Oil, Islam, and Women:

Reviewing the Literature and Revisiting Opinion Surveys

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Introduction

Michael Ross' 2008 article "Oil, Islam, and Women," outlined a fascinating and controversial argument about the effect of oil production within a country on gender relations. At the time of its writing, the article was the first ever in the *American Political Science Review* to focus on political economy and gender.[1] Ross is specifically addressing the poor position of women in the MENA (Middle East and North Africa) vis-à-vis women in the rest of the world. His claims imply that, as opposed to common assumptions, oil is of primary responsibility for the poor state of women's empowerment in and outside the MENA – not Islam. Aili Tripp writes that Ross' article "served as a response to Ronald Inglehart and Pippa Norris, who have argued that a 'clash of civilizations' between the West and the Islamic world was partly a result of the treatment of Muslim women and that gender inequality was a key reason for the failure of the Middle East to democratize."[2] I revisit Ross' claims and outline the criticisms and expansions made based on his argument and statistical analysis. There is a rich literature on the topic both critical and supportive of Ross' claims. The staunchest critics offer competing explanations, but the explanations that are most satisfactory are those which compliment Ross while accounting for his criticisms. They prove oil has an effect through other mechanisms too. The statistical analyses that have derived from Ross' original model specifications have taken on less parsimonious forms but have highlighted the validity of different mechanisms and interaction effects by which natural resource rents, resource endowments, religion, Islamic family law, patriarchal kinship networks, authoritarianism, and legislative gender quotas influence female empowerment. I offer a picture of the debate that allows competing explanations to complement

[1] Teri L. Caraway, "Comparative Political Economy, Gender, and Labor Markets," *Politics & Gender* 5, no. 4 (December 2009): 568, https://doi.org/10.1017/S1743923X09990389.
[2] Aili Tripp, "Debate: Does Oil Wealth Hurt Women?," *Politics & Gender* 5, no. 4 (December 2009): 545, https://doi.org/10.1017/S1743923X09990341.

one another, avoiding claiming which variable is the "main culprit." Firstly, I outline Ross' claims, then provide a review of the work that has stemmed from his findings, and finally revisit the argument through opinion surveys, namely, Waves two to five of the Arab Barometer.

Ross and the Gendered Dutch Disease

Ross' argument revolves around the existence of a gendered "Dutch Disease" or "resource curse," whereby women's wages and labour are diminished in oil producing countries and women's low empowerment in the economic and political sphere derive from this lack of female workers in the labour force. I outline the argument in the following section.

Social theorists as far back as Friedrich Engels have argued that women can achieve social and political emancipation by working outside the home.[3] Studies have proven this. Female labour force participation increases the enrollment rate and literacy of girls – families tend to invest more in the health and education of their daughters when they know she will be able to earn her own income and contribute to the household income.[4] It is also linked to lower fertility rates because it incentivizes delaying the onset of parenthood and, by consequence, results in bearing fewer children over a lifetime.[5] When women work factory jobs, it brings them into contact with each other, facilitating the sharing of information and lowering the barriers to collective action. Garment workers in Bangladesh realized that factory work helped them achieve higher self-confidence, develop strong social networks, improve their negotiation skills with men, and learn about health and contraception.[6] When women earn their own income independent from their support network, they gain more influence within that network.[7] It also

[3] Engels 1978 as cited in Michael L. Ross, "Oil, Islam, and Women," *The American Political Science Review* 102, no. 1 (2008): 107, https://doi.org/10.2307/27644501.
[4] Michael 1985 as cited in Ross, 107.
[5] Brewster and Rindfuss 2000 as cited in Ross, 107–8.
[6] Amin et al. 1998; Kabeer and Mahmud 2004 as cited in Ross, 108.
[7] Beegle et al. 2001; Iverson & Rosenbluth 2006 as cited in Ross, 108.

engenders more egalitarian gender relations beliefs.[8] Studies in the United States have found that as women enter the workforce, they are more likely to develop an interest in politics and engage in conversations about politics, they are more likely to join informal networks that encourage collective action and the development of civic skills, and they are more likely to engage in political backlash against the experience of gender discrimination in the workplace.[9] The effects in the developing world are consistent with findings in the United States; for instance, political participation increases among Indian women when they have an established identity outside the household, which usually occurs as a result of finding work. They also are more likely to elect female representatives.[10] In summary, Ross identifies three channels by which joining the labour force boosts female political influence:

> at an individual level, by affecting women's political views and identities; at a social level, by increasing the density of women in the labor force and hence the likelihood they will form political salient networks; and at an economic level, by boosting their economic importance and hence forcing the government to take their interests into account.[11]

Labour markets are typically segregated by gender, meaning men generally work in some jobs and women work other kinds, even when they are similarly qualified.[12] This scenario usually reduces the number of jobs available to women and lowers their wages.[13] When a labour market is gender-segregated, women have historically entered the workforce in large numbers through the development of low-wage export-oriented industries (EOIs), especially in textiles

[8] Thornton et al. 1983 as cited in Ross, 108.
[9] Sapiro 1983; Schlozman et al. 1999 as cited in Ross, 108.
[10] Chhibber 2003 as cited in Ross, 108.
[11] Ross, 108.
[12] Anker 1997 as cited in Ross, 108.
[13] Horton 1999 as cited in Ross, 108.

and processed agricultural goods. Women held over half the jobs in the textile industry in the US in 1890, and a vast majority of textile workers worldwide are women.[14] The reasons for this are that these industries do not need labourers with great physical strength, the jobs require less training and specialized skills, making it easer for women to leave their jobs to care for their families, and the type of work – making clothing – is typically perceived as traditionally women's work. Moreover, EOIs employ women at higher rates because EOIs grow quickly since they are selling to a global market and can produce many jobs without displacing men, because they are more likely to be run by foreign companies that may be less prone to gender discrimination for legal and cultural reasons, and because wages represent a large fraction of production costs for EOIs, often targeting recruitment towards women because their wages are generally lower than male wages.[15]

The effect of oil production relates to the presence of EOIs and the economic condition of "Dutch Disease," which is characterized by an increase in the real exchange rate and a shift of the economy away from the "traded sector" (agriculture and manufacturing) towards the "nontraded sector" (construction and services).[16] Ross argues that if we extend this model to account for a gender-segregated labour market, it squeezes women out of the labor force. In the classic model, the influx of foreign currency resultant from a boom in oil production will raise the real exchange rate, making the importation of tradeable goods cheaper for locals. It will also increase the demand for things that cannot be imported, like construction and retail services (nontraded sector), drawing labour away from the tradeable goods sector.[17]

[14] Smuts 1959; World Bank 2001 as cited in Ross, 108.
[15] Ross, 108.
[16] Corden and Neary 1982 as cited in Ross, 108.
[17] Ross, 108.

Female labour supply is a function of two main variables, the prevailing female wage and her "unearned income," that is, the income from her household that is not directly hers. As the prevailing wage increases, she should be more inclined to entering the job market, but as her family's income rises, she should be less inclined to join the labour market and provide secondary income to the household. Oil production should raise the prevailing wage (for both men and women), which increases incentives, but at the same time, her household income lowers, which decreases incentives.[18] In a gender-segregated labour market, however, women's wages should not increase as much. In developing countries, women are, for the most part, "employed in the traded sector, in low-wage jobs in export-oriented factories and agriculture; and they are excluded from many parts of the nontraded sector, such as construction and retail, since these jobs typically entail heavy labor, or contact with men outside the family."[19] If these assumptions hold, then the expansion of the non-traded sector should boost male labour and cause male wages to rise. As for women, the traded sector should decline and reduce demand for female labour and their prevailing wage.[20]

Existing Criticisms and Expansions

Path Dependence in Islamic History and the Persistence of Misogyny

Ross' critics have used various arguments to address his thesis, the main one being that what is really at play is Islam in preventing women's empowerment, and that the Organization of Petroleum Exporting Countries (OPEC) are driving the results due to their deep patriarchal history. Lasse Lykke Rørbæk (2016) outlines a convincing path dependence argument about the orthodox tendencies in Islam that helps explain the persisting limitations towards women's

[18] Ross, 109.
[19] Anker 1997 as cited in Ross, 110.
[20] Ross, 110.

empowerment in the MENA today. In a statistical analysis, Rørbæk finds Muslim proportion of a country's population to be significantly associated with less respect for women's economic, social, and political rights and these results remain robust to the inclusion of oil rents in the model. The oil rents coefficient, however, is only significant when the OPEC countries remain part of the sample.[21]

Rørbæk argues that Islam is compatible with women's empowerment, making Ross' explanation appealing, however a gendered Dutch Disease in the MENA notwithstanding, resistance to social change, particularly gender equality, dominated the Muslim world for over a millennium before the discovery of oil in the MENA. Islam's confrontation with Hellenic thought resulted in a rational and intellectual revolution which was eventually reversed in a theological struggle between the rationalists and religious orthodoxy in the ninth century, which coincides with the time that Islam became consolidated in everyday Muslim life.[22] The so-called "closing of the Muslim mind" embedded orthodoxy in Islamic culture, and as forces of modernization empowered women elsewhere, this process was stalled in the Muslim world, impeding economic development and scientific progress too.[23] The Quran does not outline a clear gender hierarchy, instead "provid[ing] relatively favorable conditions for women, its time of writing considered."[24] As opposed to the Bible, the Quran depicts Adam and Eve as being of "equal nature" and does not hold Eve solely responsible for the original sin.[25] Instead, the dominant religious interpretation during the determinative years of Islamic civilization and the formalization of Sharia two centuries after the death of the Prophet became the crucial factors in

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[21] Lasse Lykke Rørbæk, "Islamic Culture, Oil, and Women's Rights Revisited," *Politics and Religion* 9, no. 1 (March 2016): 72, https://doi.org/10.1017/S1755048315000814.
[22] Allawi 2009; Reilly 2010; Ruthven 1984 as cited in Rørbæk, 62.
[23] Ali 2007; Hoodhboy 1991; Kuran 2011 as cited in Rørbæk, 62.
[24] Mayer 1999; Keddie 1990 as cited in Rørbæk, 63.
[25] Ishay 2008 Rørbæk, 63.

the progressive loss of women's social and sexual rights, and as Rørbæk argues, persistent misogyny.[26]

The territorial expansion of the early Islamic conquests brought exposure to foreign culture. Hellenic influences of philosophy and science inspired a movement led by the Mu'tazilites, a group of rationalist theologians who "emphasized free will and believed the Quran should be subjected to reason."[27] The movement came to an end over a 100-year period and by the 11th century, the few Mu'talizites left were subject to repression and their works were destroyed on charges of heresy.[28] It coincided with the end of the formative period of Islam, marked by the death of the *hadith* collector, al-Bukhari (810-870).[29] I paste Rørbæk's timeline of Islamic history in Figure 1. The rationalist defeat is one of the most important critical junctures in Islamic history through its initiation of a path of resistance to social change and the strengthening of the orthodox notion that Islamic law was immutable, designed to reject new religious interpretations, evident in the juxtaposition of innovation and heresy in the religious vocabulary.[30]

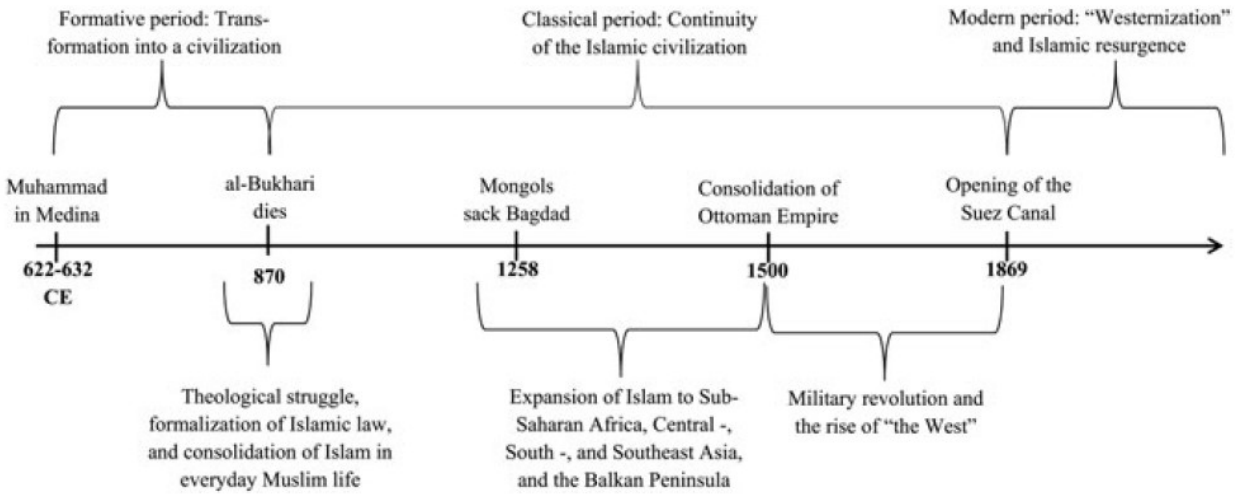
In family law, women were placed in a subordinate relationship to their male relatives, polygamy was accepted, divorce rights were reserved for men, women's inheritance was half of men's, and male guardianship was required. Female subordination was justified in the religious texts. For example, in one of al-Bukhari's *hadiths,* the Prophet denigrated women's intelligence and religiosity: "Is not the witness of a woman equal to half the witness of a man? This is the defect in her intelligence. And when she is ceremonially impure [i.e., menstruating] she neither

[26] Ruthven 1984; Syed 2010 Rørbæk, 63–64.
[27] Ali 2007; Hourani 1985; Reilly 2010 as cited in Rørbæk, 64.
[28] Ali 2007; Hourani 1985; Reilly 2010 as cited in Rørbæk, 64.
[29] Hourani 1985; Ruthven 1984 as cited in Rørbæk, 64.
[30] Ruthven 1845, 152-153; Tibi 2009, 63 as cited in Rørbæk, 65.

prays nor fasts. This is the defect in her religion."[31] Women were placed in a life of domesticity through Islamic law, which led them to play insignificant roles in economic, social, and political life.[32]

Orthodoxy persisted into modern times. Modernization was perceived as "Westernization" and social change was resisted, especially surrounding gender equality. This was a result of the embeddedness of orthodoxy in the Muslim world affecting their reaction to modernization at large.[33] Samuel Huntington argues that the influence of Western culture and modernization initiated an Islamic resurgence whereby Muslims turned to religion as a source of identity.[34] Islamist movements became strong political forces as political authorities legitimated their power on the basis of conservative Islamist discourses, and today, conservatism and resistance to women's empowerment continues to thrive in the Muslim world.[35]

Figure 1: Timeline of Islamic History taken from Rørbæk



Interacting Islamic Family Law and Resource Rents

[31] Ruthven 1984, 166 as cited in Rørbæk, 65.
[32] Mayer 1999, 98-99; Syed 2010 as cited in Rørbæk, 65.
[33] Lewis 2002 as cited in Rørbæk, 66.
[34] Huntington 1996, Chap. 5 as cited in Rørbæk, 66.
[35] Huntington 1996, 115; Moghadam 2003; Allawi 2009; Mayer; 1999 as cited in Rørbæk, 66.

Where Ross sees oil as the main explanatory variable and Rørbæk sees Islam as the main explanatory variable, Mahdi Majbouri conveniently argues oil and gas rents and Islamic family law jointly matter, testing the hypothesis with models using interaction effects. Contending with the reality that female labour force participation (FLFP) rates are low while women in the region are seeing improvements in other female development indicators like fertility rates falling and education levels increasing, Majbouri argues that oil and gas rents negatively affect FLFP when labour market institutions, such as laws, allow men to take decisions about female work in the household.[36] In countries that enforce Islamic family laws, male guardians have veto power over women's working decisions. Majbouri shows that oil and gas rents reduce FLFP where Islamic family laws are prescribed, not where religious worship is common. In Majbouri's model, it is specifically Sharia that results in lower FLFP rates. Sharia laws and, especially. laws pertaining to women's work, are consistent across various schools of law and apply to all Muslims regardless of their personal interpretations or religiosity.[37]

Majbouri summarizes the gendered Dutch Disease's interaction with Sharia in the diagram in Figure 2. Departing from Ross, he adds government transfers to the mix, arguing they increase with rents and lead to lower FLFP. Rents also increase the tendency for states to invest in social welfare, like free education and healthcare, or subsidized energy or food. These have two effects: the *substitution effect* leads people to substitute leisure with consumption of goods that are now cheaper, and the *income effect* encourages people to consume more leisure as their purchasing power increases. People work less if the income effect overpowers the substitution effect.

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[36] Mahdi Majbouri, "Oil, Laws, and Female Labor Force Participation," *International Advances in Economic Research* 23, no. 1 (February 1, 2017): 92–94, https://doi.org/10.1007/s11294-016-9621-9.
[37] Majbouri, 94.

The main departure from Ross, however, are the mechanisms displayed in grey in Figure 2: rents strengthen discriminatory institutions inside the household wherever they exist. In countries with family laws that grant "male members of the household the privilege to make or overrule decisions about female labour supply," the higher bargaining power of males resultant from rents leads to FLFP because it is legitimated in law and it is less costly for male member to limit FLFP. Islamic family law makes it "politically inexpensive (within the household) and socially acceptable for men to veto women's decision to work." Women also have "limited opportunities to use divorce as leverage in order to gain the right to work." This is why it is unsurprising for Majbouri that in Morocco, Tunisia, Egypt, and Iran, women's movements have been almost entirely focused on changing family laws.[38]

The Musawah movement, initiated in Malaysia in 2009, is a "global movement for equality and justice in the Muslim family," that is rethinking notions of male authority (*qiwamah*) and guardianship (*wilayah*) on the basis of Quranic values, Muslim legal tradition, human rights principles, and the lived realities of women and men.[39] The work of the Musawah movement serves as another example of the possibility for equality in Islamic family law and culture, but it also proves the negative impact of Islamic family laws is felt by Muslim women globally. The Musawah movement demonstrates that it is orthodox religious interpretation that limits female empowerment. They reinterpret the Quran and Hadith to make space for women's rights, essentially revoking the orthodoxy consolidated in the 9th century.

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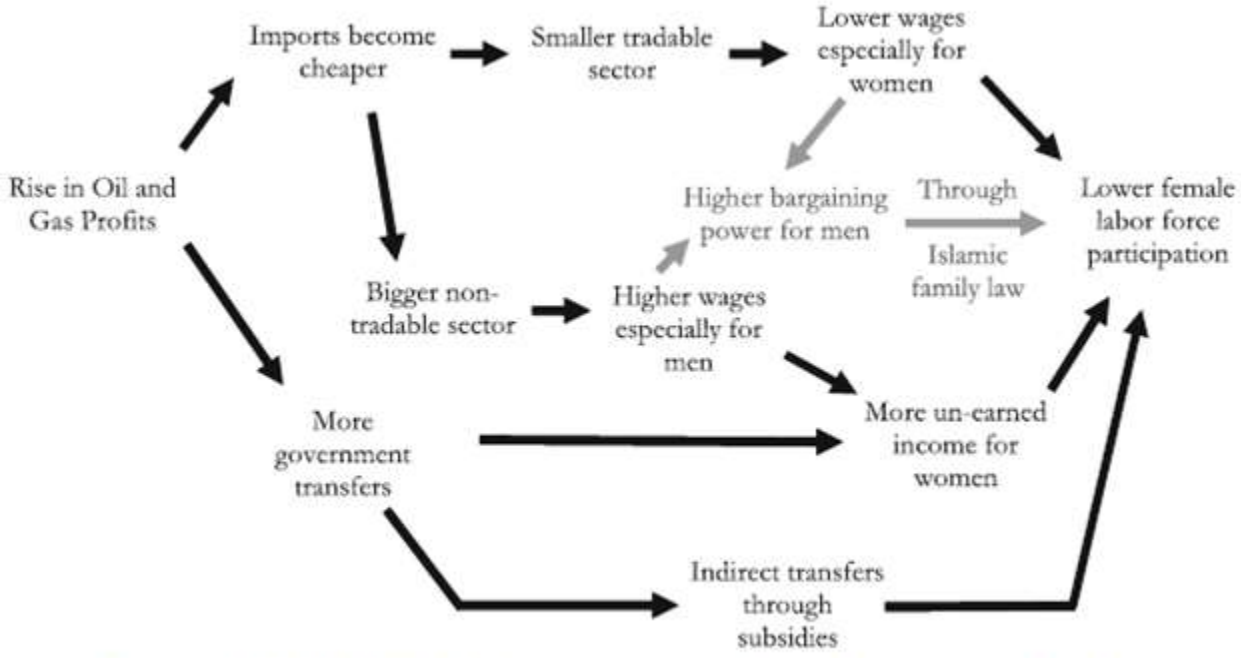
[38] Rørbæk, "Islamic Culture, Oil, and Women's Rights Revisited," 97.

[39] musawah.org, "About Us," *Musawah* (blog), November 24, 2018, https://www.musawah.org/about/; "Key-Musawah-Publications-and-Projects-March2020.Pdf," accessed December 13, 2020, https://www.musawah.org/wp-content/uploads/2020/04/Key-Musawah-Publications-and-Projects-March2020.pdf.

Figure 2: Interaction of Oil and Islam taken from Majbouri



Impact of Oil and Gas Rents on FLFP. *Note*: The part of the figure in gray depicts the new mechanism described in this study

Majbouri uses longitudinal data from 1960 to 2003 and interacts logged oil and gas rents per capita with an Islamic family law index. The coefficient for the index is negative and statistically significant. In a separate model used as a robustness check, he interacts oil and gas rents with historical plough use to make sure that the results cannot be replicated with another strong measure of gender discrimination. The plough requires more strength and led to clearer distinction of gender roles in agricultural societies where terrain facilitated the use of the plough.[40] The plough has no statistically significant effect. Majbouri also interacts oil and gas rents with a MENA dummy variable as a robustness check. The MENA variable is negative and statistically significant, but it does not affect the significance of the Islamic family law index when introduced.

[40] Boserup 1970; Alesina et al. 2013 as cited in Majbouri, "Oil, Laws, and Female Labor Force Participation," 98.

Authoritarian Selectorate Models: Placating a Conservative Winning Coalition

Liou & Musgrave propose a third theory that has to do with autocratic survival. Oil rents can fund policies harming broad segments of society as part of a strategy of rule and survival. Costly, visible, and repressive policies, such as those favouring gender inequality, help solidify regimes' winning coalitions – ideologically or theologically motivated interest groups – by signaling fidelity. It also raises the cost to potential challengers of outbidding the incumbent, as the challenger would have to promise even more repression to attract the defection of winning coalition members and risk alienating rival coalition members. Regimes that rely on taxation to raise funds face limits on their ability to impose these types of policies since they entail lowering overall productivity and generate popular resistance.[41]

Selectorate models predict that leaders survive by distributing benefits to maintain support of a winning coalition drawn from a selectorate (the pool of actors who have political power).[42] Broader selectorates yield greater provision of public goods that benefit all members of society and narrow selectorates extract so many private goods for the winning coalition that public welfare loses out dramatically.[43] Liou and Musgrave propose that both material (rents, patronage, and repression) and non-material goods (cultural and symbolic policies) are distributed. Members of an autocrat's winning coalition may make demands for social policy as well as rents.[44] The authors introduce the concepts of pro-social versus anti-social policies. Pro-social policies are designed to promote aggregate welfare (economic growth, civil rights, notion

[41] Yu-Ming Liou and Paul Musgrave, "Oil, Autocratic Survival, and the Gendered Resource Curse: When Inefficient Policy Is Politically Expedient," *International Studies Quarterly* 60, no. 3 (September 1, 2016): 1, https://doi.org/10.1093/isq/sqw021.
[42] Bueno de Mesquita et al. 2005 as cited in Liou and Musgrave, 2.
[43] Olson 1993, 569-71 as cited in Liou and Musgrave, 2.
[44] Liou and Musgrave, 2.

defense, etc.). Anti-social policies are distinguishable from private goods (they are nonrival and nonexcludable) but not intended to improve aggregate welfare.[45]

Negative externalities could benefit members of the winning coalition who desire to harm another group. Jim Crow laws or class- and race-based restrictions on housing and occupations impose unevenly distributed costs that appeal to winning coalition members and hence rulers. Regimes cannot prove to their winning coalition that they actually make citizens more pious, but it is easy for them to check if regimes impose laws requiring the veil or television networks to avoid "blasphemous" programming. Non-material sources of cohesion serve as important alternatives to patronage and distributing private goods. Implementing such policies, however, requires resources that would otherwise be used for traditional patronage, and these policies also impose limits on rulers' ability to bargain with the pubic for tax compliance.[46] Resource-rich countries can afford to pay less attention to the public's demands while compensating them with lower or negative taxes.[47] Poor policy outcomes observed in resource-rich states are thus a result of the interaction between resource wealth and autocratic governance as leaders placate winning coalition members by barring women from public life. Liou and Musgrave maintain this pattern is consistent with area experts' depictions of gulf countries, where there are close marriages between temporal and religious authorities.[48] These states exemplify the "petroleum-patriarchy relationship" – when they are excluded from large-N analyses, the relationship no longer holds.[49]

Liou and Musgrave identify the "culturalist" group of theories as those which tend to stress time-invariant factors, such as those those which argue that cultural heritage and kinship

[45] Liou and Musgrave, 3.
[46] Bates and Lien 1985 as cited in Liou and Musgrave, 3.
[47] Gandhi and Przeworski 20007; Ross 2012a; Smith 2008; Morrison 2009 as cited in Liou and Musgrave, 3.
[48] Davidson 2012, 72-75 as cited in Liou and Musgrave, 3.
[49] Groh and Rothschild 2012, 75 as cited in Liou and Musgrave, 4.

networks explain women's levels of political participation in resource-rich countries.[50] Ross' findings show that countries that share cultural heritage exhibit great variation on women's participation because of resource rents. Liou and Musgrave depart from Ross and rather than the "outcomes resulting from blind economic mechanisms that incidentally produce gendered effects, [they] contend that governments know of and even desire their policies' likely social consequences and pursue them because rulers' need to reward their backers."[51] Although they distinguish themselves from the culturalist group, their argument partially uses a culturalist one because autocratic regimes make non-material *cultural concessions* to the winning coalition to address the cultural heritage of the winning coalition. Moreover, Liou and Musgrave admit that it is the gulf that drives the relationship, and the gulf is overtly religiously conservative, so their non-material concessions reflect this reality. They do not show where else this type of dynamic can occur except for in Iran. Where Liou and Musgrave differ from the culturalists is that their cultural aspect of the argument involves only the winning coalition (i.e., the conservative religious elite), whereas culturalists would claim it is the proportion of Muslims or degree of religious conservatism in a population that drives patriarchal tendencies.

In Iran, the 1979 Revolution led to a shift in the winning coalition which led Khomeini to repeal the 1975 Family Protection Act, lifting restrictions on polygamy, removing divorce and inheritance rights for women, lower minimum marriage ages for girls, and removing allowances for married women to work without their husband's permission.[52] Furthermore, all women judges were removed from office too, co-education was banned, female teachers were dismissed and girls were effectively denied education in rural areas.[53] The *hijab* became required for all

[50] Charrad 2009, 547; Norris 2011, 5 as cited in Liou and Musgrave, 4.
[51] Liou and Musgrave, 4.
[52] Sanasarian 1982, 9497, 124 as cited in Liou and Musgrave, 14.
[53] Poya 1999, 65, 70-71 as cited in Liou and Musgrave, 14.

women. Khomeini even declared that "if the Islamic Revolution had no other outcome but the veiling of women, this in and of itself is enough for the Revolution."[54] Liou and Musgrave claim that such observations contradict culturalist or political economy predictions because the policy variation cannot be attributed to variation in Iran's cultural heritage, which was identical before and after the revolution, and neither to rising oil revenues, because its oil production fell after the revolution and never recovered to the same output levels.[55]

Oil Endowments as an Instrument

Mavisakalyan and Tarverdi use an instrumental variable approach to check if Ross' purported association is causal and perform checks on the various assumptions he makes. Using oil endowments as an instrument for oil and gas rents, they check the causality of Ross' mechanism using two-stage least squares, finding that the relationship between oil and gas rents and FLFP is indeed a causal one. Using oil endowments as an instrument addresses the endogeneity of oil production. It accounts for variations in oil production but has no direct effect on women's representation. Since endowments are geologically determined, its variation provides exogenous variation in oil production. They find that the coefficient for oil endowments on FLFP is negative and statistically significant but loses its significance when oil rents are controlled for, implying that endowment only has an effect as it operates through oil production. They conclude that "the negative effect of oil is potentially larger than" what Ross' paper suggests.[56]

They also check the assumptions behind Ross' model, its robustness to additional controls, and its robustness to using different measures of oil and gas rents and different

[54] Sanasarian 1982, 134 as cited in Liou and Musgrave, 14.
[55] Liou and Musgrave, 14.
[56] Astghik Mavisakalyan and Yashar Tarverdi, "Oil and Women: A Re-Examination," *Energy Economics*, Replication in Energy Economics, 82 (August 1, 2019): 197, https://doi.org/10.1016/j.eneco.2018.01.015.

measures of female empowerment. Ross' assumption of a gender-segregated labour market (i.e., that women can only work in the traded sector, and men in the nontraded sector) is checked by stratifying regressions by sector. They do so, firstly, by regressing oil and gas rents on the women employed in the *industry sector* as a share of total female employment, finding a negative and statistically significant effect. To check if women's employment changes in the nontraded sector, they regress on the women employed in the *services sector* as a share of total female employment, finding a positive and significant effect. The overall negative effect of oil production, then, is because more jobs are lost in the industry sector than gained in the services sector. They also assess whether there is an effect on informal work and consider the share of female family workers in total female employment, finding no significant effects.[57] In terms of different measures of resources, they find that the effects of different measures are only significant if they are normalized on a per capita basis rather than if expressed as fractions of GDP.[58]

Gender Quotas

Alice Kang replicates Ross' analysis but additionally controls for legislative gender quotas. Quotas have become a "fast track" for women seeking public office since 1995.[59] She claims that when quotas are in place, leaders may cater more to women's demands even during oil booms.[60] She finds that 27% of oil-rich countries have quotas, while half of oil-poor countries have quotas, implying issues of reverse causality. Nevertheless, she finds that the presence of quotas has a positive and significant effect on women's representation measured through female

[57] Mavisakalyan and Tarverdi, 199.
[58] Mavisakalyan and Tarverdi, 194.
[59] Bhavani 2009; Dahlerup and Freidenvall 2005; Htun and Hones 2002; Jones 1998; Paxton et al. n.d.; Tripp and Kang 2008 as cited in Alice Kang, "Studying Oil, Islam, and Women as If Political Institutions Mattered," *Politics & Gender* 5, no. 4 (December 2009): 561, https://doi.org/10.1017/S1743923X09990377.
[60] Kang, 561.

seats (percentage of women in lower house) and that the effect of oil is robust to the inclusion of quotas.[61] To illustrate the effect in real terms, she runs a reduced-form simulation for a hypothetical average country outside the MENA. The percentage of women in parliament in the absence of oil and absence of quotas is predicted to be 14%. If we add quotas, this rises to 19% (a 36% increase). If there are no quotas and the amount of oil rents is $1280 (the size of one standard deviation), the figure decreases from 14% to 12.1%.[62] She also interacts oil and quotas to assess how the effect of oil varies along different levels of quotas. When quotas are absent, oil rents have a significantly negative effect. When quotas are present, the effect of oil rents loses its statistical significance.[63] Her model contends with the issue of reverse causality – that gender quotas may be a result of high female empowerment already – however, the fact that the effect of oil is robust to the inclusion of quotas attests to the strength of Ross' argument.

Patriarchal Kinship Networks

Like Rørbæk, Mounira M. Charrad, focuses on history in the MENA before the discovery of oil. Saudi Arabia, Kuwait, the Gulf Emirates, Libya, and Iraq are oil-producing countries in the region with long histories of strongly patriarchal structures and political institutions. These societies "were based on tribal or kin ties, with strong patriarchal networks invested in the control of women," and "the oil economy later was grafted onto these social structures."[64] Charrad's theory claims that political system built off kin-based patriarchal networks tend to curtail women's rights, whereas those that have evolved to be relatively autonomous from such networks tend to favor more women-friendly policies.[65] Although she argues it is vital to

[61] Kang, 563–64.
[62] Kang, 565.
[63] Kang, 566.
[64] Mounira M. Charrad, "Kinship, Islam, or Oil: Culprits of Gender Inequality?," *Politics & Gender* 5, no. 4 (December 2009): 548, https://doi.org/10.1017/S1743923X09990353.
[65] Charrad 2001, 1-13, 233-41; 2007a as cited in Charrad, 547.

studying female empowerment in the MENA, she does not offer a method of quantifying patriarchal kinship networks, nor does she show that variation in kinship networks exist across the MENA. Rather, she argues that the MENA is made up of countries where patriarchal kinship networks are prevalent, and that the statistical significance of the MENA dummy in Ross' models derives from these patriarchal kinship networks dominating politics in the region.[66]

Cultural Values

Pippa Norris correctly states that Ross' study does not consider direct evidence concerning attitudes and values. She argues that because of this,

> the analysis is unable to test successive rival models that monitor how the public feels about women and men's roles in the workforce, family and public life, moral values toward sexuality, or any other direct measures about the strength of religiosity or religious identities and beliefs.[67]

Ross uses proportion of Muslims as a proxy measure for culture, admitting himself that it is a crude measure. In the following sections, I outline a statistical analysis of opinion surveys to gauge attitudes in the MENA towards female empowerment based on respondent religion and I discuss the resultant findings.

Summarizing the Statistical Models Employed So Far

In Table 1, I summarize the data and methods of the statistical analyses used by the authors' presented in the literature review to compare the work that has been done on the topic. None of the articles leverage opinion surveys to bolster their arguments.

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[66] Charrad, 548.

[67] Pippa Norris, "Petroleum Patriarchy? A Response to Ross," *Politics & Gender* 5, no. 4 (December 2009): 559, https://doi.org/10.1017/S1743923X09990365.

Table 1: Data and Methods seen in the Literature Review

Author(s) & Method	Dependent Variables	Main Explanatory Variables
Ross (2008) 1. First differences with country fixed effects (pooled time-series cross-sectional data 1960-2002) 2. Cross-national model with a between estimator (1993-2002)	1. *Female Labor Force Participation* (fraction of formal labor force that are female) 2. *Female Seats* (fraction of seats held by women in parliament)	1. *Oil Rents Per Capita* (total rents, subtracting extraction costs, divided by midyear population)
Rorbaek (2016) Cross-national model with a between estimator (1999-2008)	Cingranelli and Richards (2014) women's rights indicators: 1. *Economic rights* (equality in pay, promotion, job security, hiring, and free choice of profession without male relative or husband consent) 2. *Social rights* (education, travel, participation, equality in inheritance, marriage, and divorce) 3. *Political rights* (right to vote, join parties, run for office and hold government positions, and proportion of women in legislature)	1. *Muslim proportion* 2. *Binary Muslim majority* 3. *Oil rents* (10-year mean of total value of production in thousands US dollars per capita)
Majbouri (2017) Country and year fixed-effects (1960-2003)	1. *Female Labor Force Participation*	1. *Logged oil rents per capita (from Ross 2008)* 2. *Islamic family law index* (multiplying the share of Muslims by one if the country applies Islamic law to family issues) 3. *Interaction between oil and gas rents and Islamic family law index*
Liou & Musgrave (2016) 1. Stratified panel least-squares with country fixed-effects and first-differenced variables with	1. *Female Labor Force Participation* 2. *Total Fertility* 3. *Adolescent Fertility* 4. *Contraceptive Access*	1. *Oil Income Per Capita* (from Ross 2008) 2. *Polity definition of autocracy and democracy*

an autoregressive error component (1960-73, 1973-86, 1987-2002) 2. First-differences with country fixed effects (independents averaged over 1963-1972 and response variable from 2002) 3. Cross-national regression (1993-2002)	5. *UN Gender Inequality Index* 6. *Cringanelli-Richards Indices (2010)* 7. *WomanStats Project: Caprioli's Index of Physical Security of Women, Brinton's Discrepancy Index, McDermott's Index of Inequity in Family Law* 8. *Clan Governance* (Hudson et al. 2015, 540)	3. *Cheibub, et al. (2010) dichotomous definition of democracy*
Mavisakalyan & Tarverdi (2019) 1. Cross-national model with a between estimator (1993-2002) 2. Instrumental variable 2-stage least squares	1. *Female labor force participation* 2. *Parliamentary seats held by women* 3. *Ministerial seats held by women* 4. *Female employees, industry* 5. *Female employees, services* 6. *Fertility rate* 7. *Marriage age*	1. Main IV: *Oil Rents Per Capita* (from Ross 2008) 2. Instrument: *Oil Endowments per Capita* 3. *Net oil export per capita* 4. *Oil reserves per capita* 5. *Oil rents in GDP* 6. *Net oil export in GDP* 7. *Oil reserves in GDP*

Data and Methods

None of the replications so far employ opinion survey data. I leverage Arab Barometer data from all five waves, covering a period from 2006 to 2019. Using the survey package in R, I calculate complex survey design consistent weighted estimates and errors using the weights provided by the Arab Barometer (AB).[68] Weights are missing for the first wave of the AB so it is dropped from the weighted analyses (i.e., years 2006-2009). I assume that opinions tend to liberalize over time, as younger people come of age and can take the survey and media has become more globalized, so leaving out Wave 1 may bias the results towards more liberal

[68] Thomas Lumley, *Complex Surveys: A Guide to Analysis Using R*, Wiley Series in Survey Methodology (Hoboken, N.J: John Wiley, 2010).

opinions. I bind all waves to each other to create a new dataset, then I join the aggregated dataset with country-level data from Rørbæk.[69] The religion question in the AB is not asked in Saudi Arabia and Yemen, but I assume that respondents were Muslim and code all respondents from those two countries as Muslim. Without Wave 1, our dataset has 63,338 observations, 31,396 of which are women.

I examine descriptive statistics for employment and attitudes towards female empowerment along gender, religion, and country, calculating 95% confidence intervals to determine whether two groups are statistically significantly different from each other. If the 95% confidence interval of one estimate overlaps with another estimate it is not significantly different. I run survey-weighted ordinal logistic regression (OLR) with the dependent variable being responses to the statement: "University is more important for men than women," with the main independent variables being self-reported religion and oil and gas rents in the respondent's country. I additionally control for gender and employment status. The response variable is ordinal, and although I could treat it linearly and get a regression table of interpretable results, I follow the best practice and use OLR. I omit the regression table from the body of the article because OLR tables do not facilitate easy interpretation. Instead, I plot predicted probabilities and 95% confidence intervals based on different levels of the independent variables.

The model used in this paper is preliminary and needs more work, namely through adding country-level and individual-level controls, as well as theorizing interaction effects. The model is specified as follows:

University Men Importance = Religion + Gender + Employment + Oil & Gas Rents per Capita + error

[69] Lasse Lykke Roerbaek, "Replication Data for: 'Islamic Culture, Oil, and Women's Rights'" (Harvard Dataverse, October 14, 2015), https://doi.org/10.7910/DVN/KFNEQ5.

Muslim Women's Employment

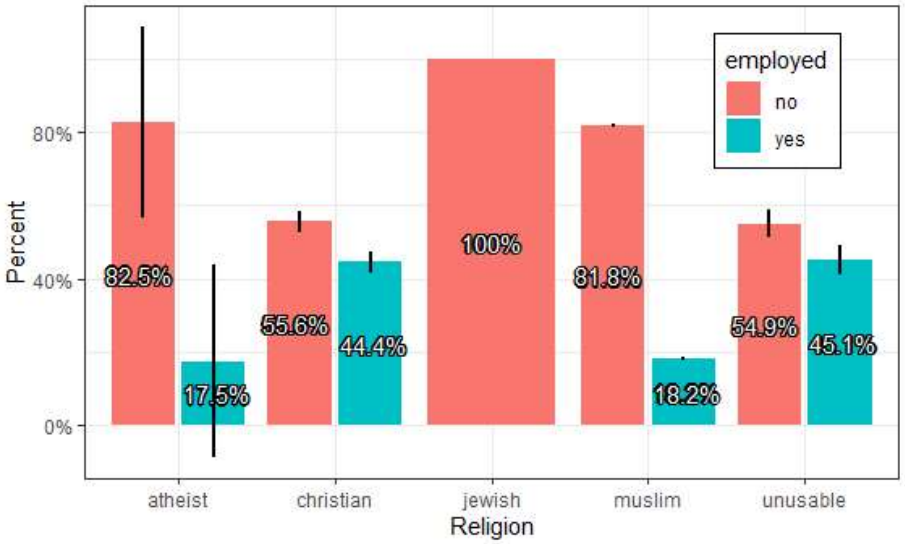


Figure 3: Female Employment by Religion

Figure 3 plots the survey data for employment among women in the MENA. Percentages are grouped by self-reported religion. The confidence interval for atheists is very large because there are not many in the sample, so we must be cautious when comparing them to the rest of the sample. There are also very few Jewish women in the sample, so I refrain from drawing conclusions about them too. Data for Muslims and Christians is abundant. Among Muslim women, the overwhelming majority are not employed (81.8%). Comparatively, only about half of Christian women are unemployed (55.6%). Women who wished not to claim a religion or where coders could not identify a religion (***unusable*** category) reported similar employment data to Christian women.

Attitudes Towards Women's Empowerment

Figure 4: Attitudes Towards Women's Empowerment Among Muslims in the MENA

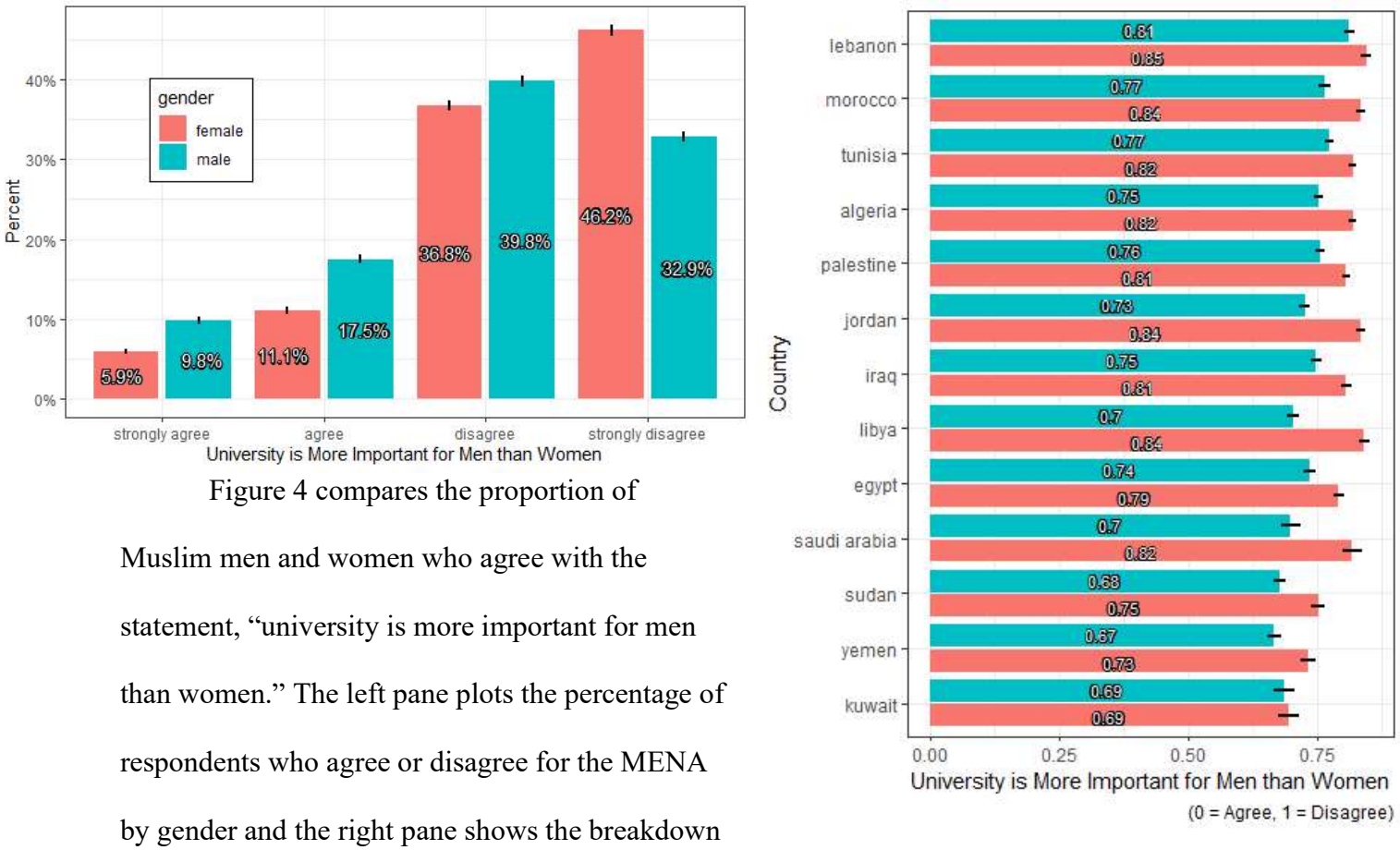
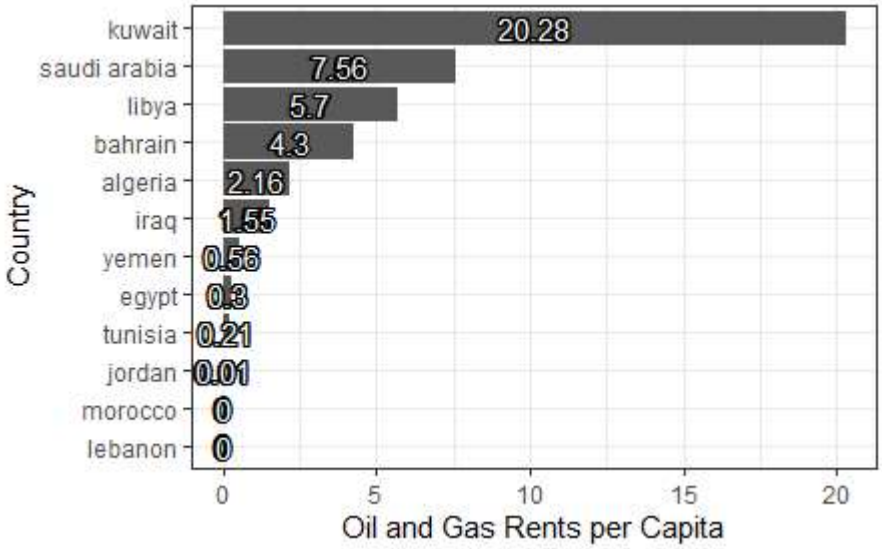


Figure 4 compares the proportion of Muslim men and women who agree with the statement, "university is more important for men than women." The left pane plots the percentage of respondents who agree or disagree for the MENA by gender and the right pane shows the breakdown by country, showing them in descending order. The black lines represent the 95% confidence intervals for the sample estimates. The estimates from the right pane are calculated by taking the average of four numbers (one to four) which represent the four levels of agreement with the statement, then dividing by four so the estimate is bound between zero and one with zero meaning "strongly disagree" and one meaning "strongly agree." Women are much more likely than men to "strongly disagree" with the statement. This finding bolsters Majbouri's argument, which claims that it is the enforcement of Islamic family law in the household that partly leads to low female empowerment. In terms of the country breakdown, the least feminist ones are Kuwait, Yemen, Sudan, and Saudi Arabia. The countries with the largest gaps between the

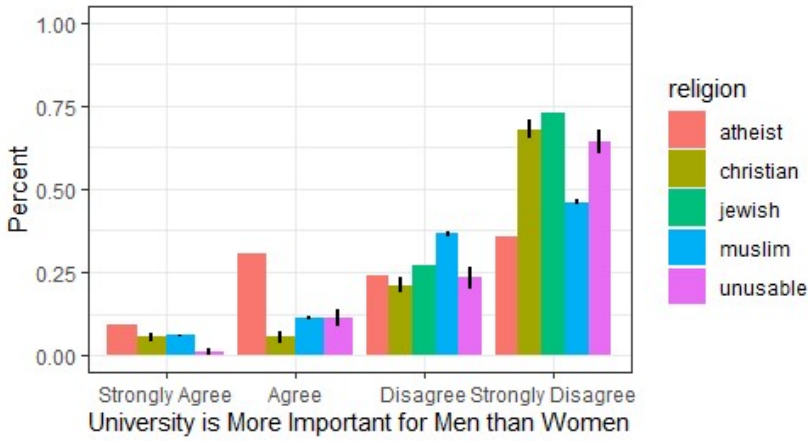
opinions of men and women are Saudi Arabia, Libya, and Jordan. The only country where the opinions of men and woman are not statistically distinguishable is Kuwait. If we map these countries based on their oil and gas rents per capita, the pattern resembles that which we see when we map by female empowerment. I plot these rents in **Error! Reference source not found.**. Kuwait, Saudi Arabia, Libya, and Bahrain all rank high. The patterns in the descriptive statistics offer a preliminary picture, but we cannot make many claims from them.

Figure 5: Oil and Gas Rents per Capita in the MENA



How do women in the MENA of different religions respond to the university statement? I plot the results for the female empowerment statement for women of different religions in Figure 6. I omit confidence intervals for atheist and Jewish women because they run over the plot dimensions. If we stick to comparing Christian women (gold bars) and Muslim women (blue bars) because their estimates are more accurate, we see that Christian women are less likely to "disagree" but more likely to "strongly disagree." A higher proportion of Muslim women "agree." About the same

Figure 6: Women of Different Religion and Female Empowerment



proportion "strongly agree." Overall, Christian women's attitudes are more favourable to women's empowerment. Compared to Muslim men, however, Muslim women's attitudes are more favourable to women's empowerment. This attests to dynamics within the household as a source of empowerment.

Predicting Attitudes Towards Female Empowerment

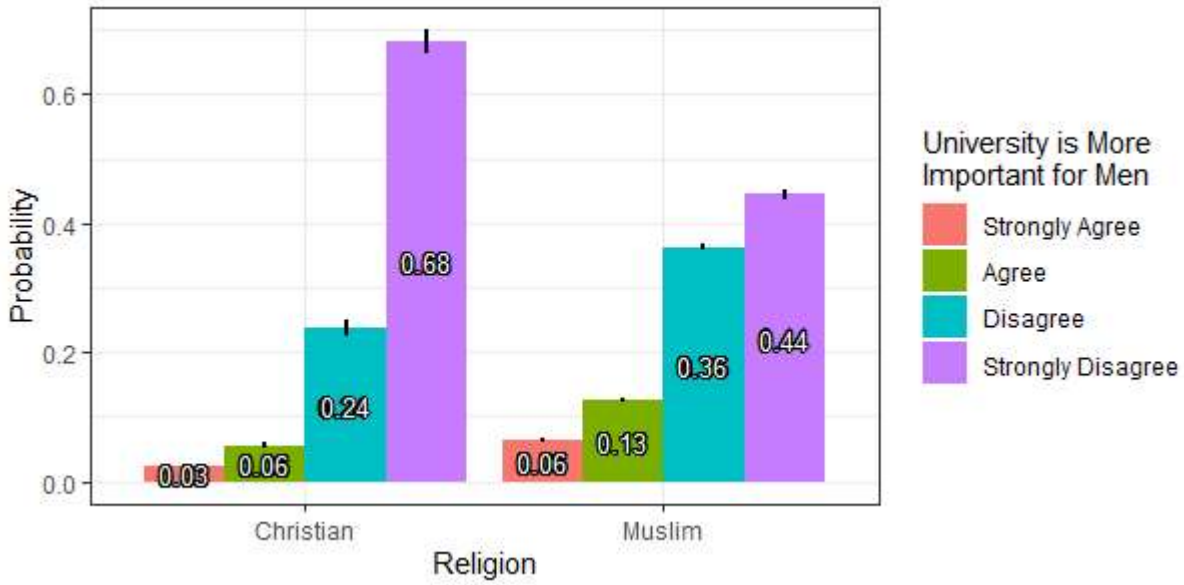
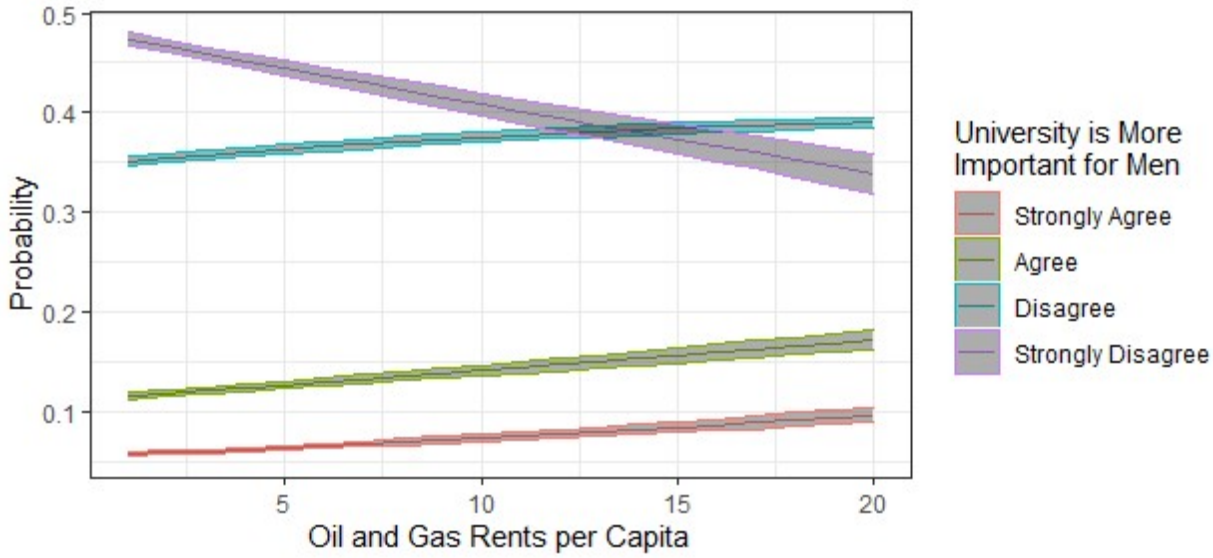


Figure 7: Predictions for Female Empowerment Along Religion

I plot predicted probabilities and 95% confidence intervals for our OLR for each level of the response variable "University is more important for men than women." There are 52,023 complete cases in the data to run the regression on. Since we are only interested in variation based on religion or resources, I hold all variables constant except for the variable of interest for each set of predictions. For the predictions along religion, which are printed in Figure 7, I predict for a hypothetical women that is unemployed. Changes in the predictions should thus be solely due to the effect of religion on that hypothetical individual. The model predicts Christians to be much more likely than Muslims to "Strongly Disagree" (0.68 vs 0.44), attesting to the strong affect of religion at the individual level. If we compare the probabilities for responding only

"Disagree," Muslims end up being more likely than Christians (0.36 vs 0.24). For the responses "Agree" and "Strongly Disagree," Muslims are more likely. Taken together, the difference between the probabilities of Christians and Muslims show that Muslims have less favourable attitudes towards female empowerment.

Figure 8: Prediction for Female Empowerment Along Resource Rents



I predict probabilities for changes in oil and gas rents per capita from 0 to 20 and plot the estimates and 95% confidence intervals. There is a strong effect on responding "Strongly Disagree." As a country's oil and gas rents per capita increases, the likelihood of responding "Strongly Disagree" greatly decreases. Although the change is not huge, estimates for all other levels of the response increase with resource rents, even for "Disagree." Although this may imply mixed findings, the effect on the "Strongly Disagree" level is negative and much stronger.

Conclusion

The picture that the political economists and culturalists paint greatly simplifies reality. Some authors, on the other hand, like Majbouri, or Liou and Musgrave, successfully prove the existence of interaction effects and more complicated mechanisms that effect female

empowerment. Taken together, the sources analyzed offer a complex picture of the MENA where resources, authoritarianism, religion, kinship networks, and institutions matter through both through macroeconomic and individual level mechanisms. My limited analysis of opinion surveys serves only as a starting point for testing Ross' theory. So far, there is evidence for Ross' theory in the AB, except for the fact that being Muslim also clearly matters. Future work on opinion surveys should account for Islamic family law index and authoritarianism, accounting for Majbouri and Liou and Musgrave's theories.

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