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**Making Sense of Arab Labor Markets:  
The Enduring Legacy of Dualism**

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## ABSTRACT

### **Making Sense of Arab Labor Markets: The Enduring Legacy of Dualism<sup>1</sup>**

It is well-established that Arab labor markets share certain common characteristics, including an oversized public sector, high unemployment for educated youth, weak private sector dependent on government welfare for their survival, rapid growth in educational attainment, but much of it focused on the pursuit of formal credentials rather than productive skills, and low and stagnant female labor force participation rates. I argue in this paper that all of these features can be explained by the deep and persistent dualism that characterizes Arab labor markets as a result of the use of labor markets by Arab regimes as tool of political appeasement in the context of the “authoritarian bargain” social contract that they have struck with their citizens in the post-independence period. Even as fiscal crises have long destabilized these arrangements in most non-oil Arab countries, culminating in the dramatic political upheavals of the Arab spring revolutions, the enduring legacy of dualism will continue to strongly shape the production and deployment of human capital in Arab economies for some time. This will undoubtedly pose serious challenges to any efforts to transform these economies into dynamic, rapidly growing and more equitable globally competitive economies.

JEL Classification: I25, J21, J24, J31, J45, O53, P52

Keywords: labor market dualism, Arab Spring, unemployment, education, authoritarian bargain

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## **Introduction**

The stylized facts about the structure and operation of Arab labor markets are fairly well established. Much of the Arab World is characterized by an oversized public sector, with employment in the bureaucracy and security forces not only constituting a large fraction of total employment but also a dominant share of formal sector employment (cf. Shaban et al. 2001, Said 2001, World Bank 2004a). It is also well-established that public employment constitutes an important share of employment for politically significant groups in much of the Arab World, such as the educated middle class, citizens of oil-rich monarchies, and members of key sects, tribes or ethnic groups. The oversized public sector has generally meant that the formal private sector is typically anemic and small, relying mostly on government welfare and rent-seeking for its survival (Malik and Awadallah 2013, World Bank 2013a, ESCWA 2012). A corollary of this lack of private sector dynamism has been the growth of informality, especially in situations where the ability of the public sector to continue growing its workforce became increasingly curtailed due to fiscal realities.

Arab economies are also characterized by large, but distorted investments in human capital. While many Arab countries have experienced some of the most rapid increases in educational attainment in the world over the past three decades, much of the investment in human capital has been in pursuit of the credentials useful to access public sector jobs rather than the skills demanded by globalizing economies (Salehi-Isfahani 2012). The low quality of the human capital produced is clearly manifested in the very low scores obtained by Arab students in standardized international tests (Mullis et al. 2008). With rapidly increasing educational attainment and falling gender gaps in such attainment, one would have expected female labor force participation rates to have risen sharply, given the strong positive relationship between education and participation. This has in fact not happened. Overall female participation rates have stagnated, and, participation rates for educated women have in fact fallen significantly in recent years as opportunities in the public sector have been curtailed. Finally, the best known stylized fact about Arab labor markets is very high youth unemployment. Youth unemployment rates in the Arab region, which are the highest across all major world regions, are clearly associated with the difficulty educated young people have been having in accessing employment for the first time.

The principal argument I advance in this paper is that most of these stylized facts can be explained by one underlying characteristic of Arab labor markets, and that is the deep and persistent dualism that has characterized them throughout the post-independence period. This dualism is primarily driven by the use of public sector employment by authoritarian regimes as a tool to appease politically salient groups as part of the “authoritarian bargain” social contracts they have struck with their citizens. In brief, the authoritarian bargain is a sort of implicit deal between authoritarian regimes and politically significant groups to provide them with well-compensated jobs in the bureaucracy and the security forces, among other privileges such as access to subsidized commodities, housing and services, in exchange for political quiescence, if not loyalty (See Amin et al. 2012; Desai et al. 2009). By using labor markets as means to distribute rents and to buy political quiescence, Arab governments have essentially undermine the labor markets’ primary function, which is to efficiently allocate human capital to its most productive uses and to signal the kind of human capital investments that are needed.

The politically significant groups that have benefited from the authoritarian bargain vary from country to country, but include the educated middle classes in many of the populous countries of the region (Algeria, Egypt, Morocco, Tunisia), all citizens in the sparsely populated oil-rich gulf monarchies that depend on large numbers of expatriate workers, and members of important sects, tribes or clans in countries such as Jordan, Iraq, Libya, Syria, and Yemen.

Although these authoritarian bargains often placed unsustainable fiscal burdens on state budgets, they endured in the region as a result of the regimes’ continued access to hydrocarbon and other mineral rents, either directly or through foreign aid. Ali and Elbadawi (2012) argue that ruling elites in oil-rich countries attempt to avert revolt by using labor markets as a mechanism to transfer a fraction of the oil rent to politically significant groups. This is done primarily through public sector employment, which tends to be much larger in these countries than comparable developing countries. Their ability to do this is clearly a function of the size of the oil rent per capita that is at their disposal (See also Robinson et al. 2006).

With downward pressure on oil prices in the second half of the 1980s and much of the 1990s, these authoritarian bargain social contracts eventually became fiscally unsustainable and came under severe pressure in a number of countries, especially the more populous oil producers, which had to increasingly resort to repression to maintain the political status quo (Soliman 2011,

Omer and Ibrahim 2012). As oil prices recovered in the 2000s, there were clear attempts to re-establish the old bargains, with the greatest success in doing so in the oil-rich economies of the Gulf and in places like Algeria in North Africa (Lowi 2009). The regimes without ready access to plentiful mineral rents were forced to gradually renege on their side of the bargain but, besides resorting to greater repression, they tried to minimize the political fallout by protecting insiders and shifting the cost of adjustment to outsiders. Insiders were typically members of the privileged groups who had already gained access to the benefits of the authoritarian bargain in the form of public sector jobs and other entitlements. An important group of outsiders, who bore the brunt of the adjustment, were the young people who invested in the sorts of credentials that would in the past have guaranteed them a place in the bureaucracy, but now found themselves relegated to low-quality informal jobs. Almost all entitlement reforms, including the curtailment of public sector employment, have sought to make the reforms more politically palatable by grandfathering in those who had already acquired the entitlement. Thus existing government workers were for the most part able to retain their jobs and their access to subsidized housing and services, with young newcomers bearing the brunt of the changes (Amin et al. 2012).

In what follows I will first present a simple model illustrating how public sector hiring and compensation leads to labor market dualism and unemployment. I then present further evidence supporting the stylized facts discussed above and end with an empirical analysis, using census microdata from a number of Arab countries, which links high youth unemployment to the possibility of getting government jobs.

### **1. Government hiring and compensation practices can lead to labor market dualism and structural unemployment: A simple model<sup>2</sup>**

The gist of my argument is that the labor market dualism that resulted from the authoritarian bargain and its aftermath continues to drive labor market expectations, choices regarding what type of human capital investments to make, and the queuing behavior that leads to excessive unemployment among new entrants. To illustrate this argument, I will draw on a simple model derived from the classic Harris-Todaro model of migration and unemployment in a dualistic developing economy (Harris and Todaro 1970). The model relies on the public sector paying

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<sup>2</sup> The analysis in this section draws on Assaad (1997).

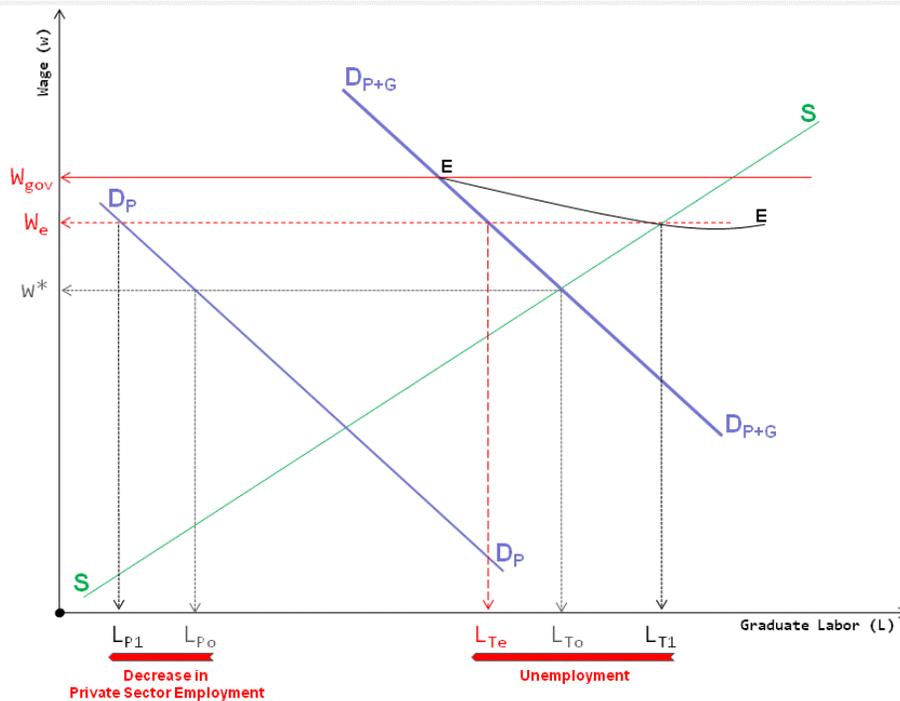
compensations (including non-wage benefits and non-pecuniary aspects of jobs) that are higher than market clearing wages for certain eligible groups. These groups are then induced to queue for the rationed government jobs, with the extent of queuing being a function of the probability of obtaining such a job. If eligibility is based on obtaining a minimum threshold of education, the persistence of this dualism over a long period of time will not only result in high unemployment among educated new entrants, but also the systematic misallocation of human capital to less productive uses in the public sector and to distortions in the sorts of human capital investments people make. The latter problem has been referred to as the “credentialist equilibrium”, whereby the lure of public sector employment leads to investments in the acquisition of the diplomas needed to obtain such jobs, at the expense of the skills needed in a competitive private sector-led economy (Salehi-Isfahani 2012).

The simple static supply and demand model of the labor market for graduates eligible for government jobs, shown in Figure 1 illustrates the gist of the argument. The model shows the demand curve for labor in the private sector as  $D_P$  and the demand curve in both the private and public sectors as  $D_{P+G}$ . In a competitive labor market, the market clearing wage would be  $W^*$ . However, the government pays a compensation level  $W_{gov}$  that is higher than the market clearing wage. This induces new entrants to queue for the rationed government jobs on the basis of an expected wage  $W_e$ , which is equal to the probability of getting a job in the government times the government wage  $W_{gov}$  plus the probability of getting a job in the private sector times the market clearing wage  $W^*$ . This translates into a labor supply that extends along the parabola E-E from the intersection of the demand curve  $D_{P+G}$  and  $W_{gov}$  to the supply curve S, forming a new equilibrium wage  $W_e$ . At that wage, labor supply  $L_{T1}$  exceeds labor demand  $L_{Te}$  and the difference shows up as unemployment of graduates.

A couple of things to note about the results of such a model is that the distortion introduced by the government wage being higher than market clearing wage raises the labor supply of graduates over what it would be otherwise (mostly by inducing more people to acquire the credentials that make them eligible for government jobs) and reduces the quantity of labor demanded in the private sector from  $L_{P0}$  to  $L_{P1}$ . Thus, this simple static model explains a number of the stylized features of Arab labor markets, namely high unemployment among graduates,

strong preference for government jobs among new entrants and propensity to queue for it, excessive demand for credentials, and anemic employment growth in the private sector.

**Figure 1.** Supply and Demand of Educated Labor in the Presence of a Public Sector Wage Floor



Source: Assaad 1997.

## 2. An Oversized Public Sector

The first and most obvious consequence of the use of use of public employment as a tool for political appeasement is an over-sized public sector. Evidence of an oversized public sector relative to the size of the economy in most Arab countries is not hard to come by. Data from the World Bank on a sample of 12 MENA countries, shown in Figure 2, shows that central government wage and salary expenditures average about 10 percent of GDP, which is higher than in any other world region, including OECD countries (World Bank, no date). On the basis of a smaller sample of 6 MENA countries, the same source shows that the share of general government expenditures on wages and salaries is about 12 percent, similar to the average for OECD countries, but higher than any other developing world region (Ibid.).

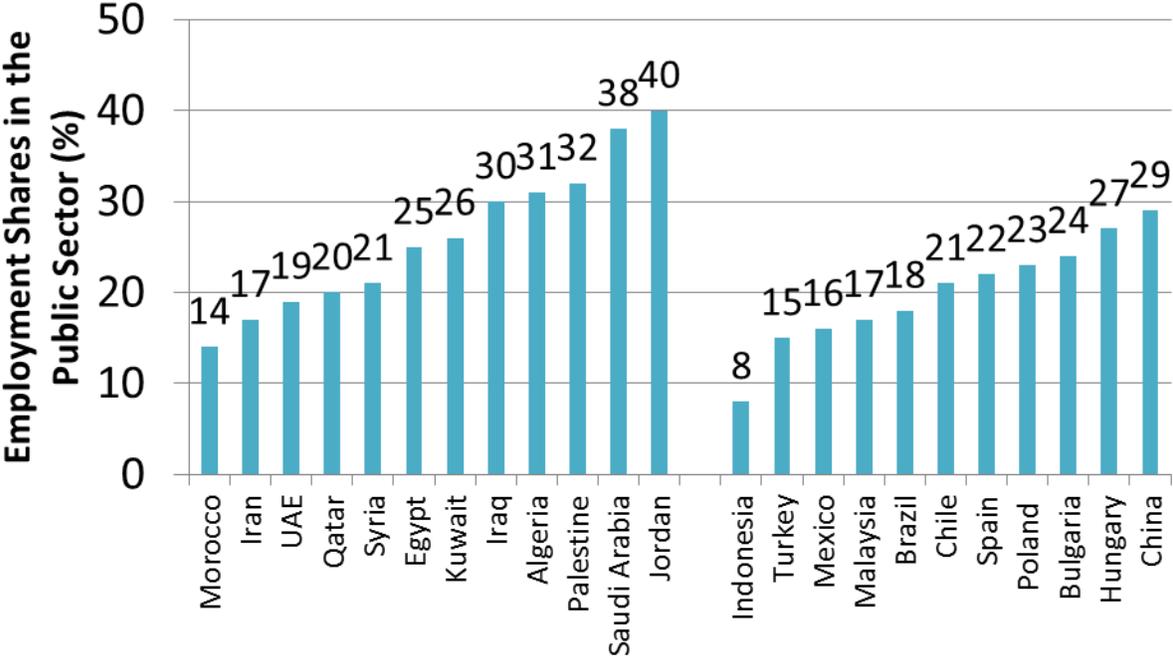
**Figure 2. Size of Central and General Government Wage Bill Relative to Government Expenditures and Revenues, and GDP by Region**



Source: World Bank (no date) based on IMF data.

Similarly, Figure 3 shows that public sector employment shares in individual MENA countries are significantly higher than in a sample of comparable developing countries, and also vary significantly within the region, ranging from 14 percent in Morocco to 40 percent in Jordan. In some cases these figures understate the true size of employment in government because they exclude employment in the armed forces, as is known to be the case in Egypt and Syria. The employment shares shown in Figure 3 **Error! Not a valid bookmark self-reference.** for Gulf economies strongly understate the contribution of public sector employment to the employment of nationals since they include both nationals and expatriate workers. The share of the public sector in the employment of nationals is as high as 87% in Qatar, 86% in Kuwait and 72% in Saudi Arabia (Baldwin-Edwards 2011). It is in excess of 90% among UAE nationals (World Bank 2013a).

**Figure 3. Employment shares in the public sector (%), averages in the 2000s**



Source: World Bank, 2013a.

Evidence on public-private wage differentials in Arab countries is hard to come by. The comparison is complicated by the fact that the public and private sector workforces differ along productive characteristics such as education and experience and that public sector jobs generally offer superior non-pecuniary aspects of employment, such as job security, health benefits, paid vacations, sick leave, etc.. Results using 1988 and 1998 data on Egypt showed that there was a

positive differential in wages of about 20 percent favoring the private sector male workers when compared to workers with similar characteristics in the government (Assaad 1997 and Said 2009). The differential for female workers, on the other hand, clearly favored government workers over private sector workers (by 60 percent in 1988 and 10 percent in 1998). Using 2006 data, Said (2009) finds that the differential in favor of the private sector had practically disappeared for males and that favoring government workers for females had widened to 33 percent. When comparing public enterprise to private sector wages, wage differential correcting for education and experience are always in favor of the public sector for both males and females. Said (2009) estimates that they were as high as 27 percent for males and 33 percent for females in 2006. Said (2013) provides similar estimates for Jordan in 2010. She estimates that public sector wages are lower than private sector wages by about 8 percent for males, but higher by 17 percent for females. Given that the non-pecuniary aspects of employment are likely to be substantially higher in the public sector, these public-private wage differentials indicate that total public sector compensation significantly exceeds that in the private sector for workers with similar characteristics in both Jordan and Egypt.<sup>3</sup> Although no direct evidence is readily available, it is likely that compensation differentials in favor of the public sector are even larger in oil-rich Arab countries where public employment is used as a primary mechanism to distribute the oil rent.

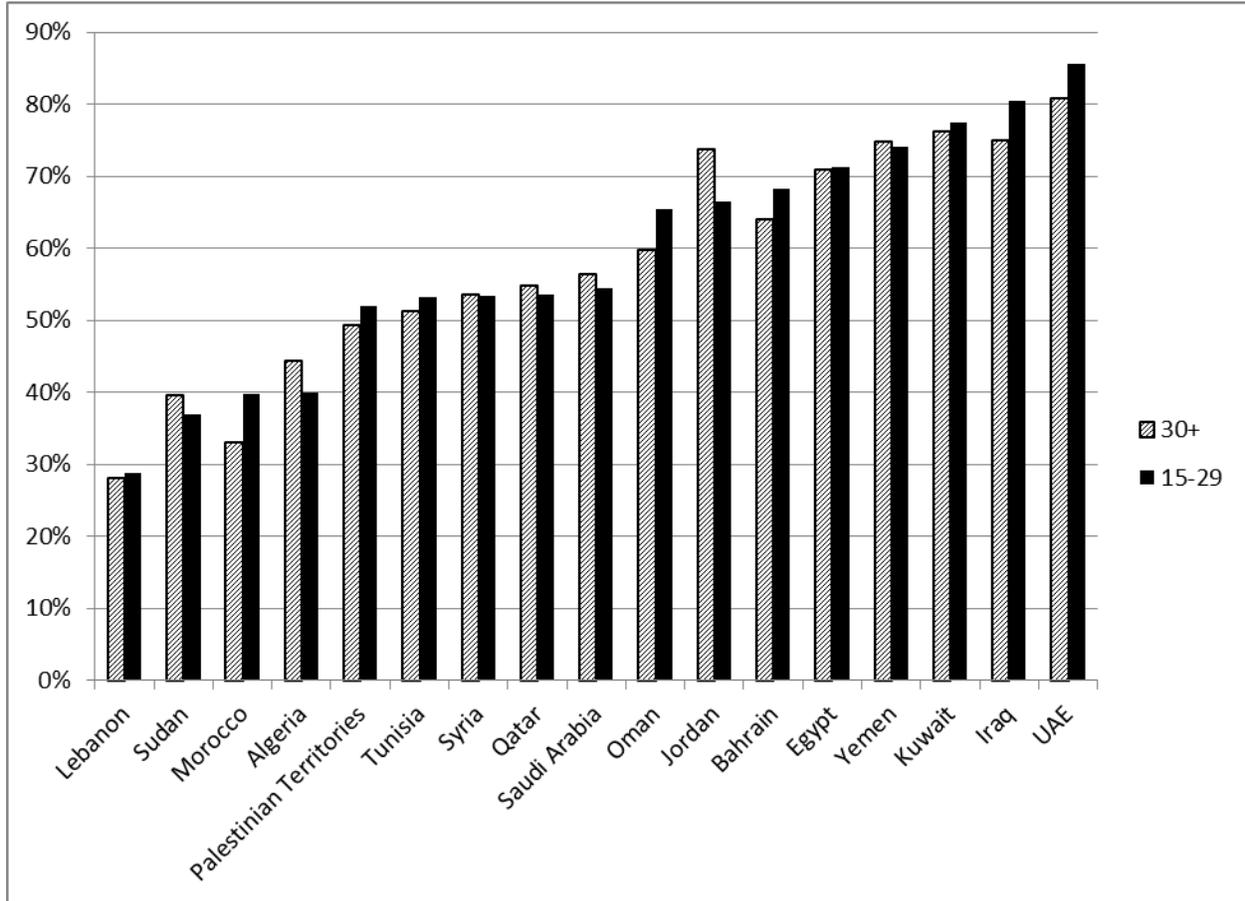
Given the significant differential in compensation in favor of the public sector, it is no wonder that both youth and adults in the MENA region express strong preference for public sector employment in opinion surveys. When asked whether they prefer employment in government, private business, self-employment, or employment in non-profit organization, assuming that pay and work conditions were similar, a majority of youth and adults interviewed in the Gallup World Poll in most Arab countries select government employment. As shown in Figure 5, the proportion of youth selecting government employment over the other three options exceeds 50 percent in all countries except for Lebanon, Sudan, Morocco and Algeria. The first three of these countries have some of the lowest public employment rates in the region. Preferences for the public sector tend to be strongest in oil-rich countries, such as UAE, Iraq, and Kuwait, which have traditionally used public employment as a mechanism to redistribute oil rents, but they are also

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<sup>3</sup> Using data from 1988, Assaad (1999) estimates that non-wage aspects of employment in the Egyptian public sector are worth at least as much as the wage itself.

strong in Yemen, Egypt, and Jordan, which have long traditions of employment graduates in the public sector.

**Figure 4**  
**Proportion of Youth (15-29) and Adults (30+) Expressing a Preference for Government Employment if Pay and Work Conditions were Similar, 2011**

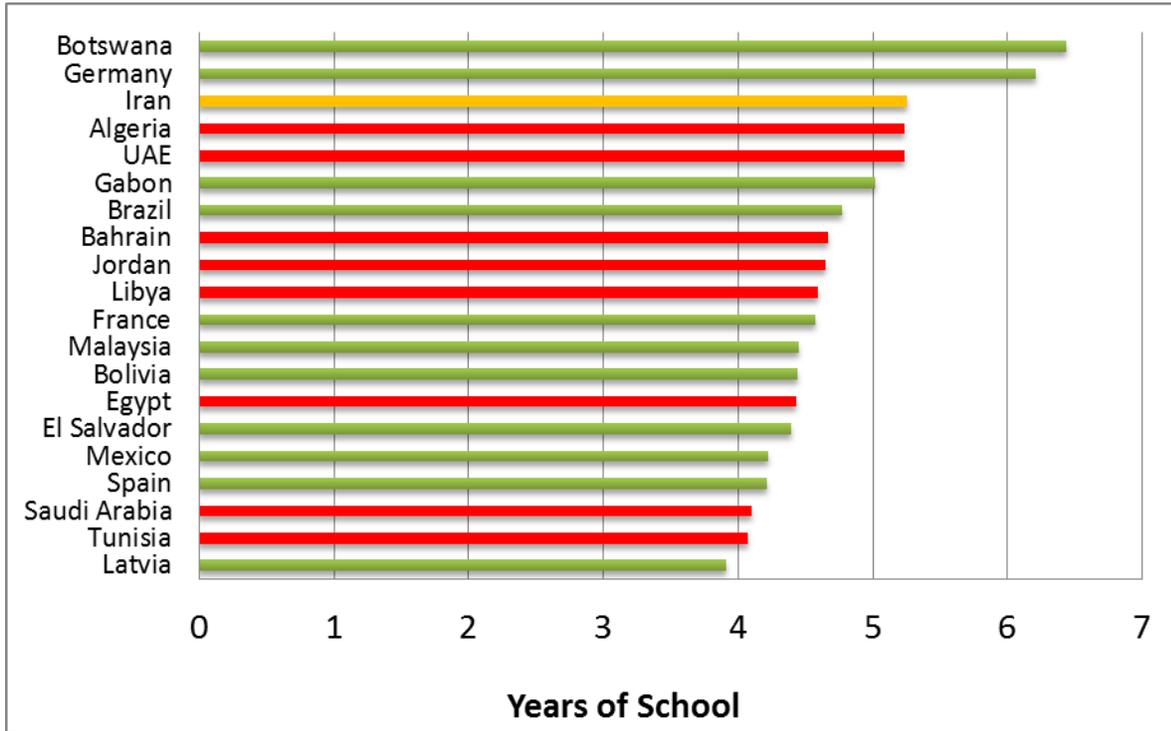


Source: Gallup (2012).

### **Large But distorted Investments in Education**

Arab countries have made very significant investments aimed at raising educational attainment and closing the gender gap in education in recent years. As shown in Figure 5, among the 20 countries with the largest increases in educational attainment from 1980 to 2010, as measured by mean years of schooling, eight were Arab countries and the ninth was Iran, which shares many of same economic features.

**Figure 5**  
**Top 20 Countries in terms of Increases in Mean Years of Schooling, 1980-2010**

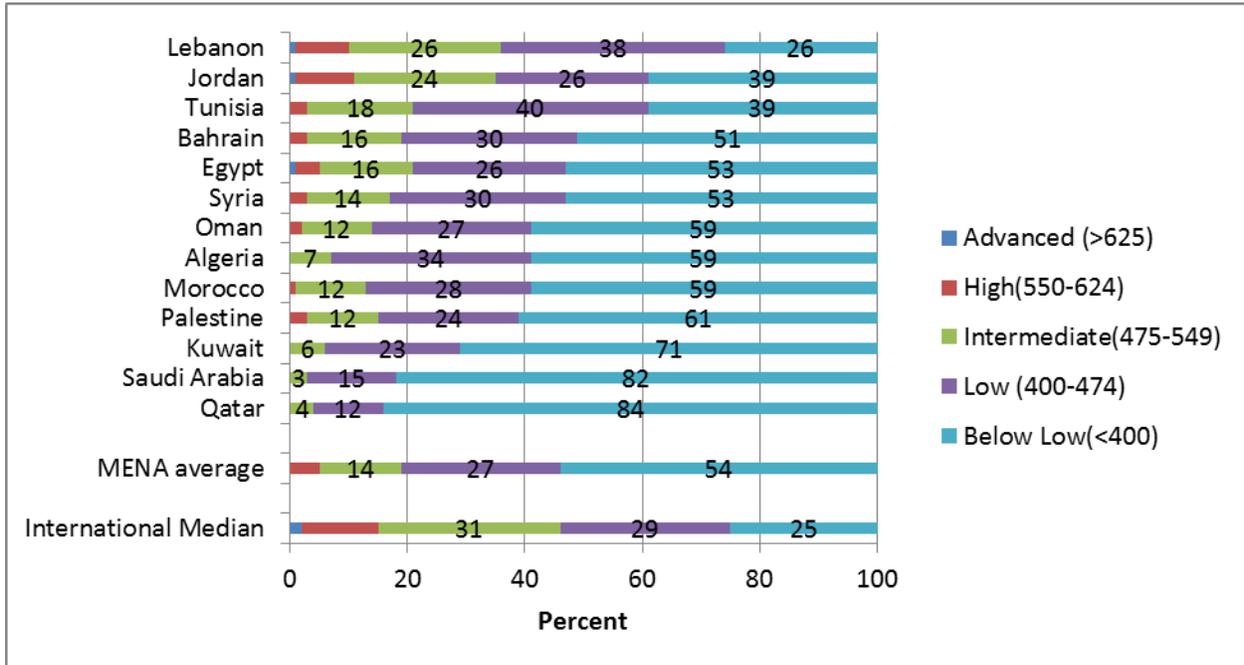


Source: Campante and Chor (2012) based on data from Barro and Lee (2010)

Despite these rapid increases in educational attainment in the Arab world, the quality of education has been persistently low, as evidenced by performance on international tests. As shown in Figure 6, the percentage of 8<sup>th</sup> graders performing at the lowest level, the “below low” threshold, in international mathematics tests in MENA is 54 percent, more than twice the international median. Less than 20 percent of eighth graders in the region perform at the “intermediate” threshold or above. Some of the worst performing countries are among the richest in the region, with Qatar, for example, having 84 percent of its children performing under the “below low” threshold and Saudi Arabia with 82 percent performing below that level. This suggests that the issue is not lack of resources but the incentives for children to perform well. With guaranteed jobs in the public sector waiting for them, there is no reason for children in these rich countries to exert themselves. Another issue may be the nature of curricula in these countries and the excessive focus on rote memorization.

**Figure 6**

**Distribution of TIMSS Eighth Grade Mathematics Score in 2007, Selected Arab Countries**



Source: World Bank 2013a based on data from Mullis et al. (2008).

The large increases in the quantity of education has not generally translated into improved employment prospects for graduates. The frustration of young people who acquired schooling but were not able to reap the requisite economic benefits from it is often cited as one of the main causes of the Arab Spring uprisings (Campante and Chor 2012). To illustrate the dramatic change in employment prospects for secondary school and university graduates over the past three decades, I use two unique data sets to trace the type of first job they were able to obtain over time in both Egypt and Jordan.<sup>4</sup> As shown in Figure 7, over 60 percent of those with secondary degrees or above in Egypt got jobs in the public sector in the 1970s as compared to 20 percent who obtained formal private wage work. The proportion getting public sector employment falls precipitously thereafter in Egypt to reach under 20 percent for those entering in the first half of the 2000s. Nevertheless, the proportion obtaining formal private sector work has hardly changed over the same period. The slack has been taken up by informal private wage work and to a lesser extent unpaid work in family-owned enterprises. This dramatic informalization of the labor market for graduates, which translates into an inability to join the

<sup>4</sup> The data is obtained from the Egypt Labor Market Survey of 2006 (ELMPS 06) and the Jordan Labor Market Survey of 2010 (JLMPS 2010). The surveys inquire about the timing of first labor market entry and the type of job obtained at that time for individuals in various cohorts.

ranks of the middle class, undoubtedly accounts for much of the frustration that led to the January 25<sup>th</sup> Egyptian revolution in Egypt.

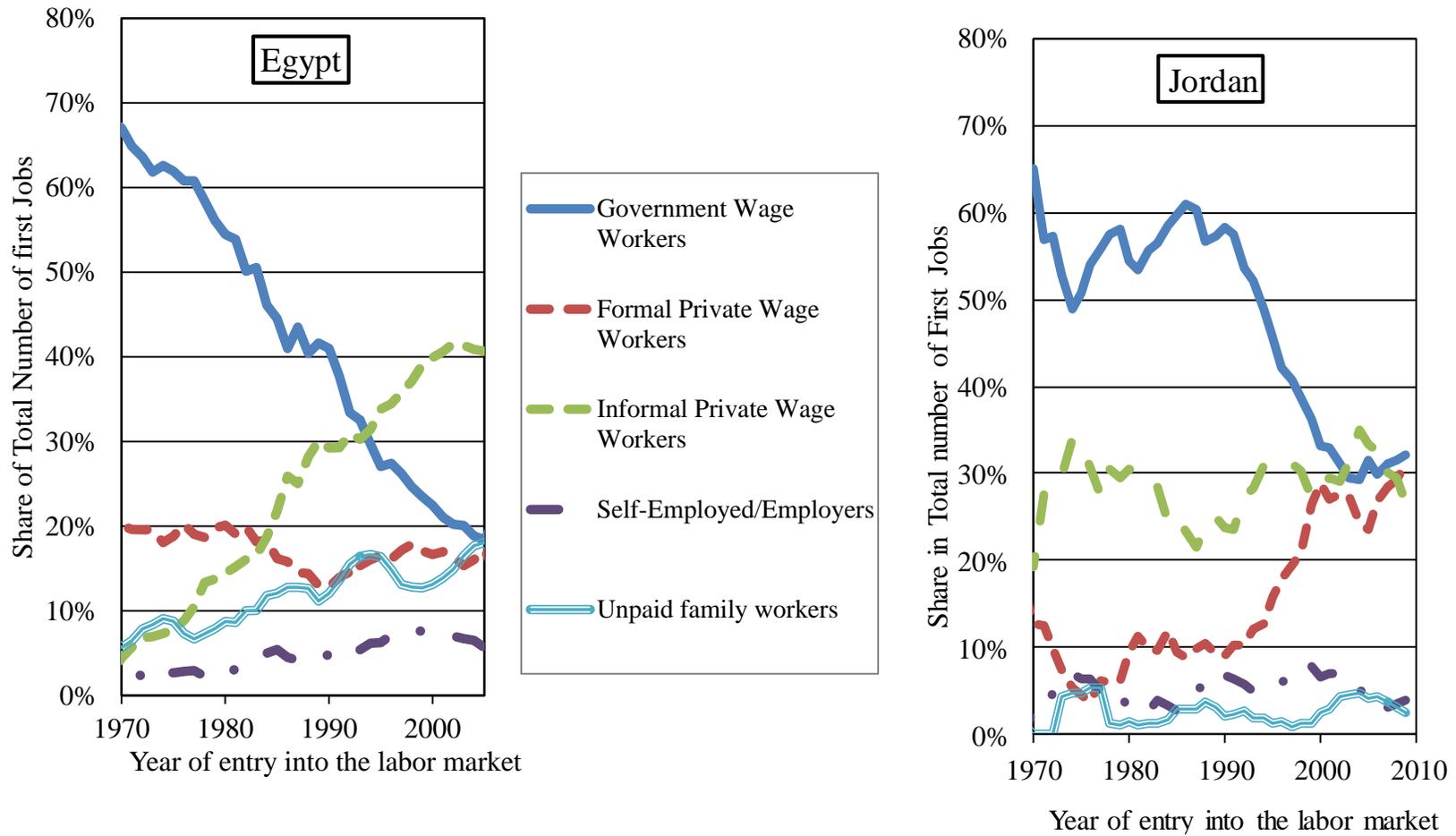
The experience of graduates over time in Jordan is similar in some respects but different in others. The proportion of graduates obtaining public sector jobs in their first job also fell dramatically in Jordan over time, but it started its decline much later than in Egypt, around the late 1980s and early 1990s. It then fell rapidly, from about 60 percent to 30 percent, in just over a decade. Unlike Egypt, where the decline continued apace, the decline in Jordan slowed dramatically in the 2000s and even reversed somewhat in recent years. Also, in contrast to Egypt, where informality was the main alternative to public employment, formal private wage employment took up much of the slack in Jordan. A careful examination of the data shows that Jordan was able to avoid informalization by providing its private employers with greater flexibility in hiring and firing. The data show that a growing proportion of these formal private sector jobs was in fact jobs with temporary contracts rather than in ones with indefinite duration contracts (Assaad 2013).<sup>5</sup>

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<sup>5</sup> Egypt implemented labor law reforms that allowed employers issue indefinite duration contracts that could be renewed an indefinite number of times only in 2004. These reforms would therefore not be reflected in this data, which ends in 2005.

**Figure 7**

**Employment Structure in the First Job by year of Entry into the Labor Market for those who Attained an Upper Secondary Education or Above, Egypt and Jordan**



Source: Assaad (2013) based on data from ELMPS (2006) and JLMPS (2010)

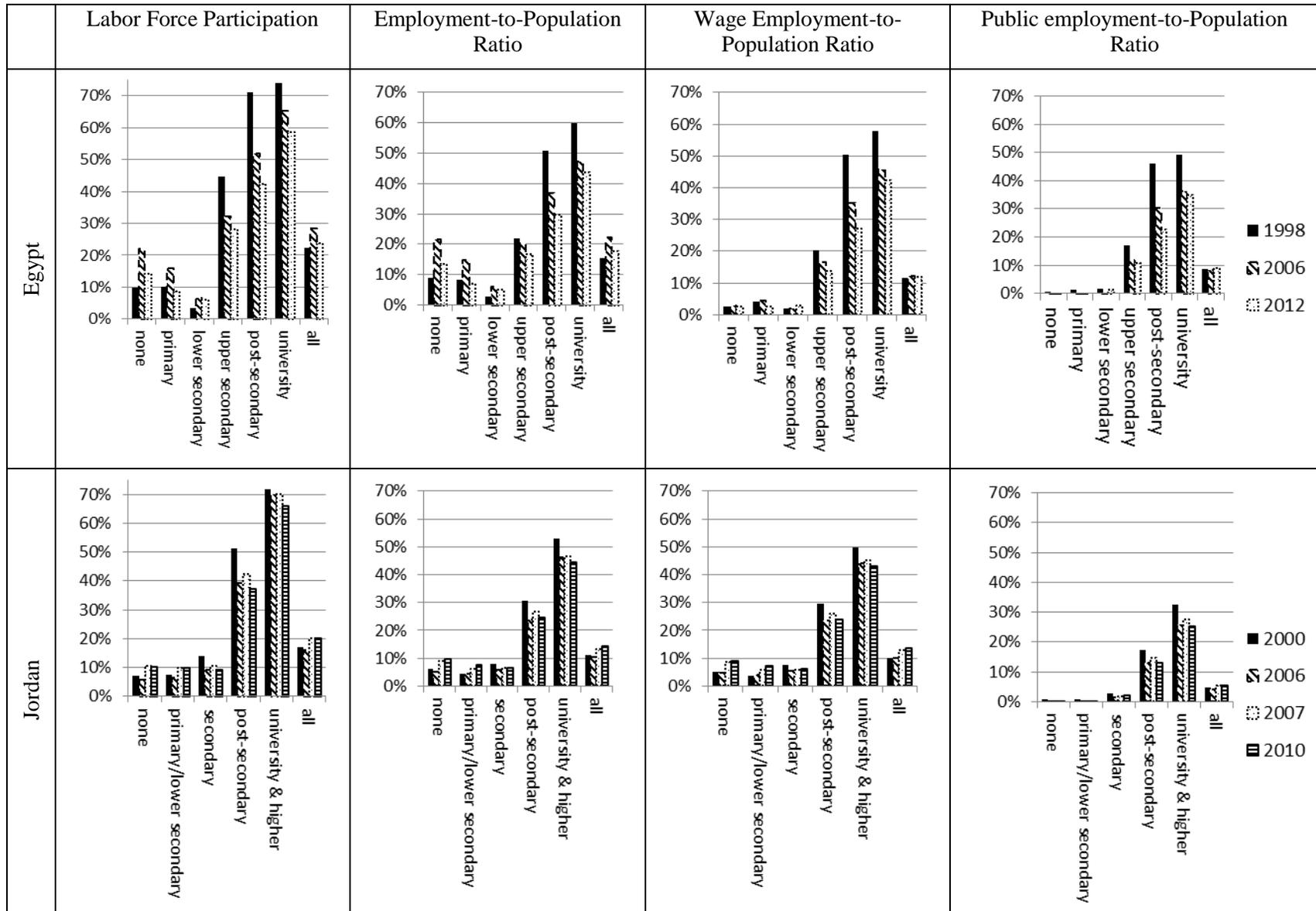
### **3. Low and Stagnant Female Labor Force Participation**

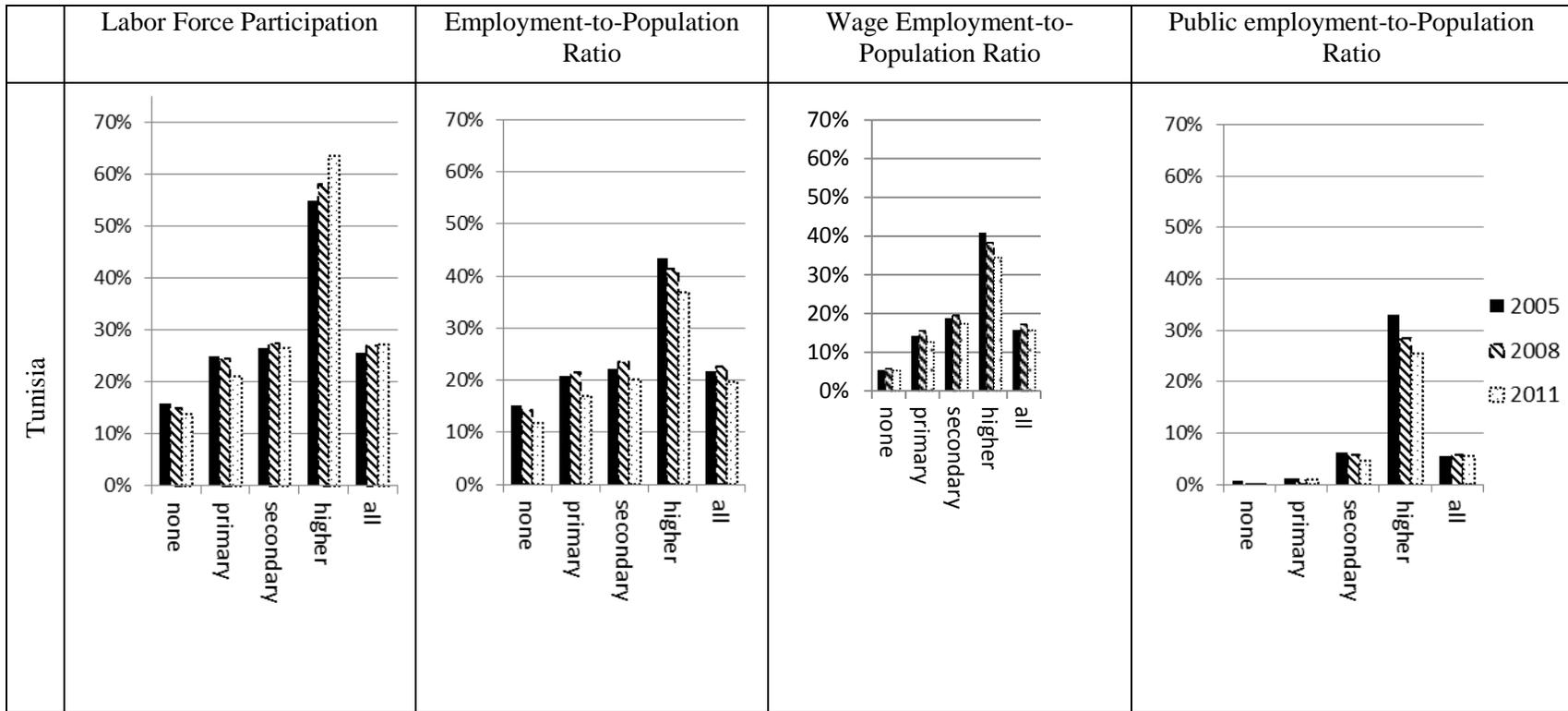
The very low female labor force participation in the Arab World are amply documented (cf. World Bank 2004, World Bank 2013b). According to the World Bank's World Development Indicators, out of the twenty countries with the lowest female labor force participation rates in 2011, fifteen were Arab countries (World Bank 2013c). Some have attributed these low participation rates to the influence of conservative social norms and the value placed on female modesty in Islam (Clark et al. 1991, Miles 2002, Sidani 2005, Spierings et al. 2008). Others attribute it to the effect of oil rents on raising reservation wages, sustaining the patriarchal gender contract, or reducing demand for female labor through the Dutch disease phenomenon (Karshenas and Moghadam 2001, Ross 2008). The main question I would like to address here is not why female labor force participation rates are so low in the region, but rather why they have stagnated or increased very little, despite significant increases in educational attainment and substantial progress on closing the gender gap in education. This particular question has been referred to as the MENA "gender equality paradox." (World Bank 2013b).

A number of studies have established the strong relationship between labor force participation and education in Arab countries (Assaad and El-Hamidi, 2009, Assaad, et al. 2013). These studies have shown convincingly that the link between participation and educational attainment is strongly mediated by the availability of government employment for educated women. The slowdown in government hiring in recent years first resulted in a drop in employment rates among women and a sharp increase in unemployment, but later translated into declines in participation among educated women in certain countries; a factor that has countered the decisive shift in favor of greater educational attainment and that has kept overall participation rates flat.

This dynamic is clearly illustrated in Figure 8, which examines various forms of female participation in economic activity by level of educational attainment in Egypt, Jordan and Tunisia over time. The first thing we note from the figure is that overall participation was not only low, but also fairly stagnant over time in all three countries. This was true despite the fact that, as we saw earlier, educational attainment rose rapidly and that participation rises significantly once women reach the post-secondary level.

**Figure 8 . Female Labor Force Participation, Employment-to-Population Ratio, Wage-Employment-to-Population Ratio and Public employment-to-Population Ratio, by Educational Attainment and Over Time for Egypt, Jordan and Tunisia**





In both Egypt and Jordan, labor force participation actually fell among educated women in the 2000s.<sup>6</sup> In both countries, this decline can be traced through the four figures to a decline in public wage employment for educated women, which comprises the bulk of wage employment in both instances. Less educated women either participate exclusively in non-wage work (as in Egypt) or have very low participation rates (as in Jordan).

The situation in Tunisia appears different, but in fact shares many of the same features as in Egypt and Jordan. Although participation in the labor force increased over time for women with higher education in Tunisia, this increase is entirely due to rising rates of unemployment. The ratios of employment-to-population, wage employment-to-population, and public wage employment all show the same declining trend that is apparent in Egypt and Jordan. In all three countries, women with post-secondary education are strongly dependent on the government for their employment. As rates of public employment decline, their employment rates also decline, leading first to high unemployment rates among women and then to falling labor force participation rates, as in the case of Egypt and Jordan. Private wage employment was simply not a viable alternative to public sector employment for these educated women, partly because women, who would have otherwise spent their entire careers working in the public sector, either decline to take private sector jobs altogether or leave such jobs at marriage. Thus, with the curtailment of employment in the government in recent years, women are either pushed in the unemployment queue, as we will see below, or pushed out of the labor force altogether.

#### **4. High Youth Unemployment: A Product of Labor Market Dualism?**

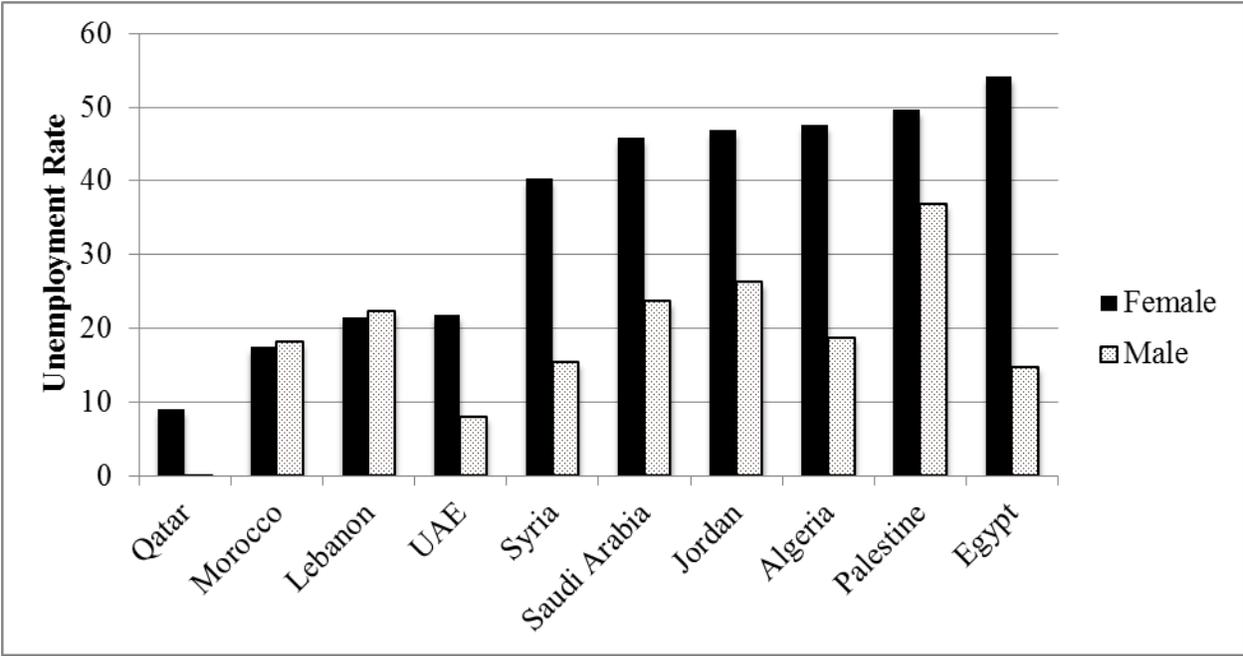
High youth unemployment is probably the most distinctive feature of Arab labor markets. According to the ILO, the Middle East and North Africa, taken separately, are the two regions with by far the highest rates of youth unemployment in the world (ILO 2013, Annex A). The youth unemployment rates in 2012 in the Middle East and North Africa are estimated at 28.3 percent and 23.7 percent, respectively, compared to 18.1 percent in developed economies and the European Union, the region with the next highest rate. Projecting forward, the ILO estimates that the youth unemployment rate will keep rising to reach 30 percent in the Middle East by 2017

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<sup>6</sup> Because of a change in sampling frame, there is a break in the Jordanian data between the last quarter of 2006 and the first quarter of 2007, which resulted in an artificial increase in female participation rates. Because of that, it is best to compare 2000 to 2006 and 2007 to 2010. See Assaad et al. (2013) for further discussion of this issue.

and to reach 24 percent in North Africa by 2016, whereas the peak rate in any other world region will not exceed 18 percent, the projected rate for Central and South Eastern Europe over the period 2013 to 2018. ILO estimates also show that the Middle East and North Africa are the two regions with the highest gender gap in unemployment. The female-to-male ratio in youth unemployment rates is estimated at 2.1 and 1.8 in the North Africa and the Middle East, respectively, compared to 1.5 in Latin America and the Caribbean, the region with the next highest ratio (Ibid.). The large discrepancy in unemployment rates by sex is at the country level is clearly apparent in Figure 9. The only two countries where female rates are slightly lower than males rates are Morocco and Lebanon; two countries where the public sector does not play a major role in the labor market.

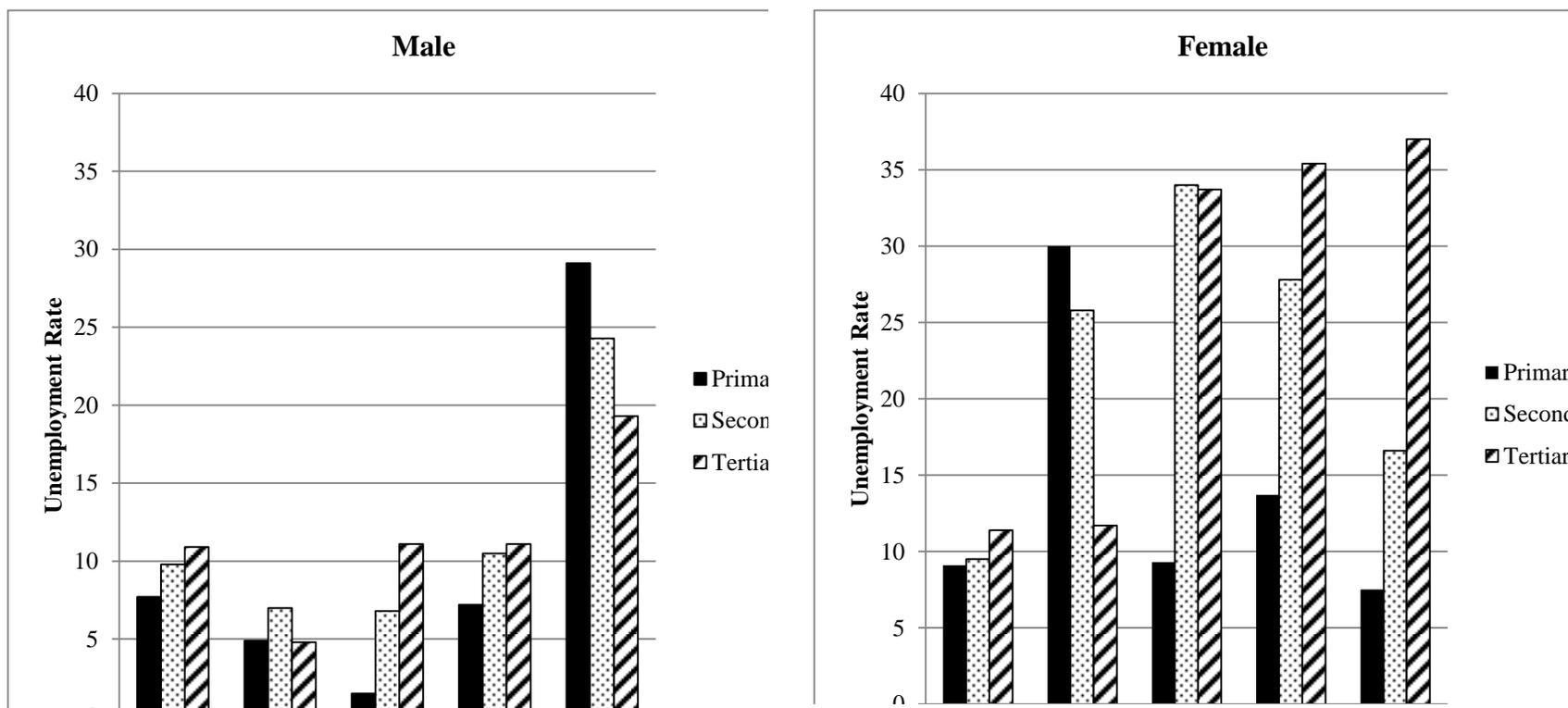
**Figure 9. Youth Unemployment Rates in Selected Arab Countries by Sex**



Source: Author’s calculation based on data from ILO (2011). Most recent year (2007-2011).

Not only is the Arab world distinguished by its high youth unemployment rates, but also by the fact that they tend to rise with skill level. Figure 10 clearly shows the tendency of youth unemployment rates to rise with educational attainment for both males and females. The main exceptions to this trend, among the countries shown, is the case of Palestinians males and Syrian males and females. High unemployment among less educated Palestinian males is a well-known

**Figure 10. Youth(15-24) Unemployment Rates by Educational Attainment and Sex for Selected Arab Countries**



Source: Author's calculation based on data from ILO (2011).

Most recent year, 2007-2011.

phenomenon related to the closure of the Israeli labor market and this group's reliance on unskilled jobs in Israel. It is not clear why unemployment is so high among less educated Syrian females. Outside these two exceptions, the rising pattern of unemployment with educational attainment is unmistakable and is consistent with the hypothesis that educated youth are queuing for public sector jobs.

To investigate this hypothesis further, I use microdata from a number of population censuses in Arab countries for which data is available in the IPUMS-International data base (Minnesota Population Center 2013). The sample consists of individual observations for youth 15-29 who are in the labor force from ten percent random samples of the population in seven censuses from five countries, yielding a total sample size of 2,084,702 observations.<sup>7</sup> On the assumption that for most people job search takes place in the local jurisdiction in which they were born, a queuing hypothesis suggests that youth unemployment will be higher in jurisdictions with a higher share of public employment, after controlling for age, education, sex, and other jurisdictional characteristics. If, on the other hand, unemployment was caused by an inadequacy of labor demand in the jurisdiction, we would tend to expect lower youth unemployment in jurisdiction with higher than average government employment.<sup>8</sup> In all countries, I use the first level administrative geography (i.e. province or governorate of birth) to define jurisdiction.<sup>9</sup> To avoid problems associated with the endogeneity of migration, I use the jurisdiction of birth rather than that of current residence to calculate the relevant public employment rate.

To motivate the analysis, I start by looking at scatter diagrams of youth unemployment rates vs. the public employment rate at the province/governorate of birth (See Figure 11). As shown in the figure, all but two samples exhibit the expected positive relationship. The exceptions are Egypt in 1996 and Palestine in 2007. The negative relationship in Palestine in 2007 is due to the fact that most unemployment in Palestine in that year had to do with less educated male workers

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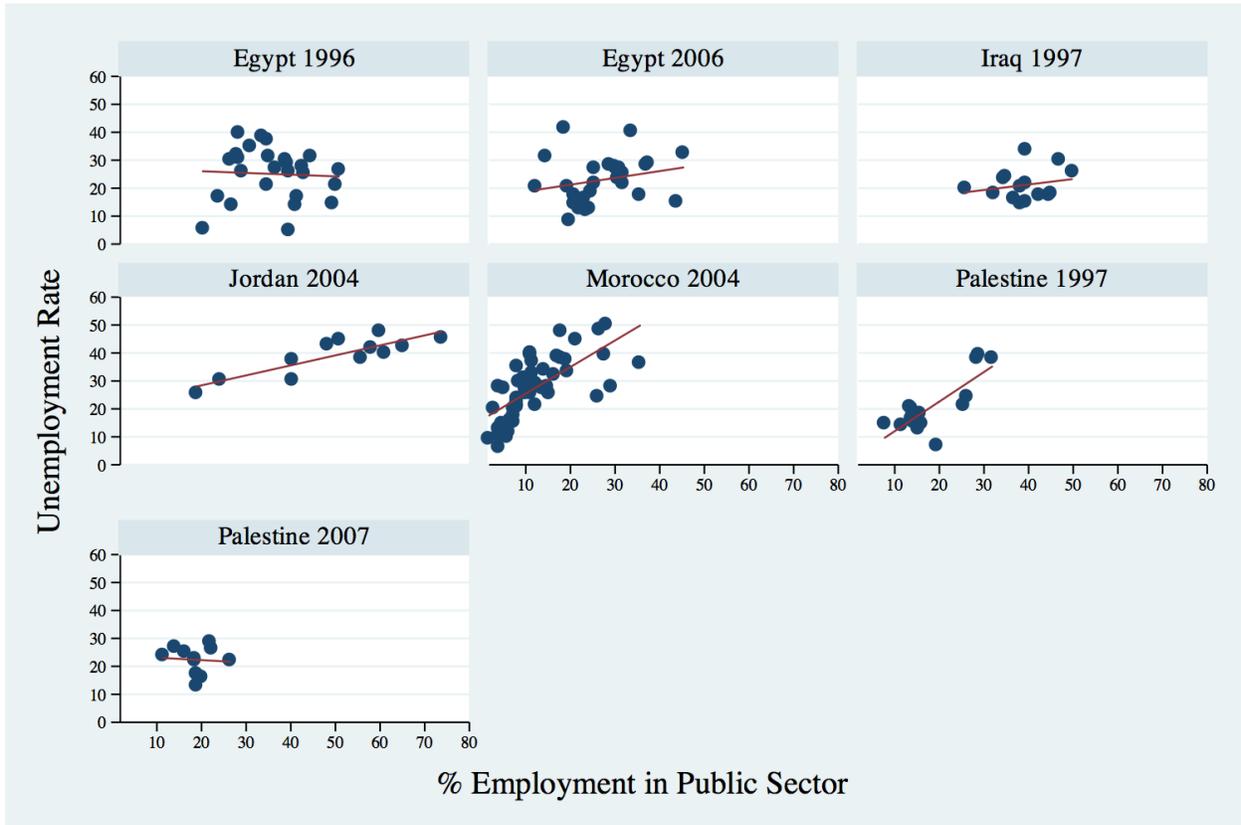
<sup>7</sup> I trim the sample to exclude governorates/provinces with a public employment rate that is larger than the 99<sup>th</sup> percentile to avoid the undue influence of small province with very high public employment rates.

<sup>8</sup> It is possible that causality is in the reverse direction and that government place more jobs in high unemployment areas. This would be the case, for instance, if public works programs were creating a lot of temporary public jobs in depressed areas. There are few such programs in the countries we are studying and most government jobs tend to be permanent jobs in the bureaucracy and security services, which are unlikely to be linked to how depressed a region is.

<sup>9</sup> There were 27 such jurisdictions in 1996 and 29 in 2006 in Egypt, 15 in 1997 in Iraq, 12 in 2004 in Jordan, 60 in 2004 Morocco, and 16 in 1997 and 11 in 2007 in Palestine. Gaza was excluded from the 2007 census of Palestine.

no longer being able to access the Israeli labor market for jobs due to the security closure of the border between Israel and the West Bank.

**Figure 11 Scatter Diagrams of Youth Unemployment Rates (Ages 15-29) vs the Proportion of Employment in the Public Sector at the Governorate/Province Level in Selected Arab Countries.**



Source: Source: Author's calculations based on data from Minnesota Population Center (2013)

Having looked at the bivariate relationship between youth unemployment and the local public employment rate, I examine next the same relationship in a multivariate framework where I control for a variety of other covariates at both the individual and community levels. The individual level controls are age, sex, and educational attainment. The community level controls are urban/rural location and some governorate/province characteristics, such as prevalence of connections to basic urban services and variables indicating the educational composition of the governorate/province population. The means of the explanatory variables are shown in Appendix Table A-1.

The youth (15-29) unemployment rates in each census by various characteristics are shown in Appendix Table A-2. As we have seen in Figure 10 above, unemployment rates for young women are much higher than those of young men, except for Iraq. Unemployment rates tend to be higher for more educated youth, except for Iraq and Palestine, where they are highest for the least educated. In Egypt, peak unemployment rates are reached at the secondary level, whereas in Jordan and Morocco they are reached at the university level. Finally, there is no systematic pattern in youth unemployment by urban/rural location.

Marginal effects from Probit regression of the probability of being unemployed conditional on being in the labor force for youth 15-29 are shown in Appendix Table A-3. I start by running a regression for the pooled sample, with only main effects and country-year dummies. I then add interactions between sex and education, the public employment rate and education, the public employment rate and sex, and finally the public, employment rate, sex and education. In the subsequent columns I estimate regressions with the same interaction terms for each of the country-year samples independently. The reference individual in all the regressions is a 22 year-old male, with secondary education, residing in rural areas in a governorate or province with mean characteristics for the country in that year. The governorate/province characteristics, including the public employment rate, are expressed in standardized units

Focusing initially on the pooled main effects regression (shown in the first column of Appendix Table A3), we note that the coefficient of the public employment is positive as expected but only significant at the 10 percent level once the individual and community-level controls are included. An increase in the public employment rate of one standard deviation is associated with a 2 percentage point increase in youth unemployment, on average across all seven censuses. We also note that age has the expected inverted U-shaped effect on unemployment and that the reference young woman has an unemployment rate that is 15 percentage points higher than the reference young man. Education significantly increases unemployment up until the secondary level and then the effect levels off.

Because the results for the model with interactions are a little more difficult to interpret, I carry out simulations by varying the public employment rate from minus two standard deviations to plus two standard deviations around the mean to see its effect on the unemployment rate for different categories of youth by education and sex. The results of these simulations are shown in

Figure 12. For the regression pooling all countries, we can clearly see that the public employment rate in the governorate/province of birth has a positive effect on the unemployment rate of young males and females with less than secondary education, but has no significant effect on that of secondary and university educated youth. The absence of an effect for the more educated youth is surprising at first and seems to contradict our hypothesis that public employment policies are likely to segment the labor market for the educated more than for the uneducated. However, it could just be that the job search of educated youth has a broader geographic scope than that of uneducated youth and that they look for work well beyond their governorate of birth. If that were the case, it would explain why educated youth have higher unemployment rates in even governorates with low rates of public employment.

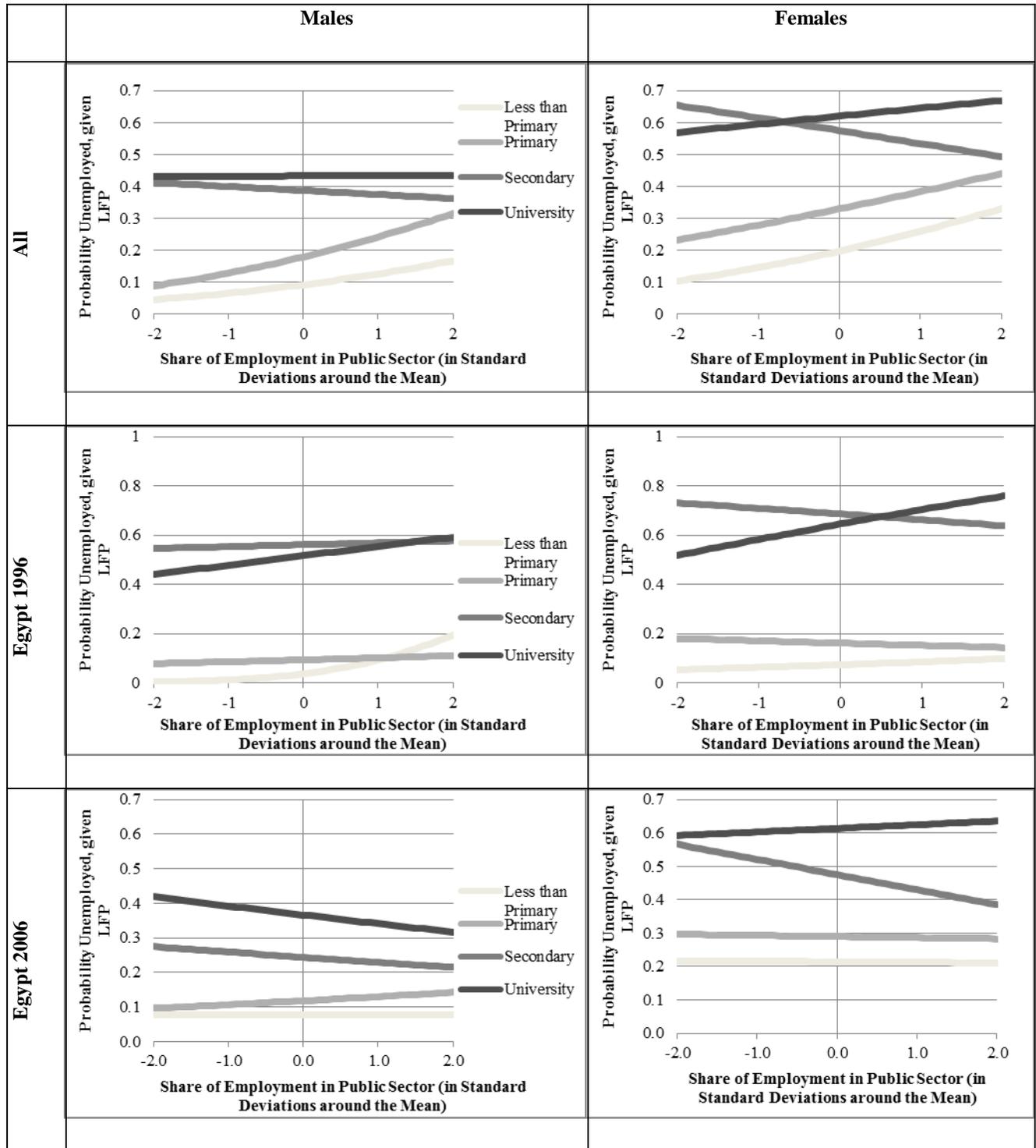
Moving now to the individual country results, we note that in Egypt in 1996, queuing for public sector job tends to be most pronounced among university graduates and especially female graduates who have the strongest positive relationship between their unemployment rate and the prevalence of public employment in the governorate of birth. By 2006, this positive relationship appears to have disappeared for male graduates and weakened significantly for female graduates.

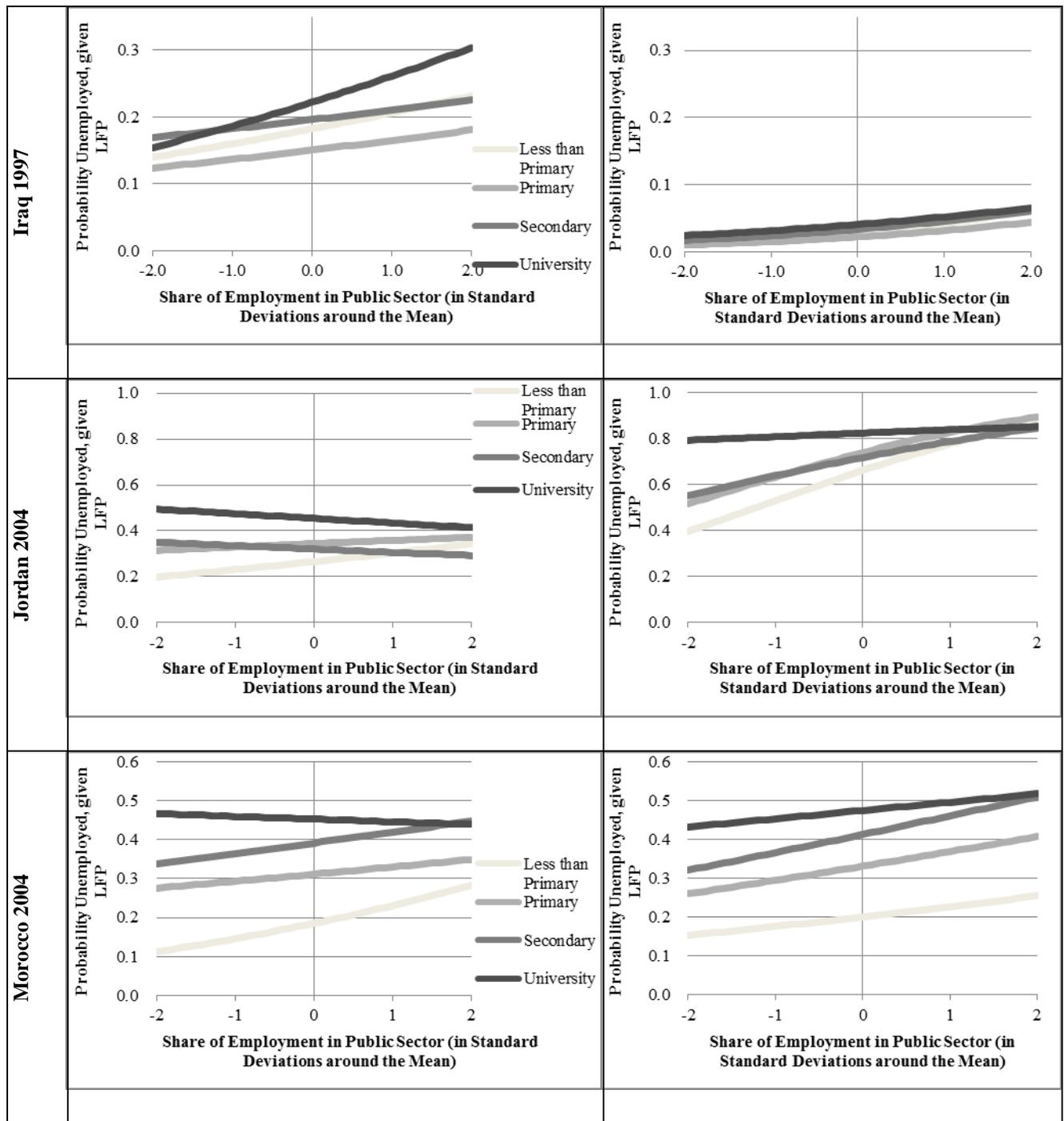
Iraq in 1997 provides strong evidence in favor of the queuing hypothesis. It exhibits a strong positive relationship between youth unemployment and the prevalence of public employment in the province of birth for all educational and sex groups. For a one standard deviation increase in the prevalence of public employment, the unemployment rate of a reference Iraqi male youth with a university degree increases by 4 percentage points, a relative increase of 18 percent. At 27 percent, the relative increase in unemployment for female Iraqi graduates is also quite large although it is from a relatively low base.

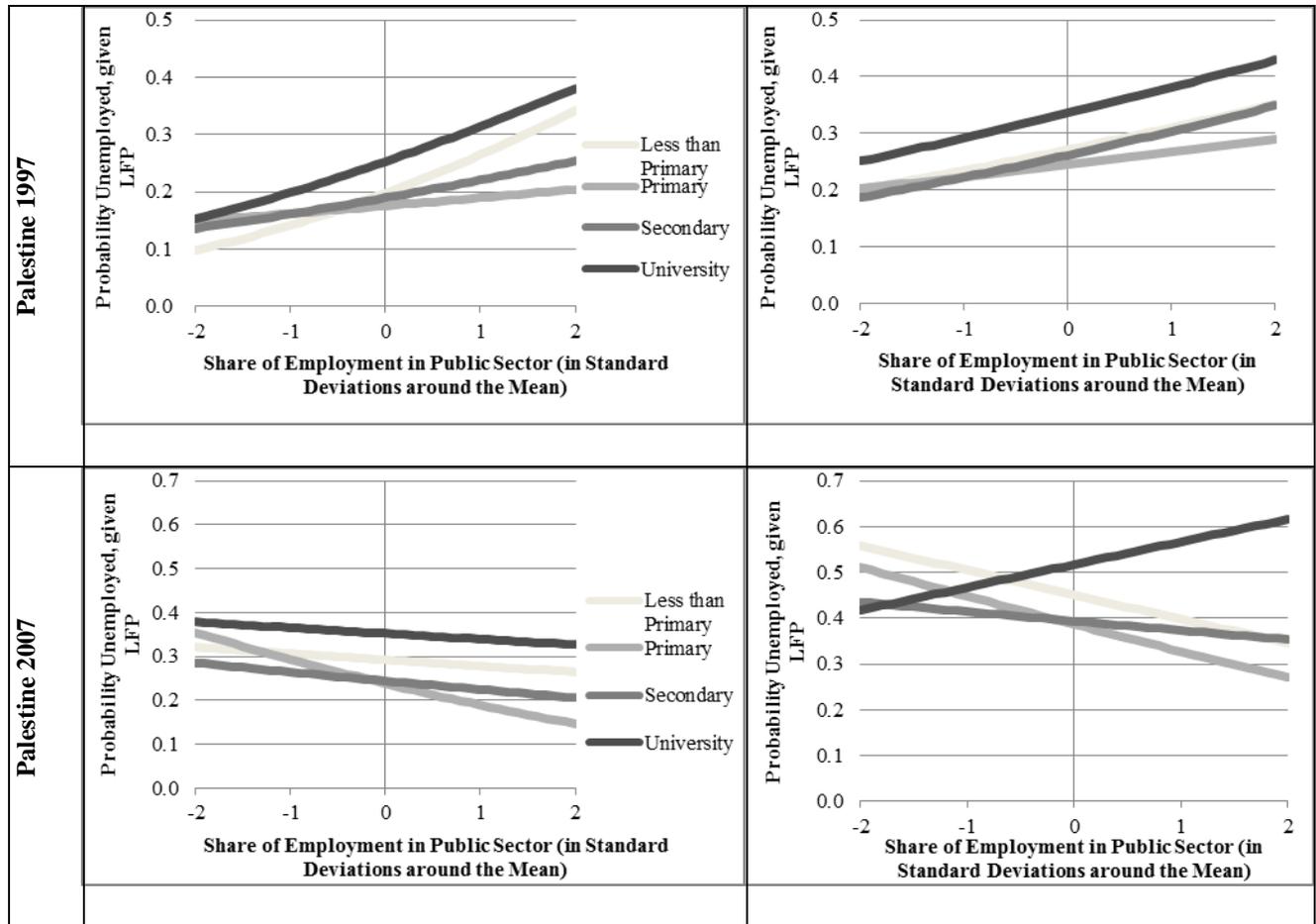
In Jordan in 2004, there is direct evidence of queuing for males with less than primary education and for females with less than university education. Females with university education there have very high unemployment predicted unemployment rates in excess of 80 percent and could very well be queuing for public jobs in the national labor market. In Morocco in 2004, there is a positive relationship between the youth unemployment rate and the prevalence of public jobs in the province, for all groups except for male university graduates. Again, given their high unemployment rates, the absence of a positive relationship for this group does not mean that they

do not queue for public jobs, but that their job search is probably not limited to their province of birth.

**Figure 12. Youth Unemployment Rate by Share of Employment in the Public Sector in the Province/Governorate of Birth, Simulations from Probit Regression**







Source: Author's calculations based on data from Minnesota Population Center (2013)

The Palestinian case is interesting because of the strong reversal that occurs between 1997, when the Israeli labor market was still fairly open for less educated makes, and 2007, when the security-related closure made strongly affected the employment prospects of this group. In 1997, there is a strong positive relationship between youth unemployment and the prevalence of public employment for all educational groups and for both sexes. This was a time that the Palestinian authority was building up its ranks and when it was probably still worthwhile for young people to queue for government jobs. By 2007 when the labor market situation became much less favorable, the only group that appears to be queuing in any significant fashion is female university graduates who have few employment prospects outside the public sector.

## Conclusions

I argued in this paper that the longstanding practice of providing public sector employment at higher than market-clearing compensation as a tool of political appeasement has not only led to the misallocation of human capital in Arab economies, but also to the wrong kinds of human capital investments, and inefficient queuing by educated workers for government jobs. The consequences of these disastrous policies persist well after the policies themselves have been suspended and continue to shape labor markets in the long term. They include the large overhang of excess employment in the public sector, large stocks of inappropriate human capital, one of the longest lived assets in the economy, institutional distortions in the education system, which continues to be oriented toward credentialism rather than skill formation, and distorted expectations among young job seekers that lead to queuing for public sector jobs and high youth unemployment. Female job seekers are more affected by this kind of labor market dualism because of the more limited opportunities they face in the private sector and the bigger wedge between their market clearing wage and their potential compensation in the public sector. As such they face higher unemployment rates and, now, increasing discouragement from participating in the workforce altogether.

I also argue that the erosion of the authoritarian bargain social contract was done in such a way as to protect the gains and entitlements of regime insiders and incumbents. This means that the entire cost of adjustment was shifted onto the younger generations who had come to expect the same benefits that their older counterparts received upon acquiring education. Instead they found themselves shut out of government jobs and relegated to low quality jobs in the informal economy. The failure of the Arab economies to develop dynamic, competitive private sectors that are integrated into world markets can itself be attributed to the rentier nature of these economies. The frustrations of a generation of young people, who have achieved increasing levels of schooling but obtained few valuable labor market skills and even fewer economic opportunities, have clearly contributed to the Arab Spring uprisings in the countries whose regimes could no longer afford the authoritarian bargain. For now, the oil rich monarchies are able to continue to buy political stability with generous welfare payments and lucrative jobs in the public sector for their citizens, but the limits of this approach will undoubtedly become clear

by the time of the next downturn in oil prices. At that point the social and political costs of highly segmented labor markets will become wholly apparent.

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## Appendix A

**Appendix Table A-1: Means of Explanatory Variables, Population Census Data, Ages 15-29**

	Egypt 1996	Egypt 2006	Iraq 1997	Jordan 2004	Morocco 2004	Palestine 1997	Palestine 2007	Total
<b>Individual Characteristics</b>								
Age	22.5	23.1	22.5	23.6	22.5	22.8	23.3	22.7
Age Squared	519.3	547.5	521.7	570.1	520.9	532.4	558.1	532.1
Male (%)	80.1	79.3	91.6	74.2	69.1	89.7	85.0	78.9
Female (%)	19.9	20.7	8.4	25.8	30.9	10.3	15.0	21.1
Education: Less than Primary (%)	39.6	27.1	31.3	7.0	57.8	10.8	5.2	36.1
Education: Primary (%)	7.0	10.4	49.7	41.0	32.2	58.6	56.7	19.4
Education: Secondary (%)	44.2	46.4	13.7	35.4	8.0	23.7	19.9	34.3
Education: University (%)	9.2	16.0	5.3	16.5	2.0	6.9	18.1	10.2
<b>Urban/rural Location</b>								
Urban/rural missing (%)	0.0	0.0	0.1	0.0	100.0	14.8	5.7	19.2
Rural (%)	41.9	59.2	34.4	23.7	0.0	33.6	28.8	38.8
Urban (%)	58.1	40.8	65.4	76.3	0.0	51.6	65.6	42.0
<b>Province/Governorate Characteristics</b>								
Public Employment Rate (%)	34.9	26.9	41.0	35.8	11.1	18.3	18.1	27.8
% Connected to Electricity	95.2	99.0	96.7	99.1	70.2	94.9	99.2	92.1
% Connected to Piped Water	71.9	93.7	78.3	83.8	53.8	83.4	80.6	77.6
% Connected to Sewerage Network	41.3	51.3	71.7	53.3	67.2	32.0	30.5	53.1
% w/ Secondary Education in Working Age Population (%)	23.3	33.9	13.8	34.3	8.9	22.5	25.6	23.8
% w/ University Education in Working Age Population (%)	6.9	11.0	5.2	10.6	2.7	5.7	9.7	7.5
N (Observations)	679,333	839,128	233,428	67,750	218,806	27,239	19,018	2,084,702

Source: Author's calculations based on data from Minnesota Population Center (2013)

Note: Data excludes governorates/provinces above the 99th percentile of public employment rate.

**Appendix Table A-2: Unemployment Rates by Various Characteristics, Population Census Data, Ages 15-29**

	Egypt 1996	Egypt 2006	Iraq 1997	Jordan 2004	Morocco 2004	Palestine 1997	Palestine 2007	Total
Male	23.4	18.7	22.0	27.9	22.7	19.5	22.2	21.5
Female	50.5	40.2	4.3	52.6	36.4	28.1	31.2	40.9
Education: Less than Primary	3.7	10.1	25.7	20.4	20.3	25.3	25.4	12.6
Education: Primary	10.1	17.3	19.4	35.1	35.5	20.2	22.5	24.2
Education: Secondary	53.4	29.3	14.6	35.2	37.6	18.9	22.6	38.3
Education: University	32.5	31.6	15.6	36.2	39.5	19.8	27.2	31.3
Urban/rural missing			13.3		27.0	25.8	28.6	27.0
Rural	30.2	18.8	20.9	42.4		17.0	23.8	23.1
Urban	27.8	29.5	20.3	31.8		21.1	23.0	27.2
Total	28.8	23.2	20.5	34.3	27.0	20.4	23.5	25.6
N (Observations)	679,333	839,128	233,428	67,750	218,806	27,239	19,018	2,084,702

Source: Author's calculations based on data from Minnesota Population Center (2013)

**Appendix Table A-3. Marginal Effects from a Probit Regression, all individuals Ages 15-29**

**Dependent Variable: Unemployed or Not for Those in Labor Force**

	All Main Effects	All Interacted	Egypt 1996	Egypt 2006	Iraq 1997	Jordan 2004	Morocco 2004	Palestine 1997	Palestine 2007
<b>Base Probability</b>	0.396	0.387	0.561	0.244	0.196	0.320	0.391	0.190	0.244
<b>Public Employment Rate in governorate/province (SD)</b>	0.020 (0.012)	-0.012 (0.017)	0.008 (0.046)	-0.015 (0.018)	0.014* (0.005)	-0.015 (0.017)	0.028 (0.019)	0.030* (0.015)	-0.020 (0.015)
<b>Individual Characteristics</b>									
Age	0.046*** (0.012)	0.046*** (0.012)	0.113*** (0.012)	0.043*** (0.004)	-0.103*** (0.005)	-0.086*** (0.010)	0.033*** (0.004)	-0.054*** (0.008)	-0.023 (0.012)
Age Sq.	-0.002*** (0.000)	-0.002*** (0.000)	-0.003*** (0.000)	-0.002*** (0.000)	0.002*** (0.000)	0.001*** (0.000)	-0.001*** (0.000)	0.001*** (0.000)	-0.000 (0.000)
Female	0.152*** (0.012)	0.182*** (0.015)	0.131*** (0.015)	0.198*** (0.018)	-0.270*** (0.016)	0.372*** (0.008)	0.021 (0.020)	0.065** (0.021)	0.133*** (0.026)
<b>Education Level, Secondary Omitted</b>									
Ed. LT Primary	-0.415*** (0.043)	-0.398*** (0.043)	-0.762*** (0.031)	-0.229*** (0.017)	-0.014* (0.007)	-0.057* (0.023)	-0.238*** (0.018)	0.008 (0.014)	0.046* (0.020)
Ed. Primary	-0.238*** (0.030)	-0.241*** (0.031)	-0.581*** (0.033)	-0.154*** (0.014)	-0.049*** (0.007)	0.023** (0.008)	-0.083*** (0.013)	-0.015 (0.009)	-0.006 (0.014)
Ed. University	-0.023 (0.015)	0.045** (0.015)	-0.044*** (0.010)	0.110*** (0.012)	0.025* (0.011)	0.126*** (0.010)	0.060 (0.032)	0.058** (0.018)	0.098*** (0.020)
<b>Residence, Rural Omitted</b>									
Urban/Rural Missing	0.104*** (0.028)	0.104*** (0.027)			-0.104* (0.051)			-0.002 (0.017)	0.062** (0.024)
Urban	0.055*** (0.012)	0.053*** (0.012)	0.002 (0.013)	0.101*** (0.011)	0.019 (0.017)	-0.046** (0.017)		0.004 (0.012)	-0.017 (0.019)
<b>Governorate/Province Controls (Standardized)</b>									
Percentage Connected to Electricity	0.009	0.006	0.034	0.020	-0.040***	0.004	0.053*	0.015	

0.035\*\*\*

(SD)	(0.009)	(0.009)	(0.027)	(0.013)	(0.012)	(0.004)	(0.025)	(0.010)	(0.010)
Percentage Connected to Piped Water (SD)	0.017	0.014	-0.015	-0.004	-0.013	-0.004	-0.005	-0.018*	-0.016
Percentage Connected to Sewerage Network (SD)	0.016	0.020	0.051	0.019	0.074	-0.062***	0.023	-0.018*	-0.013
Percentage w/ Secondary Educ. in Working Age Pop. (SD)	-0.019	-0.016	-0.107**	0.028	-0.045*	0.044***	0.025	0.063***	0.028
Percentage w/ University Educ. in Working Age Pop. (SD)	-0.020	-0.023*	-0.037	-0.024	-0.014	-0.044***	-0.056***	-0.033***	-0.040***
	(0.011)	(0.011)	(0.036)	(0.015)	(0.018)	(0.004)	(0.017)	(0.006)	(0.010)
<b>Gender &amp; Education Interactions</b>									
Female * Ed LT. Primary		-0.027	0.020	-0.037	-0.037	-0.461***	0.140***	0.088	-0.012
		(0.021)	(0.035)	(0.023)	(0.026)	(0.052)	(0.016)	(0.050)	(0.080)
Female * Ed. Primary		0.030*	0.155***	0.016	0.004	-0.099***	0.175***	0.110***	-0.015
		(0.015)	(0.033)	(0.011)	(0.025)	(0.025)	(0.008)	(0.031)	(0.030)
Female * Ed. University		-0.176***	-0.210***	-0.185***	0.098***	-0.217***	-0.025	-0.088***	-0.078***
		(0.014)	(0.014)	(0.018)	(0.017)	(0.008)	(0.022)	(0.024)	(0.023)
<b>Public Sector &amp; Education Interactions</b>									
Public Sector Rate * Ed. LT Primary		0.081*	0.174***	0.016	0.010*	0.054**	0.034**	0.030*	0.007
		(0.032)	(0.020)	(0.010)	(0.005)	(0.018)	(0.012)	(0.013)	(0.023)
Public Sector Rate * Ed. Primary		0.058**	0.127***	0.014	0.008	0.040***	0.038**	0.018**	-0.000
		(0.020)	(0.027)	(0.010)	(0.006)	(0.006)	(0.013)	(0.007)	(0.012)
Public Sector Rate * Ed. University		0.013	0.030**	-0.006	0.021*	-0.004	-0.034	0.019	0.009
		(0.015)	(0.010)	(0.009)	(0.008)	(0.007)	(0.019)	(0.017)	(0.018)
<b>Public Sector &amp; Gender Interaction</b>									
Public Sector Rate * Female		-0.027*	-0.033*	-0.021	0.026	0.093***	0.019	0.004	0.003
		(0.013)	(0.013)	(0.011)	(0.014)	(0.011)	(0.011)	(0.018)	(0.020)
<b>Public Sector, Gender, &amp; Education Interactions</b>									
Public Sector Rate * Female Ed. LT Primary		0.036	-0.030	0.032	-0.041	0.080*	-0.017	-0.028	-0.365**
		(0.026)	(0.033)	(0.021)	(0.028)	(0.039)	(0.019)	(0.045)	(0.126)
Public Sector Rate * Female* Ed. LT Primary		0.037*	-0.116***	0.019	-0.005	-0.011	-0.046***	-0.033	-0.033

Ed. Primary	(0.016)	(0.029)	(0.011)	(0.029)	(0.035)	(0.010)	(0.039)	(0.028)	
Public Sector Rate * Female*	0.052***	0.060***	0.051***	-0.029*	-0.054***	0.008	-0.020	0.047*	
Ed. University	(0.012)	(0.013)	(0.012)	(0.014)	(0.007)	(0.010)	(0.023)	(0.024)	
<b>Country-Year Fixed Effects (Egypt 1996 omitted)</b>									
Egypt 2006	-0.081***	-0.081***							
	(0.021)	(0.020)							
Iraq 1997	0.012	0.016							
	(0.034)	(0.037)							
Jordan 2004	0.050	0.052							
	(0.038)	(0.040)							
Morocco 2004	0.054	0.053							
	(0.034)	(0.033)							
Palestine 1997	-0.063	-0.056							
	(0.033)	(0.032)							
Palestine 2007	-0.036	-0.028							
	(0.025)	(0.023)							
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N (Observations)	2,084,702	2,084,702	679,333	839,128	233,428	67,750	218,806	27,239	19,018
Pseudo R-squared	0.129	0.135	0.320	0.149	0.077	0.151	0.072	0.082	0.062

Notes:

Statistical significance is marked by \* at 5%, \*\* at 1% and \*\*\* at 0.1%

Standard Errors clustered at Country-year-governorate/province level

Governorates/provinces with a public employment rate above the 99th percentile are excluded from the sample.

Reference case: Male, Secondary, age 22 at mean for province/governorate characteristics.

Source: Author's calculations based on data from Minnesota Population Center (2013)