percent) and fewer women in parliament (6.6 percent versus 10.8 percent).¹⁶

The differences can be largely explained by the dominance of oil production in Algeria, and manufactured exports in Morocco. The Algerian economy has long been based on the extraction of hydrocarbons: in 2000, oil rents made up about forty percent of GDP. In the 1990s, the Algerian government tried and failed to develop export-oriented manufacturing, and consequently jobs for women are scarce. By contrast, in Morocco women have increasingly dominated jobs in the country's largest export sector, the production of textiles and garments. The growth of textile and garment manufacturing, and the feminization of these industries, accounted for three-quarters of the gains in female labor force participation in Morocco between 1990-91 and 1998-99 [Assaad 2004].

Conclusion

Petroleum perpetuates patriarchy: oil production tends to reduce the number of women who enter the work force, and hence reduces the likelihood they will gain political influence. Without large numbers of women participating in the economic and political life of the country, traditional patriarchal institutions will go unchallenged. This dynamic can help explain the surprisingly low influence of women in mineral-rich states in the Middle East (Saudi Arabia, Kuwait, Oman, Algeria, Libya), Latin America (Chile), Africa (Botswana, Gabon, Mauritania, Nigeria), and the former Soviet Union (Azerbaijan, Russia).

Skeptics may argue that oil production cannot be socially harmful if it merely causes women to stay at home and "consume more leisure." But while an individual may prefer leisure to work, the failure of women to enter the formal labor market can have profound social costs: a reduced incentive to lower fertility rates, a reduced incentive to invest in female education, reduced opportunities for women to influence household decision making, reduced opportunities to develop new, non-familial social networks, and reduced opportunities to organize politically.

¹⁶ Women comprised 6.6 percent of the nonagricultural work force in Algeria in 1980 and 9.0 percent in 1990. The estimate of 12 percent in 2000 is a projection based on changes between 1990 and 2000 in the fraction of women in the total work force.

This argument has important implications for our understanding of the Middle East and Islam. Many observers have noted the unusually low status of women in the Middle East, and attribute it to the patriarchal culture of Islam, the Arab states, or perhaps the Middle East region. Some suggest that the treatment of women is the central issue that divides the Islamic and Western worlds, and hence drives the “clash of civilizations.” Writing in *Foreign Policy*, Inglehart and Norris (2003b) argue,

the real fault line between the West and Islam...concerns gender equality and sexual liberalization. In other words, the values separating the two cultures have much more to do with eros than demos. As younger generations in the West have gradually become more liberal on these issues, Muslim nations have remained the most traditional societies in the world.

Some also suggest that gender inequalities in Middle East is at the core of the region’s failure to democratize, and is linked to a more general lack of tolerance [Fish 2002, Inglehart and Norris 2003a].

This criticism is at least partly misplaced. These estimates suggest that the persistence of patriarchy in the Middle East has very little to do with Islam, and much to do with the region’s oil-based economy. Economic growth that is based on export-oriented manufacturing and agriculture tends to benefit women; economic growth based on oil exports diminishes their participation in the work force and the political sphere.

The link between oil and patriarchy also has implications for modernization theory. Many proponents of modernization theory suggest that economic growth produces greater gender equality [Lerner 1958; Inkeles and Smith 1974; Inglehart and Norris 2003a]. In his classic book *The Passing of Traditional Society*, Lerner [1958, 45] wrote that

Whether from East or West, modernization poses the same basic challenge – the infusion of a ‘rationalist and positivist spirit’ against which, scholars seem agreed, “Islam is absolutely defenseless.”

Modernization theory might profit from distinguishing among types of economic growth. Industrialization may produce modernization, but economic development does not always entail industrialization; in fact, mineral-based development tends to discourage industrialization by causing the Dutch Disease. Without industrialization – in particular, industrialization that draws women into the labor force – economic development will not bring about the changes in gender relations that we associate with modernization.

Finally, this study has implications for our understanding of the resource curse. Scholars have explored the ways that oil wealth tends to influence economic growth, and political institutions, and violent conflict. This paper suggests that resource abundance tends to have far-reaching effects on a country’s social structure.

Of course, oil wealth does not *necessarily* lead to higher levels of discrimination against women. Seven countries qualify as exceptions, having both significant levels of oil and gas rents per capita, and notably higher-than-expected levels of female labor force participation and female political representation: Norway, New Zealand, Australia, Uzbekistan, Turkmenistan, Syria, and Mexico. The first three countries are probably exceptions because the size and diversity of their economies give women a large number of other ways to join the labor force: oil production has not crowded women out of the labor market. The two Central Asian states have most likely benefitted from the lasting influence of Soviet rule, which promoted the role of women through administrative fiat. Perhaps the most interesting exceptions are Syria and Mexico. Neither produces large amounts of oil, which makes these cases less exceptional than they first appear. But women in both states nonetheless seem to have benefitted from many years of rule by secular, left-of-center parties that showed an interest in women's rights. These cases suggest that a committed government can sometimes counteract the effects of oil on the status of women – at least, when oil production is at modest levels.

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Figure 1: Income and Female Labor Force Participation (by region)



Figure 2: Income and parliamentary seats held by women (by region)

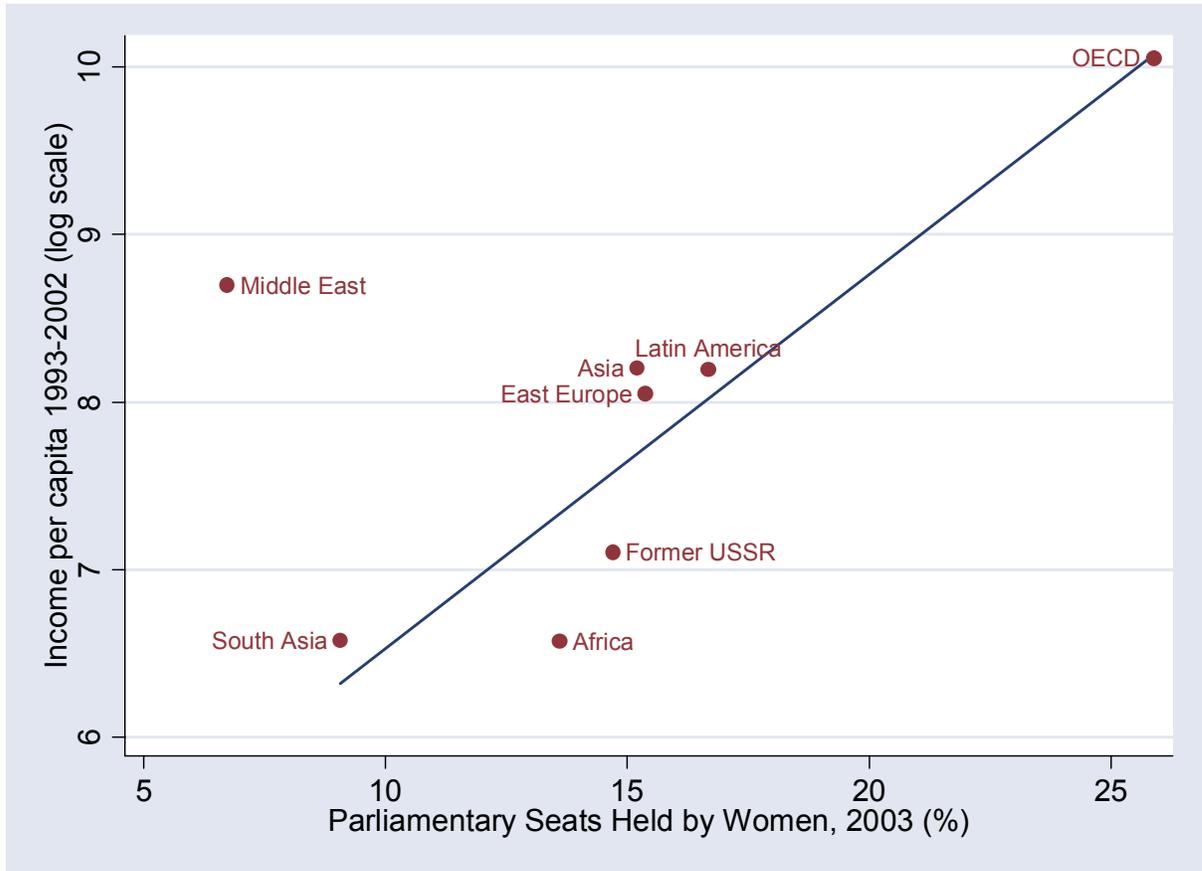


Figure 3: Attitudes towards family size and boys education (by country)

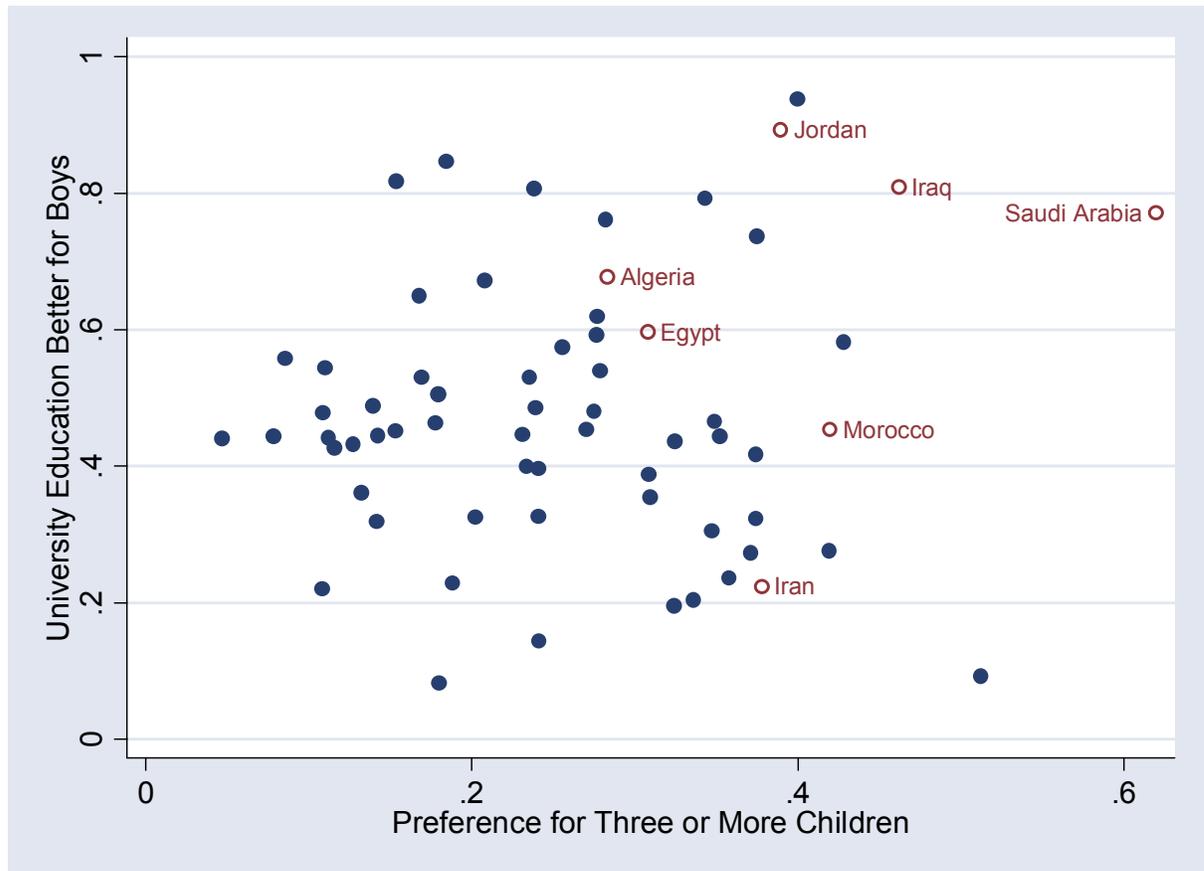
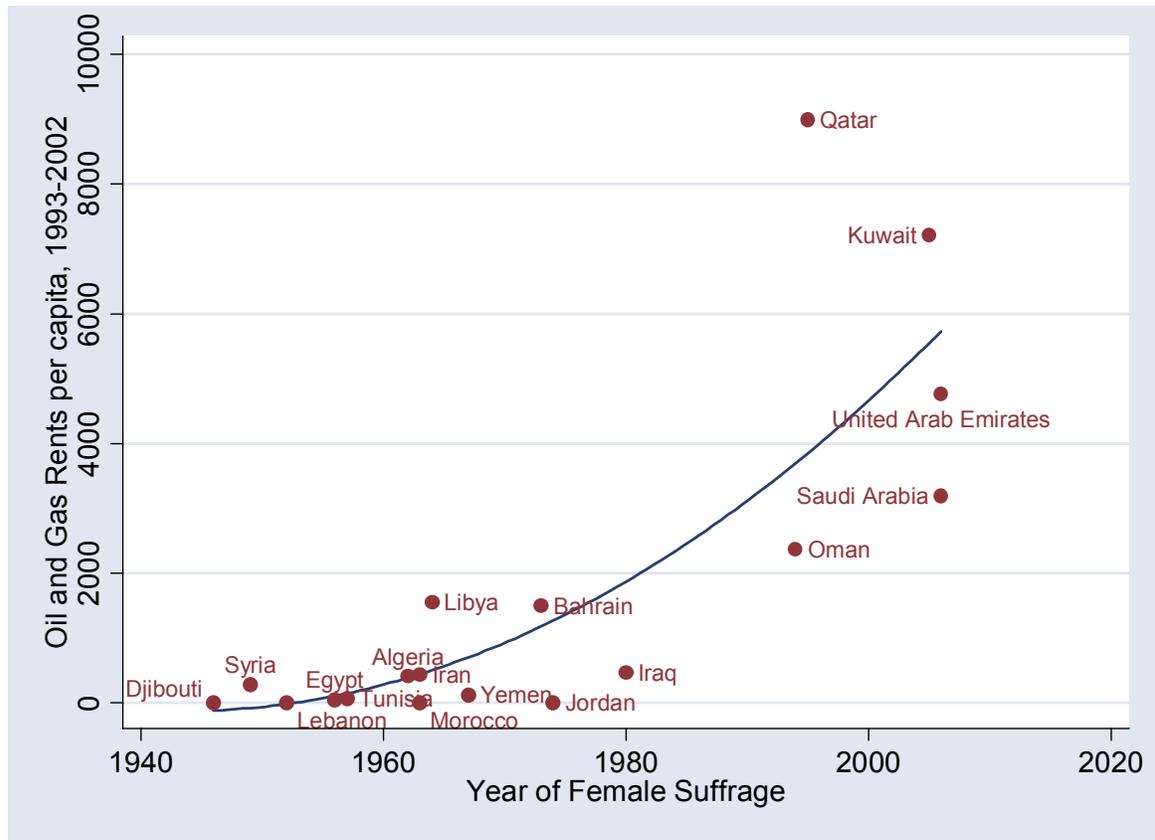


Figure 4: Oil Rents and Female Suffrage in the Middle East



Note: Women have no voting rights in Saudi Arabia and the United Arab Emirates; they have been coded as granting suffrage in 2005 so they will not be excluded from the chart.

Figure 5: Oil Rents and Female Labor Force Participation in the Middle East

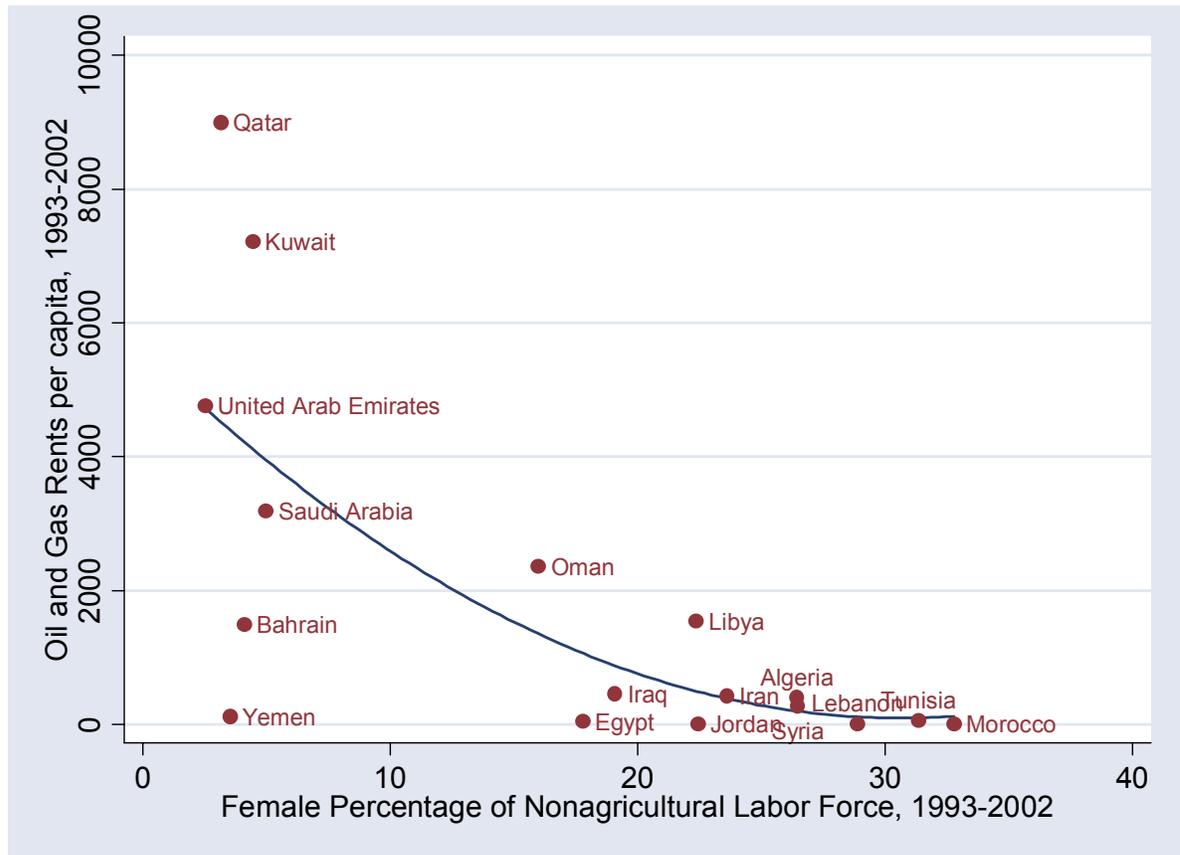


Figure 6: Oil Rents and Female Parliamentary Seats in the Middle East

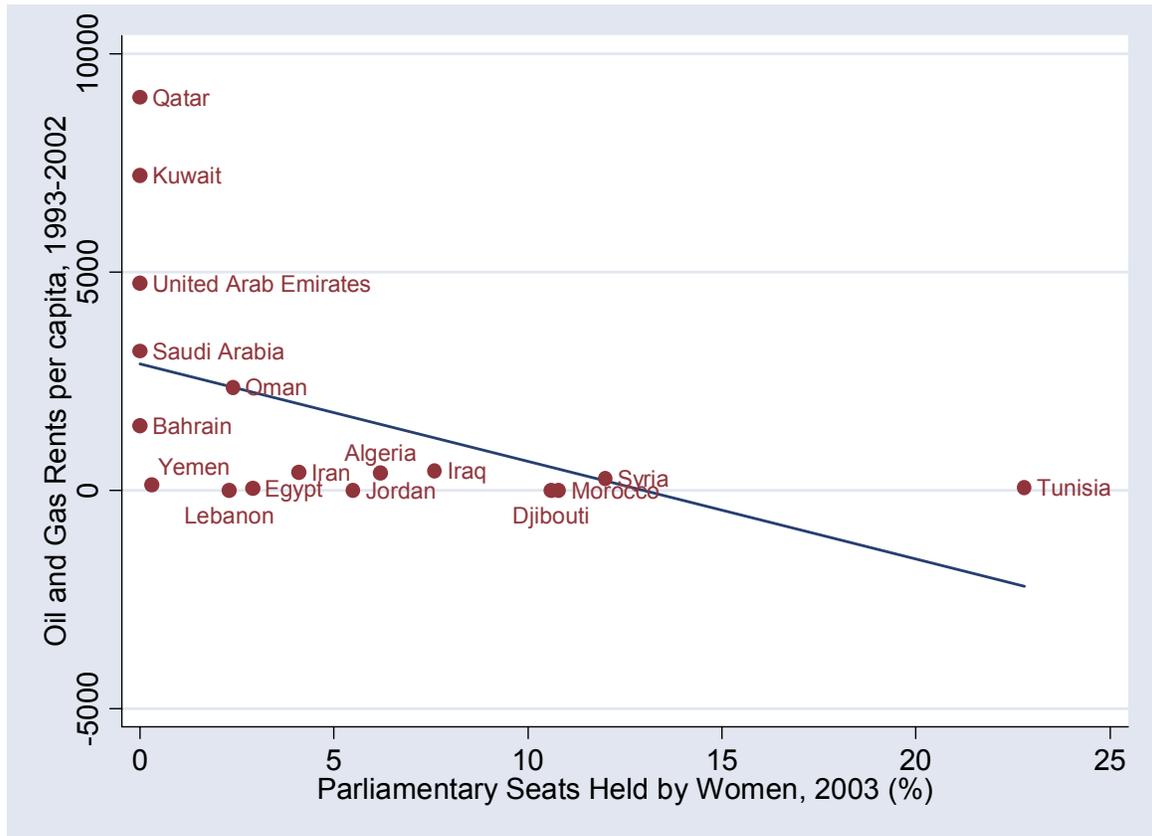


Table 1: Pooled time-series cross-national regressions, with first differences and fixed effects
Dependent variable is Female Labor Force Participation, 1960-2002

| | (1) | (2) |
|----------------------|---------------------|-------------------|
| Income (log) | -0.034 (1.05) | -0.013 (0.47) |
| Income squared (log) | 0.045 (1.34) | 0.020 (0.72) |
| Oil rents | -0.023 (3.62)*** | -0.016 (2.15)* |
| Observations | 5199 | 5133 |
| Number of countries | 161 | 159 |

Absolute value of t statistics in parentheses

All variables are standardized

* significant at 5%; ** significant at 1%; *** significant at 0.1%

Table 2: Cross-national regressions on female labor force

Dependent variable is Female Nonagricultural Labor Force Participation, 1993-2002

| | (1) | (2) | (3) |
|----------------------|---------------------|--------------------|---------------------|
| Income (log) | -1.751 (2.04)* | -1.898 (2.14)* | -2.240 (2.61)** |
| Income squared (log) | 1.730 (2.08)* | 1.815 (2.14)* | 2.284 (2.77)** |
| Middle East | -0.487 (5.61)*** | -0.367 (3.15)** | -0.333 (4.18)*** |
| Communist | 0.128 (1.77) | 0.123 (1.71) | 0.147 (2.03)* |
| Islam | | -0.189 (1.69) | |
| Oil rents | | | -0.308 (5.57)*** |
| Observations | 168 | 168 | 168 |
| R-squared | 0.32 | 0.34 | 0.39 |

Robust t statistics in parentheses

All variables are standardized

* significant at 5%; ** significant at 1% ***significant at 0.1%

Table 3: Public attitudes on family size and boys' education

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------|-----------------------------------|------------------|-----------------------------------|---------------------|-----------------------------------|---------------------|
| | <u>Prefers three or more kids</u> | | <u>Prefers boys education (M)</u> | | <u>Prefers boys education (F)</u> | |
| Income (log) | -0.204 (1.43) | -0.231 (1.56) | -0.483 (4.05)*** | -0.553 (4.47)*** | -0.396 (3.07)** | -0.490 (3.74)*** |
| Middle East | 0.276 (1.92) | 0.218 (1.39) | 0.486 (4.33)*** | 0.396 (5.69)*** | 0.334 (2.14)* | 0.212 (1.82) |
| Oil rents | | 0.319 (2.00)* | | 0.516 (2.02)* | | 0.699 (2.69)** |
| Observations | 77 | 77 | 65 | 65 | 65 | 65 |
| R-squared | 0.11 | 0.13 | 0.43 | 0.47 | 0.24 | 0.31 |

Dependent variables:

Columns 1 & 2: Fraction of male respondents who state the “ideal” number of children in a family is three or more;

Columns 3 & 4: Fraction of male respondents in a country who agree that “a university education is more important for a boy than a girl”;

Columns 5 & 6: Fraction of female respondents in a country who agree that “a university education is more important for a boy than a girl”;

Robust t statistics in parentheses

All variables are standardized

* significant at 5%; ** significant at 1%; *** significant at 0.1%

Table 4: Cross-national regressions on female seats in parliament 2002
Dependent variable is parliamentary seats held by women (%), 2002

| | (1) | (2) | (3) | (4) |
|----------------------------------|---------------------|---------------------|---------------------|--------------------|
| Income | 0.345 (4.19)*** | 0.296 (3.19)** | 0.339 (3.49)** | 0.374 (4.68)*** |
| Middle East | -0.393 (6.18)*** | -0.299 (3.88)*** | -0.228 (3.02)** | -0.166 (2.67)** |
| Islam | | -0.147 (1.80) | -0.123 (1.45) | |
| Oil Rents | | | -0.180 (3.81)*** | -0.108 (2.47)* |
| Female Labor Force Participation | | | | 0.328 (3.87)*** |
| Observations | 159 | 159 | 159 | 158 |
| R-squared | 0.23 | 0.24 | 0.26 | 0.33 |

Robust t statistics in parentheses

All variables are standardized

* significant at 5%; ** significant at 1%; *** significant at 0.1%

Table 5: Cross-national regressions on female seats in parliament 1995
Dependent variable is parliamentary seats held by women (%), 1995

| | (1) | (2) | (3) | (4) |
|----------------------------------|---------------------|---------------------|--------------------|--------------------|
| Income | 0.395 (4.28)*** | 0.358 (3.55)*** | 0.381 (3.67)*** | 0.401 (4.47)*** |
| Middle East | -0.337 (6.08)*** | -0.265 (3.47)*** | -0.230 (3.01)** | -0.167 (2.99)** |
| Islam | | -0.115 (1.33) | -0.100 (1.12) | |
| Oil Rents | | | -0.133 (2.13)* | -0.046 (0.71) |
| Female Labor Force Participation | | | | 0.311 (3.88)*** |
| Observations | 151 | 151 | 151 | 150 |
| R-squared | 0.23 | 0.24 | 0.25 | 0.31 |

Robust t statistics in parentheses

All variables are standardized

* significant at 5%; ** significant at 1%; *** significant at 0.1%

Table 6: Cross-national regressions on female ministerial positions 2002*Dependent variable is ministerial seats held by women (%), 2002*

| | (1) | (2) | (3) | (4) |
|-------------------------------------|---------------------|--------------------|-------------------|--------------------|
| Income | 0.257 (2.86)** | 0.237 (2.45)* | 0.272 (2.66)** | 0.282 (3.05)** |
| Middle East | -0.236 (4.46)*** | -0.194 (2.89)** | -0.139 (2.39)* | -0.127 (2.91)** |
| Islam | | -0.066 (0.88) | -0.041 (0.54) | |
| Oil Rents | | | -0.141 (2.39)* | -0.118 (1.93) |
| Female Labor Force Participation | | | | 0.099 (1.35) |
| Observations | 155 | 155 | 155 | 154 |
| R-squared | 0.10 | 0.10 | 0.12 | 0.12 |

Robust t statistics in parentheses

All variables are standardized

* significant at 5%; ** significant at 1%

Table 7: Female status in the Middle East and North Africa, 2002

| Country | Year of Female Suffrage | Legislative Seats Held by Women (%) | Women in Nonagricultural Labor Force (%) |
|----------------------|-------------------------|-------------------------------------|--|
| Algeria | 1962 | 6.2 | 26.4 |
| Bahrain | 1973 | 0 | 4.1 |
| Djibouti | 1946 | 10.8 | n.a. |
| Egypt | 1956 | 2.9 | 17.7 |
| Iran | 1963 | 4.1 | 23.6 |
| Iraq | 1980 | 31.6 | 19.1 |
| Jordan | 1974 | 5.5 | 22.4 |
| Kuwait | 2005 | 0 | 4.4 |
| Lebanon | 1952 | 2.3 | 28.9 |
| Libya | 1964 | n.a. | 22.4 |
| Morocco | 1963 | 10.8 | 32.8 |
| Oman | 1994 | 2.4 | 15.9 |
| Qatar | 1995 | 0 | 3.1 |
| Saudi Arabia | none | 0 | 4.9 |
| Syria | 1949 | 12 | 26.5 |
| Tunisia | 1957 | 22.8 | 31.4 |
| United Arab Emirates | none | 0 | 2.5 |
| Yemen | 1967 | 0.3 | 3.5 |