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by

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The World Bank

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Understanding the Determinants of Female Labor Force Participation in the Middle East and North Africa Region: The Role of Education and Social Norms in Amman*

by

Nadereh Chamlou♦, Silvia Muzi♠, Hanane Ahmed♣

Abstract.
The similarities between the labor market supply of women with a Middle Eastern background living in Europe and those of women living in the Middle East is of particular interest. Indeed, empirical evidence shows that Female Labor Force Participation (FLFP) of immigrants reflects to a large extent the FLFP of country of origin, with women from more conservative societies tending to participate less in the labor market than natives or immigrants from countries with a high FLFP. This impacts the host country's FLFP at an aggregate level. Therefore, from a European perspective, understanding the determinants of female labor supply in the conservative societies, such as countries from the Middle East and North Africa (MENA) region is of particular interest, considering the high share of this group among immigrants. Hence, this empirical research focuses on the role of education, especially higher education, and social norms in MENA on the choice of women to work outside. The region has achieved substantial progress in educating women, increasingly so at the tertiary level and across disciplines, but its FLFP remains the lowest among all regions. Our paper empirically investigates the impact of education with emphasis on higher education on FLFP and the relationship between social norms and female labor supply in a representative city in MENA, namely Amman, Jordan, as a proxy for MENA. Our analysis shows that higher education (post-secondary/university/post-university) has a positive and significant impact on FLFP, whereas secondary and below do not. In addition, there is a strong negative and statistically significant association between traditional social norms and the participation of women in the labor force. The findings pose the question of whether additional policies and actions are needed to change institutions and attitudes toward women's work in general, as well as improve the economic opportunities of women who have secondary education which affects the bulk of working age women.

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* Earlier versions of this paper were written while Silvia Muzi and Hanane Ahmed were consultants at the Middle East and North Africa region, World Bank. The findings and views expressed in this paper do not necessarily reflect the official positions of the World Bank Group, its Board of Directors, or affiliated institutions.

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1.Background into the link between female labor force participation of the Euro-Mediterranean area and the Middle East and North Africa region

Immigrants are an increasingly important resource in European countries for the medium and long-term labor force, in light of slowing population growth and the graying of the baby-boom generation (SOPEMI, 2009). In fact, the majority of the European countries are nowadays characterized by a significant presence of immigrants. Using the Netherlands as a proxy for Europe,, about one in five people living in The Netherlands is of non-Dutch descent, either having been born abroad or having at least one parent born abroad[1]. Among the different immigrant groupings, the proportion of people originating from the Southern Mediterranean countries (SMME) is high, and those of Turkish and Moroccan descent alone account for 4 percent of the immigrant population combined. Labor force participation among women immigrants varies considerably, from a high of 63 percent among those from former Dutch territories (Suriname, Aruba, and the Antilles) and from Western backgrounds to lows of 44 percent and 47 percent among those from Moroccan and Turkish backgrounds, respectively. Given their low participation rates, women from Southern Mediterranean and Middle Eastern backgrounds constitute the population group with the greatest potential to raise their contribution to The Netherlands' economy.

Furthermore, it is of interest to see if the female labor force participation rates of women immigrants in the Netherlands continue to hold the same pattern across different education levels. Two interesting pictures emerge. First, there is a greater likelihood among women of Turkish and Moroccan backgrounds with "basic and avo onderbouw" education not to participate in the labor force, an average of 36 percent compared to 16 percent for other groupings. Second, with higher levels of education, the share of women staying out of the work force among the various ethnic grouping reverses in favor of the Turks and Moroccan immigrants. Turkish and Moroccan women with tertiary education participate nearly fully in the labor force, whereas there is a considerable share of university educated women in other groupings that may stay out of the market. This could indicate that, in general, it may be more difficult for a Turkish and Moroccan woman to overcome traditional hurdles at home (and possibly discrimination at work) than her peers, unless she is well trained. As such, assuming everything else being equal, policy makers may want to focus on a) identifying and removing additional barriers that SMME/MENA women face at lower levels of education, and b)expanding the opportunities for these women through more concerted efforts in tertiary education, since this may bring down hurdles that may be due to traditions and social norms (Chamlou, Muzi and Ahmed, 2009)

Understanding the differing factors in female labor supply is crucial in targeting effective policy interventions to enable all women to participate in the job market, and to achieve the policy goal of increased female labor force participation (FLFP), especially in Euro-Mediterranean countries such as The Netherlands, characterized by low female labor force participation rate.

Therefore, since immigrants account for a large share of the population in Europe, the similarities between the labor market supply of women with a Middle Eastern background living in Europe and those of women living in the Middle East is of particular interest. Indeed, emerging empirical evidence shows that Female Labor Force Participation (FLFP) of immigrants reflects FLFP of country of origin, with women from more conservative societies tending to participate less in the labor market than natives or immigrants from countries with a high FLFP. This impacts the host country's FLFP at an aggregate level. Therefore, from a European perspective, understanding the determinants of female labor supply in the conservative societies is of research interest. Hence the focus of this empirical research is particularly on the role of education, especially higher education, and social norms in MENA in explaining the determinants of female labor force participation. Due

[1] In this paper, all the statistics on immigrants in The Netherlands were obtained from Statistics Netherlands.

to data limitations, we use the Moroccan and Turk immigrants in Holland as a proxy for MENA immigrants and Amman city as a proxy for the MENA region.

2. Introduction

Women's capabilities have expanded dramatically across the world, thanks to progress in education, but the growth of women's opportunities still lags significantly behind. Most of the world's countries achieved the official MDG3 target of gender parity in primary and secondary school enrollment by 2005. But efforts are still needed to create a more enabling environment for women to use their increased capabilities in the economy and society (World Bank, 2008a).

Nowhere is the mismatch between women's education and economic integration more prevalent than in the Middle East and North Africa (MENA), where remarkable improvements have been made in educating girls. Girls in this region now receive almost as many years of schooling as girls in other regions such as Latin America and the Caribbean or East Asia and Pacific. However, MENA's women have been much slower to join the labor force than their counterparts in other regions. In 2007, labor force participation rate of women 15-64 years old were only 28 percent in MENA, relative to 37 percent in South Asia, 57 percent in Latin America and the Caribbean, 59 percent in Europe and Central Asia, 61 percent in Sub-Saharan Africa, and 72 percent in East Asia and Pacific.[2]

Understanding why female labor force participation in MENA countries remains so low is crucial for designing interventions aimed at increasing women's economic opportunities. A rich literature examines the determinants of female labor force participation in both developed and developing countries, but in MENA countries the role played by social norms in particular has largely lacked investigation, mainly for lack of suitable data.

This paper is one of a series of three that examines the effects of education and social norms on female labor force participation in representative cities of the MENA region: Amman, Cairo (Chamlou and others, 2010a), and Sana'a (Chamlou and others, 2010b). It uses primary data from Jordan's capital city Amman to investigate empirically whether education acts as a vehicle for female labor market participation.[3] Our hypothesis is that while education positively affects female labor supply, social norms and conservative attitudes towards gender roles remain major obstacles to women's labor market participation in Amman.

As mentioned in the background section, Amman, Jordan is used as a representative for MENA. Jordan is a middle-income country without oil, for which a knowledge-based economy has been one of the main strategic pillars of economic and social development. The country relies intensively on its highly educated and well trained labor force as an engine of growth.

We analyze the determinants of women's labor force participation in Amman using a single equation probit model. We pay particular attention to the impacts of different levels of education on female labor supply in order to identify target groups for further policy interventions. We also look at the role of other factors, notably social norms.

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[2] World Bank WDI and GDF database. As stressed in a recent paper (Rauch and Kostyshak, 2009), the gender gap in labor force participation remains exceptionally large across the Arab world as a whole (which in this paper includes Sub-Saharan Africa countries, fuel-endowed countries, and "Arab Mediterranean" countries).

[3] We are aware that the labor market benefits of education also include the possibility of raising individuals' earnings within any given occupation or enhancing individuals' occupational choices. In the Amman household survey underlying this paper, information about earnings could not be collected and the sample size is too small for a robust analysis of the determinants of the different occupational choices. It is acknowledged that education raises women's status within the family and creates a positive spillover effect on the well-being of other household members. Positive externalities include reductions in fertility and infant mortality and better educational opportunities for children. Nonetheless, the focus of our analysis is restricted to women's economic opportunity as measured by their participation in the labor market.

About 18 percent of women in Amman have university degrees and 14 percent have other post-secondary education—reasonably high rates for a middle-income economy.[4] This analysis shows that higher education (post-secondary and beyond) increases the labor supply among women in Amman, but that the contribution of education to labor force participation is much less marked at lower educational levels.

These findings suggest that women at all educational levels in Amman may still face barriers to labor market entry, which those women who have higher education can somewhat overcome. Policy needs to focus beyond education, to put in place mechanisms that would target these barriers directly and improve the economic opportunities of women who have secondary education.

The paper is organized as follows: section 3 provides a literature review, section 4 describes the data, section 5 provides descriptive statistics, section 6 sets out the empirical strategy and discusses the results, and section 7 concludes.

3. Literature review

The role of culture in explaining female labor force participation is now gaining more attention in empirical analysis, as one strand of a more general attempt to rigorously measure the relationship between culture and economic phenomena (see Fernandez, 2008 for a comprehensive discussion). Most of the literature focuses on developed countries.

Vella (1994) investigates the relationship between female attitudes, female investment in human capital, and female labor supply. He finds that women's attitudes are systematically related to family and background characteristics, and that women's own negative attitudes towards women working significantly reduce women's labor supply. He notes that traditional attitudes influence labor supply indirectly through their impact on women's decisions to marry and raise children.

Within the same strand of analysis, Farre and Vella (2007) find that a woman's attitudes towards women working have a statistically significant effect on her children's perception of women's work and that this in turn influences their labor market decisions, including those of both her daughter and her daughter in law.

Analyzing the influence of parental background on men's attitudes towards women's work, Fernandez and others (2004) show that the working behavior of a man's mother has a large and significant impact on the likelihood that his wife works outside the household, even after controlling for several characteristics of husband and wife, and for various background characteristics of the couple (e.g., religion, geography, networks). Having a husband whose mother worked raises the probability that a married woman works full time, by 32 percentage points.

Similarly, Kawaguchi and Miyazaki (2007) find that mothers' full-time work experience affects their sons' stated opinions about women's work. These authors find that men brought up by full-time working mothers are more likely to have full-time working wives than are men raised by mothers who are not working full-time, although these results are not statistically significant. Directly exploring the responses to survey questions about gender roles, Kawaguchi and Miyazaki find that men raised by full-time working mothers are more likely to respond adversely to traditional gender perceptions.

Fernandez's (2007) "epidemiological" approach exploits the basic idea that the descendants of immigrants become part of the markets and institutions of the country of immigration but may still uphold the culture of their parent's country of ancestry. She shows that those women in the US

[4] Jordan is a country that has overcome gender disparities in education. It has an 85 percent female literacy rate, the girls/boys ratio at elementary and secondary is at 1.02, and girls score higher than boys in verbal skills, math, and sciences in standardized international tests. The female/male ratio at university level is 1.1. Women study across all disciplines; they account for 25 percent of the graduates in engineering, manufacturing, and construction and 50 percent of the graduates in science (source: World Bank Edstats). Hence, in a quantitative and qualitative sense, Jordan has achieved remarkable gender equality.

whose parents were born in countries with lower female LFP than in the US tended to work less, themselves, in the US. She also finds that women whose country of ancestry is more "conservative" tend to work less. The results hold even when the woman's age, education level, husband's education, and total income are controlled for.

Giavazzi and others (2009), using panel data including from the World Value Survey, studied whether cultural attitudes towards work, gender, and the young are significant determinants of the evolution over time of the employment rate of women. They show that, even after they instrument their variables (using deeper attitudes in the country of residence and the attitudes of US immigrants grouped by country of origin), and allow for the persistence of outcomes and for an extensive menu of additional controls, culture still matters. More specifically, they find that attitudes towards a women's role in the family are statistically and economically important determinants of the employment rate of women.

Overcoming social norms and traditions with respect to female labor force participation maybe achieved through investments in educations. In fact, empirical studies of the impact of education on female labor force participation in developing countries confirm the theoretical prediction that education is positively associated with female labor supply. However, they also show that it is *higher* education that really plays a critical role.

For example, Evans and others (1993), looking at the impact of socioeconomic development on women's labor force participation in Brazil, find that labor force participation rises with each level of education, but also that the increases are largest at the secondary level and above.

Evidence from Asian countries, too, suggests that higher education plays a vital role in increasing female labor supply. Cameron and others (2001), in their study of the impact of education on female labor force participation in Indonesia, Korea, the Philippines, Sri Lanka, and Thailand, find a U-shaped relationship between education and female labor supply[5]: primary schooling has either a negative influence or no influence on female labor force participation, while higher education has a positive impact. In each of these five countries, women's tertiary education is positively associated with the probability of working.

In Pakistan, Aslam and others (2008) find a similar strong association between higher education and female labor force participation. Young women with up to eight years of schooling are unlikely to work. However, the probability of engaging in income-generating employment rises significantly as years of education increase to the secondary level and above (ten or more years of education). The likelihood is 50 percent that a young woman with a university education is working for income. However, the authors stress, only a small portion of Pakistan's female population has ten or more years of education. They conclude that in Pakistan education has only a limited potential to affect gender equality in the labor market. They suggest that non-economic factors such as culture, conservative attitudes, and gender division-of-labor norms can play important roles in discouraging women from working.

4. Data

The analysis in this paper is based on primary data collected in Amman in 2008 by the Jordanian Department of Statistics (DoS), in a household survey that was commissioned and designed by the World Bank. The survey collected data on male and female economic participation and other household characteristics, including attitudes towards women working outside the household. It was confined to Amman, in order to examine households affected by similar economic and social factors within the same geographical setting. As it is a capital city, Amman can be expected to lead

[5] They suggest that this relationship might be driven by the correlation between education and income. Cameron and others (2001) explain that "at the low end of the scale, where education and income are low, high labor force participation rate can be explained by the pressing need to earn some income."

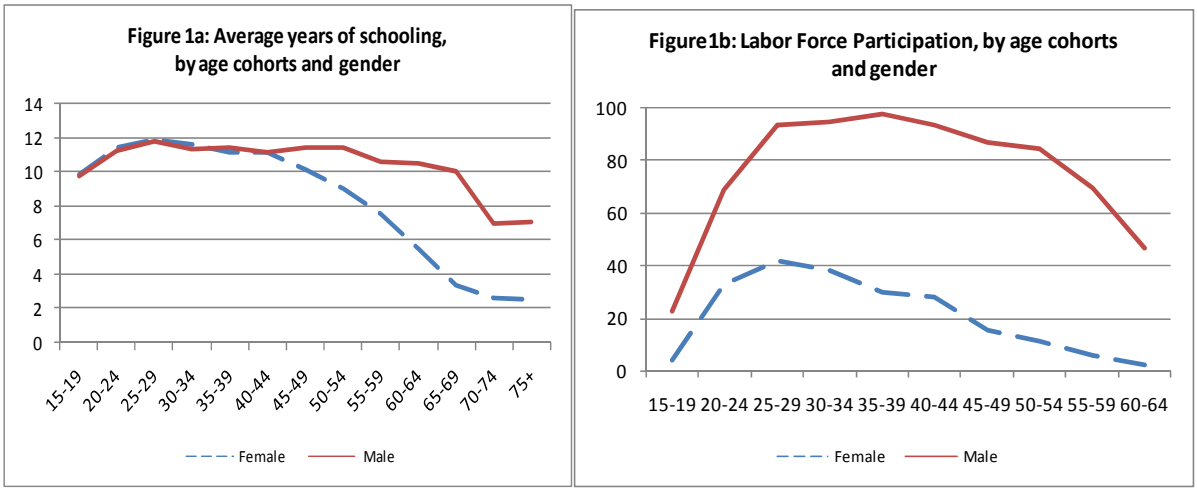
other parts of the country in sophistication, and access to infrastructure, information, and diverse opportunities.
The sample covers 3,500 households made up of 17,382 household members. Consistent with the previous literature, full-time students (currently enrolled in school) are excluded from the sample. This yields a total of 8,233 adult males and females aged 15-64 in Amman.

5. Descriptive statistics

Based on the survey data,

Figure 1a reflects Jordan's significant achievements in achieving gender equality in education; it shows substantial gender equality in the years of schooling achieved by individuals 15 to 44 years old and remarkable gender differences in the years of schooling among the older cohorts. Appendix Table 2A provides details, showing for example that 32 percent of both men and women have post-secondary and university/post-university education; 17 percent of men and 20 percent of women have secondary education; and 50 percent of men and 48 percent of women have no education or basic education.

Figure 1: Education and labor force participation, by gender



Such gender equality does not extend to participation in the labor force, as illustrated by Figure 1b and by Table 1, which shows that while 90 percent of the men in the sample participate in the labor market, only 25 percent of women do so. Meanwhile, the unemployment rate is nearly 8 percent for men but a remarkable 26 percent for women.[6]

[6] The results of our analysis are consistent with the official data provided by Jordan's DoS. However, the current survey captures a higher participation rate for both women and men. According to the employment survey run by the DoS on February 2008 in Amman, 59 percent of men are employed (defined in our study as working outside the household), 6 percent are unemployed, and 35 percent are out of the labor force. As far as the females are concerned, 12 percent are employed, 3 percent are unemployed, and 85 percent are not economically active. These disparities may be due to some technical differences related to the period for which data were collected in the two surveys. The employment survey by the DoS uses a seven-day time frame prior to the date of the interview to capture the economic activity of individuals who are 15 and above years of age, while our survey captures the employment status of persons 15-64 years of age during the six months prior to the date of the interview. However, the disparities may also reflect the ability of the survey to capture hidden income-generating activities.

Table 1: Distribution of the labor force (ages 15-64) by gender

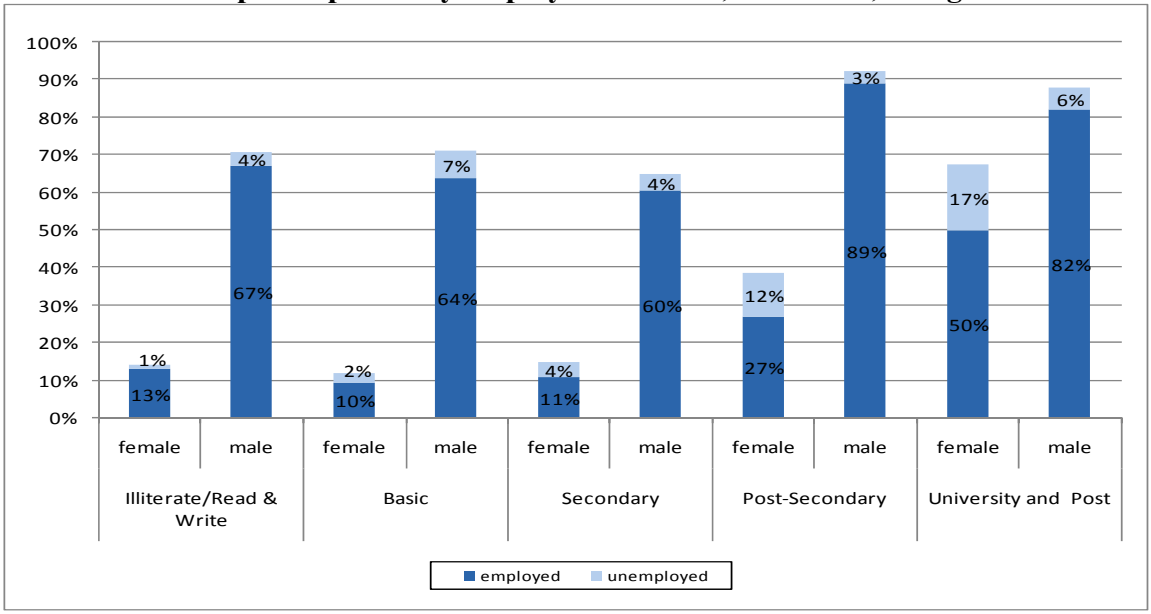
	Amman					
	Male		Female		Total	
	N	%	N	%	N	%
Unemployed (Looking for work) (a)	289	7.12	277	6.63	566	6.87
Employed (b)	3,346	82.47	782	18.73	4,128	50.14
Total labor force (c=a+b)	3,635	89.59	1,059	25.36	4,694	57.01
Out of labor force (d)	422	10.4	3,117	74.64	3,539	42.99
All persons (e=c+d)	4,057	100	4,176	100	8,233	100

Note: Three main categories are considered: employed, unemployed, and out of the labor force. Employed individuals include employers, self-employed, employed in the public sector, employed in the private sector, and individuals engaged in income-generating home-based activities. Unemployed individuals are those not working and looking for a job, while individuals who are out of the labor force are those not working and not looking for a job (e.g. housewives and retired).

The relatively few women who do participate in the labor market tend to have more education than those who do not (14 years of schooling, compared with 10 years of schooling). In addition, 45 percent of the women who participate in the labor market have university or post-graduate degrees, compared with only 23 percent of the men.

To get an in-depth view of differences in labor force participation rates by educational level for men and women in Amman, we look at the distribution of employed men and women by educational level As Figure 2 shows, female labor force participation—whether through being employed or unemployed—increases with education, but more remarkably so for women with post-secondary and university/post-university education. For example, 27 percent and 50 percent of women with post-secondary and university/post-university education, respectively, are employed, relative to only 11 percent, 10 percent, and 13 percent of women with secondary education, basic education, and illiterate/read and write education levels, respectively. Thus female labor force participation in Amman is positively associated with education, but more so at the highest education levels. Similarly, the percentages of women with post-secondary and university/post-university education who are unemployed are 12 percent and 17 percent respectively, relative to only 1 percent, 2 percent, and 4 percent among women with illiterate/read and write, basic and secondary education, respectively. Among men, there is a less clear relationship between employment and educational level. Though the employment rate is highest among men with post-secondary education (almost 90 percent), it is also quite high among men with less education (it ranges from 60 percent to 67 percent among men with up to secondary education). Neither does the men's unemployment rate vary substantially by educational level—it ranges from 4 percent to 7 percent at the different educational levels. This suggests that men can find work and engage in the labor force at any level of education. Hence, employment and work are less skills depended for men. In fact the unemployment rate of men at any level of education is fairly low.

Figure 2: Labor force participation by employment status, education, and gender



For women, a low labor force participation rate can result from both supply and demand factors. Analyzing the role of the demand factors and therefore the characteristics of the labor market in Amman goes beyond the aim of this paper. Nonetheless, useful insights can be drawn by looking at differences in male and female unemployment **rates** by educational level. Using standard unemployment definitions, the unemployment rate for men falls from 11 percent of men with basic education to 4 percent of men with post-secondary education. But the unemployment rate for women shows the opposite pattern: it rises from 8 percent for illiterate women to 31 percent for women with secondary and post-secondary education. Further, the unemployment rate for women with university education is nearly four times the rate for men at the same educational level (26 percent compared to 7 percent).

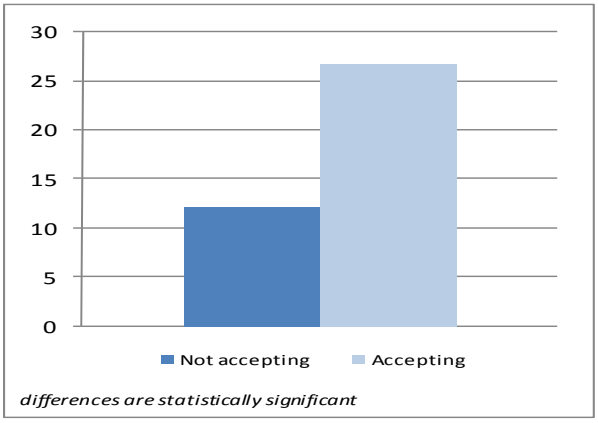
We next consider household characteristics that might influence women's propensity to participate in the labor market. The data show that married women, and women with young children, are less likely to work outside the home than are single and childless women. Among the women not participating in the labor market, 79 percent are married, while among those who do participate only 46 percent are married. The presence of young children also has some influence on women's participation rate: among the women not participating in the labor market, about one-third have children less than six years old, hence fairly close to the 26 percent among women who do participate. The data also shows that 17 percent of women participating in the labor market have an older person in the household (individuals more than 65 years of age), compared to 11 percent of women not participating. The percentage is the same (9 percent) for working and non-working men.

It is commonly assumed that female labor supply remains low because the high opportunity cost of working outside the home (mainly due to the costs of childcare) is not adequately compensated by earnings. However, in Amman, as in much of MENA and unlike what happens in advanced countries, it is marital status, rather than responsibility for children, that seems to exert the major role in a woman's decision about whether to seek work. This is probably because many women with children already withdrew from the labor market at the time of their marriage. Meanwhile, the positive association between female LFP and the presence of elderly individuals in the household probably reflects the fact that in MENA the elderly typically share the burden of childcare and household management.

The survey explored the influence of social norms on female labor force participation decisions by asking household members direct questions about their attitudes towards women's outside work and, for members who opposed women's outside work, their reasons why. For our descriptive

analysis we distinguish those households in which at least one member expressed a negative attitude towards women working.[7] Overall, 26 - 28 percent of the surveyed individuals live in such households. Of the women participating in the labor market, only 13 percent live in households with a negative attitude towards women working, compared to 31 percent of the women not participating.
A clearer picture of the association between attitudes toward women working and female labor supply is offered by

Figure 3: FLFP in households accepting and not accepting the idea of women working outside the household

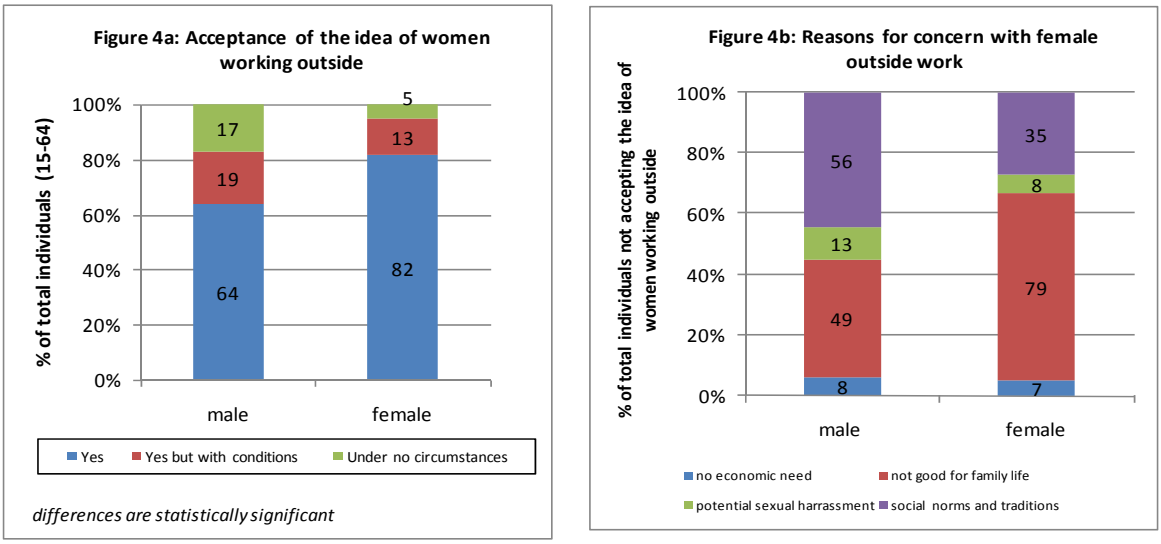


This shows that the labor force participation rate of women living in households with a positive attitude towards women's outside work is more than double that of women living in households with a negative attitude.
The role of attitudes about the value of work, working women, and gender equality in influencing women's economic participation and entrepreneurship was also analyzed in a report on female entrepreneurship in MENA (World Bank, 2008b). Using data from the World Values Survey, that report found that attitudes toward working women are correlated with women's employment and entrepreneurship across regions. It also showed that women's attitudes toward working women are more positive than men's, across both regions and countries. The difference between the male and female indexes, however, is much wider in the Middle East than elsewhere and is statistically significant. Men's less favorable attitude toward working women is likely to affect women's labor force participation, especially because the laws in most Middle Eastern countries explicitly or implicitly require women who wish to work to obtain permission from their husbands.
Further evidence about the attitudes of both men and women towards women working outside the household is presented in

Figure 4a. Non-acceptance of the idea of women working outside is twice as prevalent among men as among women: some 36 percent of men in Amman do not accept the idea of women working outside—though with different degrees of non-acceptance—compared to only 18 percent of women. The difference is even more striking when the percentage of individuals who unconditionally oppose women's outside work is considered: 17 percent of men versus 5 percent of women.

[7] This variable represents the attitude towards women working of every respondent including female members. We acknowledge that the attitude of male household members, mainly spouse or father, may have a stronger influence on female decisions. However, we also think that other household members may play some role in women's decisions on whether to work.

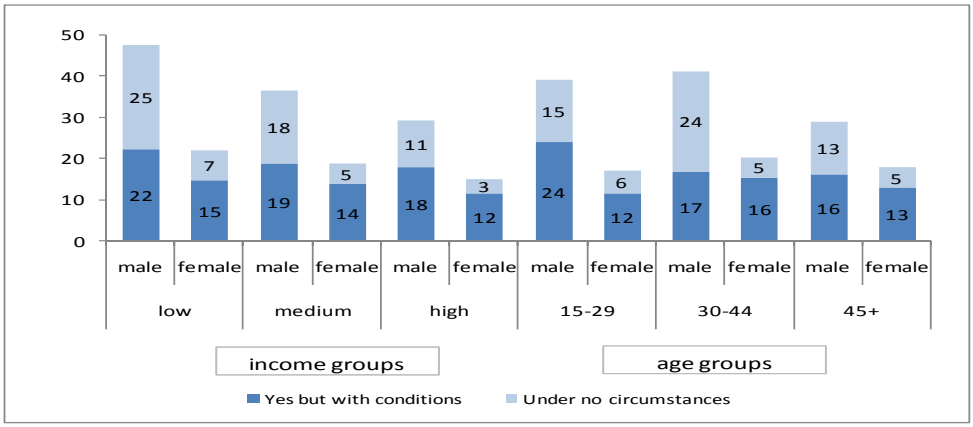
Figure 4: Attitudes towards women's work outside the household



It is important to understand *why* men or women might oppose women's working outside the household.

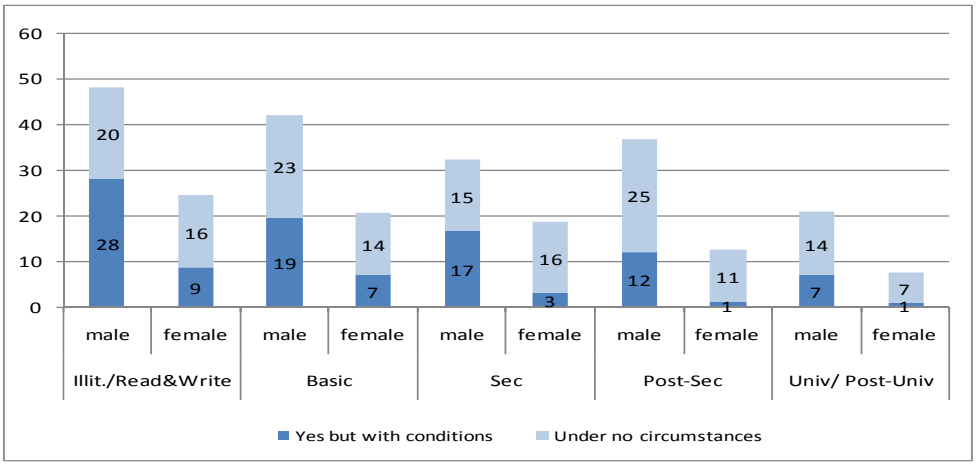
Figure 4b shows that, in general, women are more concerned by practical issues like the quality of family life (a concern expressed by 79 percent of the women who do not favor women working outside the home), while men are more concerned about social norms and traditions. Indeed, 56 percent of the men who do not favor women working outside the household cite social norms and traditions, compared to only 35 percent of women. In addition, men are more concerned about potential sexual harassment in the workplace than are women themselves. Only eight percent of men and 7 percent of women expressed no economic need for women to work.
Non-acceptance is more prevalent in the younger cohorts of men than in the older generation (45 years or older) and it is almost invariant among women (Figure 5). In addition, non-acceptance decreases as household income rises, regardless of gender, but even in the wealthiest quintile, 30 percent of men and 15 percent of women do not accept the idea of women working outside the home.

Figure 5: Non-acceptance of the idea of women working outside the household, by income, age, and gender



A similar pattern is shown when educational levels are considered (Figure 6).

Figure 6: Non-acceptance of the idea of women working outside the household, by education and gender



In summary, the descriptive statistics show differences between participating and non-participating men and women in terms of education, family characteristics, and attachment to traditional social norms. What is particularly evident from these statistics is the impact of education and social norms on female labor supply. To better understand these relationships and identify the determinants of female labor force participation, we carry out a multivariate analysis to control for compositional effects and, whenever possible, to establish causality.

6. Empirical strategy and results

To investigate the determinants of labor force participation in Amman, we estimate a single-equation probit model drawing on the extensive theoretical literature on labor market behavior.[8]
The results from the model confirm that additional years of schooling increase female labor force participation. However, when levels of schooling are considered, only higher education (post-secondary and university/post-university) shows a positive and significant effect.
Based on the results of the probit model we analyze the association between social norms and female labor force participation. Unfortunately, due to limitations in the data, the role of social norms cannot be verified using the IV technique, so we cannot establish causality between the two phenomena. Nonetheless, the analysis shows a clear negative association between female labor supply and traditional social norms, as proxied by household members' disapproval of women working outside the home and, especially, by being married. Having young children is negatively associated with female labor supply, but the coefficient here is relatively low.

a.Single-equation probit model

We investigate the determinants of labor force participation for males and females aged 15-64 by estimating the following single-equation probit model:

[8] See Killingsworth and Heckman (1986) for a review of early theoretical and empirical studies. More recent studies are cited in section 1 above.

$$Yi = Xia + Sib + ei \quad (1)$$

where Y_i is the dependent variable, taking a value of one if individual *i* participates in the labor market, and zero otherwise.

X_i is a vector of covariates that represent individual and family characteristics as well as attitudes toward working women within the household. It includes age, marital status, being Jordanian, living in the presence of children less than six years of age in the household, living in the presence of elderly (65 years of age or above) individuals in the household, living in a household in which share of adult females as a share of total adult members is greater than 50 percent, and living in households with a negative attitude towards women working.[9] S_i represents the schooling of individual *i*. The model includes two measures of education: years of schooling, and educational "levels," measured by dummy variables. Three different specifications of the probit model are considered. In the first, educational attainments are captured by a dummy that is equal to one for university education and zero otherwise. In the second, the dummy is equal to one for university and post-secondary education and zero otherwise, and in the third the dummy is equal to one for university, post-secondary, and secondary education and zero otherwise. These specifications were chosen so as to control for endogeneity by using IV probit models, and conceptually to understand the role each educational level plays in female labor force participation decisions. The specifications are listed in Appendix Table 1A which also provides a comprehensive description of all other variables used in this analysis.

An individual will participate in the labor force if the net benefits of working are positive. Thus the probability that an individual participates in the labor market is:

$$Prob\ (Yi=1) = Prob(Xia+Sib+ei>0) = \theta[Xia+Sib] \quad (2)$$

Where θ is the evaluation of the normal cumulative density function. Detailed results showing the marginal effects of the different variables on female labor force participation are reported in Appendix Table 3A.

Across different specifications of education, we observe a consistent positive association between education and the probability of female labor force participation. An additional year of schooling is associated with a 3 percent increase in a woman's probability of participation. The effect is much stronger when she has completed university. Women with university degrees are 45 percent more likely to participate in the labor market than are women with no education. This finding is consistent with the fact that the opportunity cost of remaining inactive is high for people who have invested their time in higher education. When we compare women with secondary education and above to women with no education, the probability of participating in the labor market increases only by 23 percent.

Looking at other determinants, we see labor force participation has an age concavity profile, being very low for the youngest and oldest women and higher for those in their 20s and 30s. The positive effect of being Jordanian on the likelihood of labor force participation might suggest that women of other nationalities have some difficulty integrating into the labor force. Being married is significantly and negatively associated with the probability of labor participation: married women are 25 percent less likely to participate in the labor market than non-married women (whether never married or widowed, separated, or divorced). We also clearly see the importance of care-giving for young children in Jordanian society. The presence of children under six is significantly associated with a lower probability of labor force participation, even though the coefficient is smaller than

[9] We also consider another specification of the model in which the wealth status of the households, as measured by the wealth index quintiles, is also included. The results are very similar and therefore not presented.

expected: women living with young children are 5 to 6 percent less likely to participate in the labor force than women with no children.[10] The presence of household members older than 65 is associated with a 6 percent increase in the probability of participating in the labor market. This result is not surprising given that, as noted above, the elderly in MENA typically help with household management. Finally, traditional social norms are negatively associated with female participation in the labor market; women living in households with a negative attitude towards women working are 12 percent less likely to participate in the labor market.

Though it is impossible to claim causality, the results show the rate of female labor force participation to be strongly associated with marital status and social attitudes and more weakly associated with the presence/absence of children.

7. Conclusions and policy implications

The household data analyzed in this paper yield several important findings.

First, as expected, education has a strong positive impact on female labor supply. Using the continuous variable for years of schooling, our estimates confirm that an additional year of schooling increases female labor force participation by 3 to 4 percent. However, breaking the effect down by the three levels of education, our results emphasize the important influence of having university/post-university or post-secondary education on female labor force participation. Indeed, the more we include lower levels of education in the dummy, the less is the effect of education on the probability of female labor force participation. In addition, the positive effect of having at least secondary education on female labor force participation does not hold in our different identification strategies of obtaining the upper bound, lower bound, and IV estimates. The pattern shown by the model results—in which higher education, but not secondary education, pushes up the labor force participation rate—is clearly visible also in the survey statistics: while the participation rates of women with post-secondary and university/post-university education are 39 percent and 67 percent, respectively, the participation rate of women with completed secondary but no higher education is only 15 percent.

Women with secondary but no higher education constitute one fifth of the women in Amman. Secondary education in Jordan is essentially the same for girls as for boys. For Jordan as a non-resource based middle-income country that has made significant investments in education, the lack of economic integration of women with secondary education should be of concern. In many other countries, women with this level of education form the backbone of service and manufacturing industries, in which women with higher education may not be suitable or economical workers. While Jordan has some programs, such as micro-finance, in place to promote economic opportunities for women with low income and education, women with secondary education may be the overlooked middle group.

Second, the data and analysis in this paper show a strong negative and statistically significant association between traditional social norms and the participation of women in the labor force. Variables (such as being married and having children) that are direct proxies for division-of-labor norms, and variables (such as preconditions for women's work) that indirectly relate to attitudes and traditions, confirm the negative relationship between traditional social norms and women's labor force participation. Particularly important in this regard is that being married is a greater deterrent to outside work than is having young children. Many women with children already withdrew from the labor market at the time of their marriage. It is important to note that women view women's work far more positively than men do, across income and educational groups, though a slightly more

[10] The marital status of women seems to play a much larger role than the presence of children in female labor supply decisions in MENA countries than in developed countries. In the US, Edwards and Field-Hendrey (2002) showed that being married, and having children less than six years of age, decrease the probability of women working outside home by 5 percentage points and 21 percentage points respectively.

positive attitude is generally visible among the wealthier and more highly educated households. Further, younger men's attitudes towards women's work are more conservative than older men's.

These findings imply that at the household level, men's attitudes can be an important barrier to women's labor supply. Moreover, various laws explicitly or implicitly require the permission of the husband or the male kin for women to be hired, work, and stay employed. Hence, as well as modifications in laws and regulations that undermine women's right to work, policies and actions may need to be developed—similar to those used by countries that have now achieved higher rates of FLFP—that target the attitudes of the male kin toward women's work.

Jordan's existing policies and efforts to develop its human resources have largely focused on improving education and human capital, with considerable success. The main conclusion from this paper is that this approach may have been necessary but is not sufficient to bring about the needed rise in female labor force participation. An equally important goal for policy is to change social norms and to directly target a potentially large and important cohort of Jordan's labor supply.

For European policy makers, these findings have two implications. The first is with respect to their development policies within MENA. At the moment, much effort is given to the poor and unskilled, because fighting poverty is an important element of the policy agenda. Or, the attention is given to school to work transitions for university graduates. The findings of this paper show that (a) donors could do more in their assistance programs to promote economic opportunities of married women with middle to secondary education within the middle class. And (b) to do this more targeted attention should be given to campaigns addressing men's attitudes and disposition vis-à-vis women's work. Not much has been done on these two fronts. Over time, these two effort are likely to change mindsets in home countries, which will impact the views of immigrants.

In their home countries, again, more could be done on two fronts: (a) through positive and negative incentive schemes to promote women immigrant's work among those with completed high-school education. As was evidenced from the Dutch data, women's participation rates drop significantly for this group in comparison to other immigrant and domestic population. And (b) as the participation rate among university graduates from MENA region is nearly at full capacity, more could be done to increase the university attendance among this group. Since in many European school systems, students are channeled through various tracks, of which only a few can advance to university level, the early g0/no-go selection may disproportionately disadvantage women from these immigrant groups who may be held back due to cultural factors, but who may well have the capacity to be ready later on for a university education. As such, more attention to mitigating cultural factors may in fact help push many more of these women toward advanced degrees and higher labor force participation rates.

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Appendix: Statistical Tables

TABLE 1A

DEFINITION OF VARIABLES IN LABOR FORCE PARTICIPATION MODEL

Variable	Description
LFP	Equals 1 if individual is participating in the labor force (employed+unemployed), 0 if not participating (out of the labor force)
EDUCATION	
EDUY	Years of schooling
NO_EDU	1 if individual reports being illiterate/read & write, 0 otherwise
BASIC	1 if individual has primary or preparatory education, 0 otherwise
SEC	1 if individual has secondary education, 0 otherwise
POSTSEC	1 if individual has a post secondary education, 0 otherwise
UNIV	1 if individual has a university or post university education, 0 otherwise
ATLEAST_POSTSEC	1 if individual has a university and post secondary education, 0 otherwise
ATLEAST_SEC	1 if individual has a university, post secondary education or secondary, 0 otherwise
PERSONAL CHARACTERISTICS	
AGE	Age in years
AGE2	Square of age
JORD	1 if individual is Jordanian, 0 otherwise
MARRIED	1 if individual is married, 0 otherwise
HOUSEHOLD CHARACTERISTICS	
CHILD6	1 if individual is living in the presence of child(ren) less than 6 years old, 0 otherwise
ADULT65	1 if individual is living in the presence of adults over 65 years old, 0 otherwise
SHAREWOMEN	1 if individual is living in a household with share of adult women as a fraction of total adult members greater than 50%, 0 otherwise
NORMS	1 if individual is living in a HH with at least 1 member not in favor of women working outside

Table 2A : **Descriptive Statistics**

	AMMAN					
	Mean Characteristics of Males (15-64)			Mean Characteristics of Females (15-64)		
	Participants	Nonparticipants	All	Participants	Nonparticipants	All
EDUY	11.345	9.403	11.143	13.539	9.630	10.621
	(4.08)	(5.61)	(4.30)	(3.65)	(4.57)	(4.67)
NO_EDU*	0.044	0.194	0.060	0.028	0.133	0.107
	(0.21)	(0.40)	(0.24)	(0.17)	(0.34)	(0.31)
BASIC*	0.453	0.386	0.446	0.172	0.447	0.377
	(0.50)	(0.49)	(0.50)	(0.38)	(0.50)	(0.48)
SEC*	0.171	0.133	0.167	0.137	0.219	0.199
	(0.38)	(0.34)	(0.37)	(0.34)	(0.41)	(0.40)
POSTSEC*	0.100	0.078	0.098	0.209	0.118	0.141
	(0.30)	(0.27)	(0.30)	(0.41)	(0.32)	(0.35)
UNIV*	0.232	0.209	0.229	0.454	0.082	0.176
	(0.42)	(0.41)	(0.42)	(0.50)	(0.27)	(0.38)
AGE	34.872	45.988	36.028	32.345	38.452	36.903
	(11.52)	(15.94)	(12.52)	(8.85)	(12.88)	(12.28)
AGESQ	1348.700	2368.258	1454.752	1124.384	1644.434	1512.554
	(879.37)	(1315.99)	(984.63)	(632.11)	(1035.11)	(975.77)
JORD*	0.931	0.884	0.926	0.938	0.916	0.921
	(0.25)	(0.32)	(0.26)	(0.24)	(0.28)	(0.27)
MARRIED*	0.627	0.706	0.635	0.462	0.785	0.703
	(0.48)	(0.46)	(0.48)	(0.50)	(0.41)	(0.46)
CHILD6*	0.364	0.140	0.341	0.263	0.373	0.345
	(0.48)	(0.35)	(0.47)	(0.44)	(0.48)	(0.48)
ADULT65*	0.093	0.095	0.093	0.173	0.114	0.129
	(0.29)	(0.29)	(0.29)	(0.38)	(0.32)	(0.33)
SHARE*	0.182	0.254	0.189	0.474	0.317	0.357
	(0.39)	(0.44)	(0.39)	(0.50)	(0.47)	(0.48)
NORMS*	0.276	0.282	0.277	0.130	0.306	0.262
	(0.45)	(0.45)	(0.45)	(0.34)	(0.46)	(0.44)
Observations	3,635	422	4,057	1,059	3,117	4,176

Standard deviations are reported in brackets. * These variables are binary 0/1 variables, and their means represent the proportions of ones in the sample

Table3A : Determinants of female labor force partecipation: Upper Bound Probit Estimates

Dependent variable: Labor force participation dummy

	(a)		(b)		(c)		(d)	
	Probit coefficients	Marginal Effects	Probit coefficients	Marginal Effects	Probit coefficients	Marginal Effects	Probit coefficients	Marginal Effects
eduy	0.136***	0.0333***						
	[0.0127]	[0.00236]						
univ			1.319***	0.445***				
			[0.0662]	[0.0240]				
atleast_postsec					1.164***	0.347***		
					[0.0566]	[0.0182]		
atleast_sec							0.896***	0.226***
							[0.0598]	[0.0144]
jord	0.442***	0.0882***	0.527***	0.109***	0.525***	0.105***	0.408***	0.0868***
	[0.117]	[0.0185]	[0.119]	[0.0187]	[0.114]	[0.0173]	[0.109]	[0.0190]
age	0.162***	0.0396***	0.196***	0.0511***	0.160***	0.0403***	0.165***	0.0420***
	[0.0211]	[0.00486]	[0.0203]	[0.00489]	[0.0206]	[0.00490]	[0.0211]	[0.00502]
agesq	-0.00244***	-0.000596***	-0.00296***	-0.000772***	-0.00250***	-0.000632***	-0.00255***	-0.000648***
	[0.000298]	[6.74e-05]	[0.000283]	[6.71e-05]	[0.000288]	[6.73e-05]	[0.000297]	[6.93e-05]
married	-0.867***	-0.245***	-0.844***	-0.251***	-0.806***	-0.232***	-0.850***	-0.248***
	[0.0841]	[0.0261]	[0.0811]	[0.0260]	[0.0821]	[0.0259]	[0.0813]	[0.0257]
norms	-0.571***	-0.122***	-0.604***	-0.137***	-0.577***	-0.127***	-0.614***	-0.136***
	[0.0716]	[0.0138]	[0.0721]	[0.0139]	[0.0717]	[0.0137]	[0.0699]	[0.0133]
dshare	0.0328	0.00804	0.0212	0.00554	0.0608	0.0155	0.029	0.00742
	[0.0650]	[0.0160]	[0.0633]	[0.0166]	[0.0641]	[0.0165]	[0.0630]	[0.0162]
over65	0.228***	0.0604**	0.194**	0.0540**	0.188**	0.0505**	0.236***	0.0652**
	[0.0877]	[0.0250]	[0.0884]	[0.0262]	[0.0887]	[0.0255]	[0.0877]	[0.0262]
dch6	-0.244***	-0.0574***	-0.199***	-0.0506***	-0.219***	-0.0536***	-0.272***	-0.0667***
	[0.0761]	[0.0175]	[0.0759]	[0.0187]	[0.0770]	[0.0182]	[0.0756]	[0.0178]
Constant	-4.338***		-3.599***		-3.171***		-3.210***	
	[0.389]		[0.344]		[0.345]		[0.348]	
Observations	3,861	3,861	3,861	3,861	3,861	3,861	3,861	3,861
Pseudo_R2	0.291	0.291	0.3	0.3	0.314	0.314	0.268	0.268

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1