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THE COMPOSITION OF LABOR SUPPLY
AND ITS EVOLUTION FROM
2010 TO 2016 IN JORDAN

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and Caitlyn Keo

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Abstract

This paper investigates the changing character of labor supply in Jordan in light of recent demographic developments as well as the rapid increases in educational attainment among Jordanians. A particular focus of the paper is on the demographic changes generated by the recent refugee influx. Labor force participation, as well as its components of unemployment and employment, are examined. We examine differential patterns of participation by age, gender, education, and place of residence. Data from the Jordan Labor Market Panel Surveys of 2010 and 2016 are supplemented with annual data from the Jordanian Employment and Unemployment Survey (EUS) for the intervening years.

JEL Classifications: J00, J21, J64, J11

Keywords: Labor Force Participation, Unemployment, Employment, Refugees, Population Growth, Jordan

ملخص

تبحث هذه الورقة في الطابع المتغير لإمدادات العمل في الأردن في ضوء التطورات الديموجرافية الأخيرة وكذلك الزيادة السريعة في التحصيل العلمي بين الأردنيين. ينصب تركيز الورقة بشكل خاص على التغيرات الديموجرافية الناتجة عن تدفق اللاجئين مؤخراً. ويتم فحص مشاركة القوى العاملة، فضلاً عن مكونات البطالة والعمالة. وندرس الأنماط التفاضلية للمشاركة حسب السن والنوع الاجتماعي والتعليم ومكان الإقامة. يتم استكمال بيانات مسح سوق العمل الأردني لعامي 2010 و2016 ببيانات سنوية من مسح العمالة والبطالة الأردني للسنوات الواقعة بين العامين المذكورين.

1. Introduction

This paper reviews the evolution of labor supply in Jordan from 2010 to 2016. The most important development in terms of labor supply in Jordan was, without a doubt, the major immigration shock of the Syrian refugee influx starting in 2011. The population of Jordan increased by almost 50% in six years and the working age population by 60%. A little less than half of the increase was made up of Jordanians and the rest was made up of refugees from Syria as well as continued growth in the number of migrant workers, especially from Egypt.

The long-term trends in the composition of the working age population of Jordanian nationals remained relatively unchanged despite the demographic shifts. This population is still overwhelmingly young, increasingly educated, and has some of the lowest labor force participation rates anywhere in the world among both men and women. While the average level of education in Jordan declined slightly due to the influx of less educated Syrians, the proportion of Jordanian nationals acquiring university education continued to climb from 2010 to 2016, increasing from 12% to 15% of the Jordanian working age population. This trend was especially notable among women, where the increase in the share of university graduates was even more pronounced. For example, women born in 1990 have almost one more year of education than their male counterparts. This reversal in the gender gap in education is expected to endure.

The rapid growth of the working age population in Jordan was not matched by a similar growth of the labor force because participation rates fell among both men and women. This was not only because participation among refugees was much lower than among Jordanians and migrant workers, but also because participation among Jordanians themselves declined from 43% of the working age population in 2010 to 39% in 2016. Participation among Jordanian men, which at 70% in 2010 was already among the lowest in the world, declined even further to 63% by 2016. Participation among Jordanian women stood at 17% in both 2010 and 2016, also among the lowest in the world. This stagnation in female participation rates occurred despite the rapid increases in education among young Jordanian women, a phenomenon that is usually associated with rising participation. For men, participation rates fell across almost all age groups, but especially among prime age men, and across most educational attainment categories. For women, participation rates were stable across age groups, but fell among the more educated.

Because unemployment rates increased substantially among Jordanians in the 2010 to 2016 period, employment rates fell even more rapidly than participation rates. The decline in employment rates was particularly notable among Jordanian men of working age, which fell from an already low 64% in 2010 to a mere 55% in 2016. It also fell among Jordanian women from 14% to 11%. Nearly all nationality groups in Jordan experienced a decline in employment rates. The large shift in the composition of Syrians in Jordan from migrant workers to refugees during the 2010 to 2016 period resulted in the largest drop in employment rates from 88% to 36% for Syrian men. However, even among male Egyptian migrants, who were in Jordan primarily to work, employment rates fell from 97% to 82%. This suggests that the deteriorating regional political and economic conditions contributed to a reduction in employment rates, which led to both an increase in unemployment and a decline in participation.

From 2010 to 2016, unemployment rates among Jordanians increased by around 50% in relative terms, from 11.4% to 17.5%. The increase was more rapid among women than among men, reflecting the difficulty women were having in finding acceptable employment. Female unemployment increased from 20.0% to 34.8%. In the past, there was no strong link between unemployment and education for men in Jordan, but now unemployment appears slightly higher

among less educated men. For women, unemployment seems to be increasing and high across education levels.

In what follows we detail these trends by examining the evolution of the working age population, labor force participation and its employment and unemployment subcomponents by age, gender, education, and nationality. Data from the Jordan Labor Market Panel Surveys (JLMPSs) of 2010⁵ and 2016⁶ are supplemented with annual data from the Jordanian Employment and Unemployment Survey (EUS).

2. Demographic Change in Jordan

Between 2010 and 2016, the population of Jordan grew from 6.7 million to 9.8 million (Department of Statistics (Jordan) 2017a). This rapid growth, an almost 50% increase in population in a period of six years, is due in part to the Syrian conflict and the influx of refugees crossing Jordan's northern border. An estimated 1.3 million Syrians were in Jordan at the time of the 2015 Population Census (Department of Statistics (Jordan) 2015a). The demographic composition of people within Jordan's national borders has undergone substantial changes due to the presence of migrants and refugees as well as changes among Jordanians themselves. These changes are critical drivers of the potential supply of labor in Jordan.

2.1 Population shifts

In this section we examine the changes in the distribution of the population between 2010 and 2016 by age and sex, region and urban/rural location. Figure 1 shows the population structure of Jordan for 2010 and 2016 based on the JLMPS.⁷ This figure illustrates an expansion in the population pyramid, particularly among younger age cohorts. As shown in Figure 1 the population in Jordan grew enormously in the six years between 2010 and 2016. The 0-4 age cohort made up the largest age interval in 2016 as it did in 2010. However, in 2016 the age group 0-4 was closer in size to the age group 5-9, suggesting a potential shift in fertility and population growth.⁸ Nevertheless, the youth bulge was very prominent in both years; children (aged 0-14) still constituted the three largest 5-year age cohorts, followed by the two cohorts of youth (aged 15-24), then young adults (aged 25-29) and finally the cohorts of adults (aged 30+).

⁵ See Mryyan (2014) for additional analysis of the JLMPS 2010.

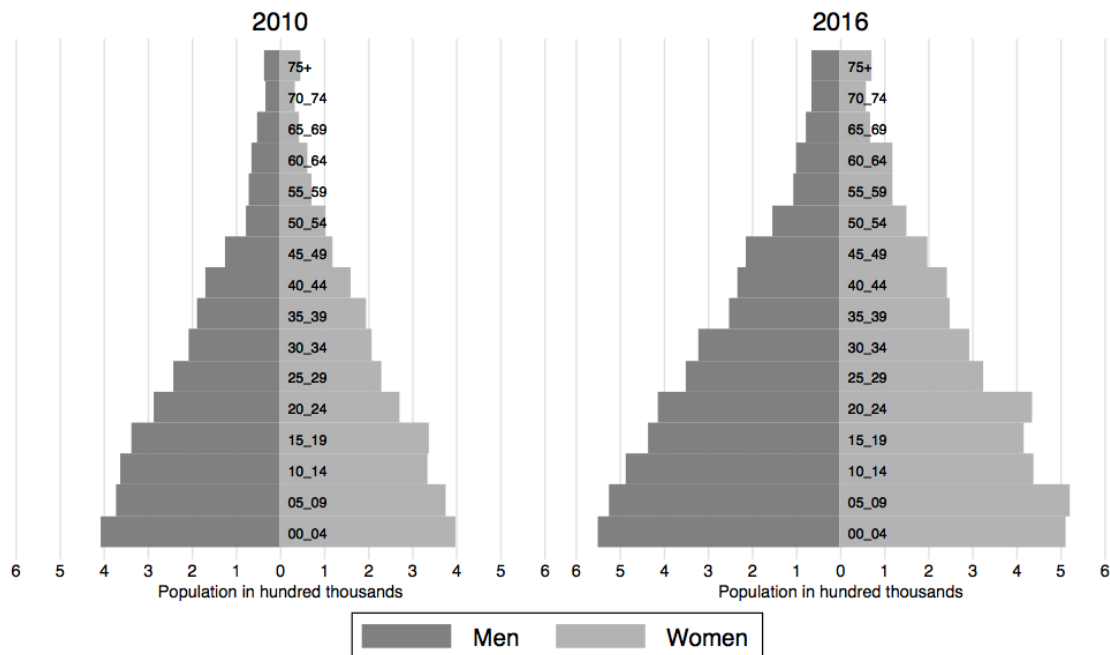
⁶ The JLMPS 2016 data are publicly available as of May 2018 from the Economic Research Forum Open Access Microdata Initiative at: <http://www.erfdataportal.com/>

For more information on the JLMPS 2016 data, see Krafft & Assaad (2018).

⁷ The JLMPS data are weighted using weights that reproduce the geographic distribution of the population obtained in the 2015 Population Census. See Krafft and Assaad (2018) for how the weights were constructed.

⁸ This result is consistent with the 2015 census, where we can see the largest age cohort, in 2015, was at age 5 with roughly parallel decreases in population by year of age moving towards both younger and older ages from age 5 (Department of Statistics (Jordan) 2015c). See Sieverding, Berri, and Abdulrahim (2018) for more information on changes in fertility.

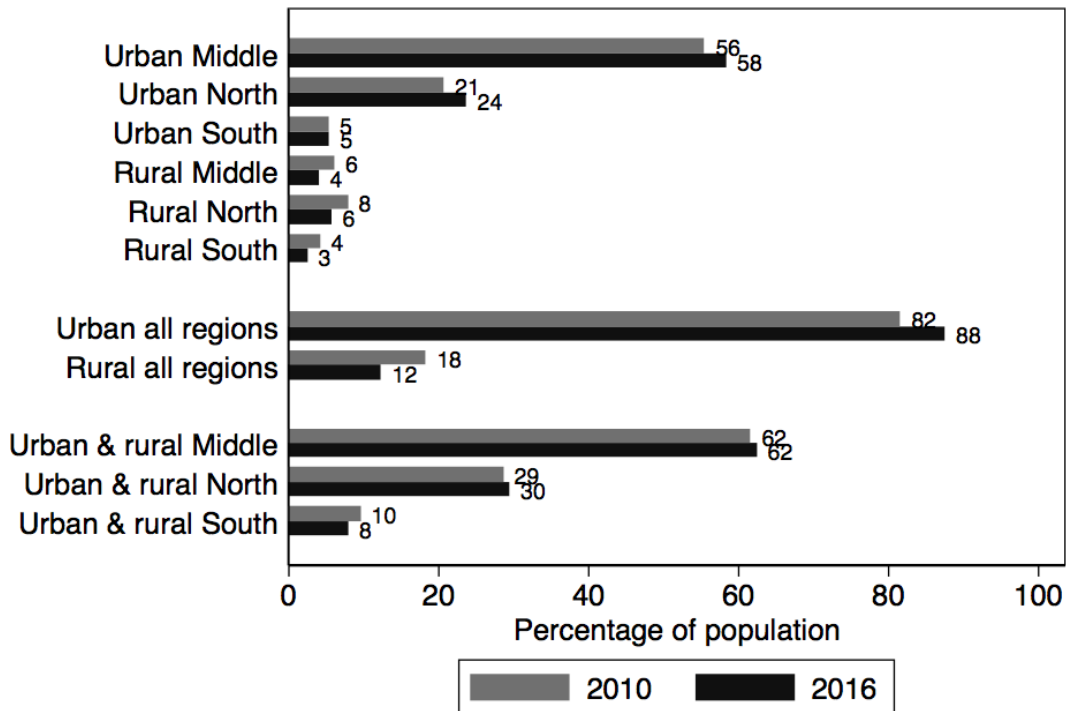
Figure 1. Population structure of Jordan (hundreds of thousands), by sex, 2010 and 2016



Source: Authors' calculations based on data from JLMPS 2010 and JLMPS 2016

The growth of the population between 2010 and 2016 was disproportionately concentrated in the urban parts of Jordan (Figure 2). The share of the population in urban areas grew by 6 percentage points, from 82% to 88%. The share rural consequently fell from 18% in 2010 to 12% in 2016. Additionally, in 2016, over half of the population (62%) lived in the Middle region, including the capital, Amman. Although the rural North shrank in relative size, from 8% to 6% the urban North, which borders Syria, increased its share of the population from 21% to 24%.

Figure 2. Population (percentage), by region and urban/rural location, 2010 and 2016

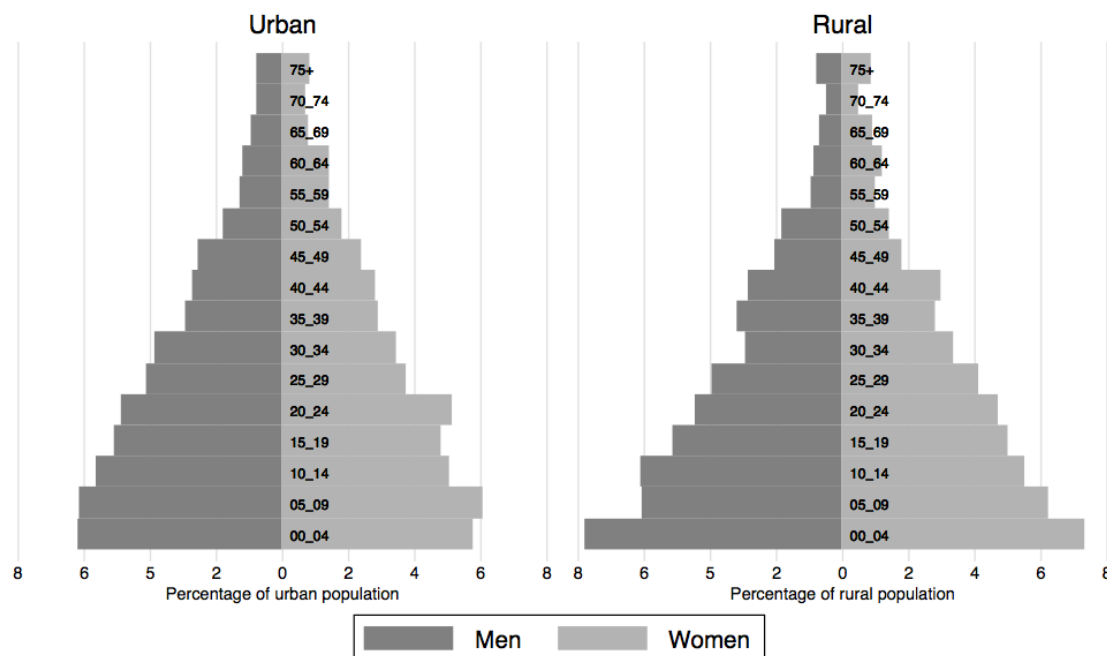


Source: Authors' calculations based on data from JLMPS 2010 and JLMPS 2016

Figure 3 shows the population structure of urban and rural areas by sex in 2016. There were more young people in rural areas; 39% of the population in rural areas was made up of children (0-14), as compared to 36% in urban areas. This figure illustrates an expansive population pyramid in both urban and rural areas, meaning that larger percentages of the population were at younger age cohorts. However, in urban areas the youngest cohort, aged 0-4, was similar in size to the preceding cohort aged 5-9. In rural areas, the youngest cohort shows continued growth. Although the urban pattern may be a temporary shift related to the current economic climate, it may also signal the advent of fertility decline and the shifting of the peak of the youth bulge to older ages.⁹

⁹ These demographic changes are discussed further in Sieverding, Berri, and Abdulrahim (2018) and Krafft and Sieverding (2018).

Figure 3. Population structure of Jordan (percentage), by sex and urban/rural location, 2016



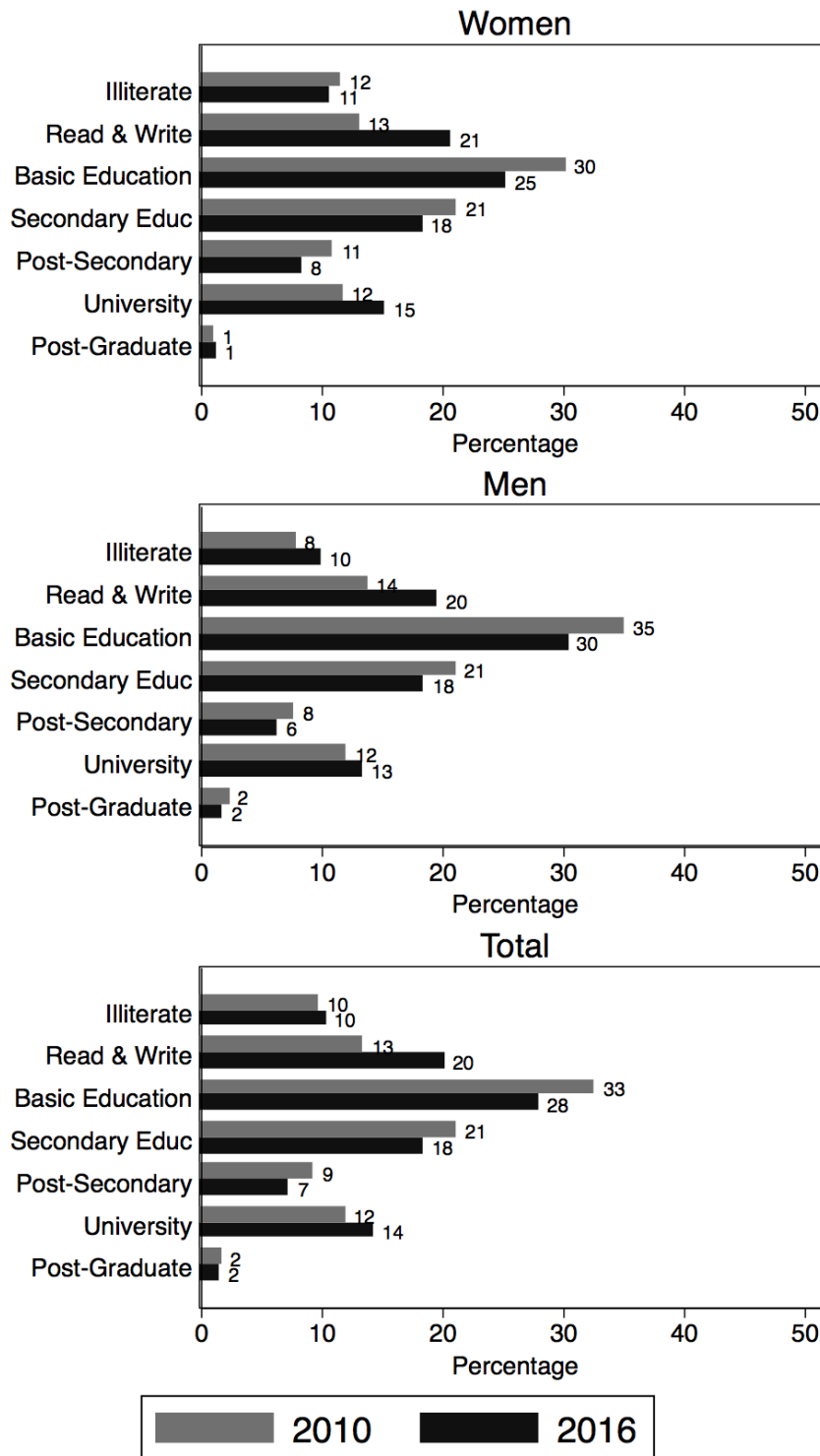
Source: Authors' calculations based on data from JLMPs 2010 and JLMPs 2016

2.2 Educational Composition of the Working Age Population

As is customary in Jordan, we consider seven education levels: illiterate, read and write, basic, secondary, post-secondary, university, and post-graduate.¹⁰ Figure 4 shows the education levels for the entire working age population by sex. The working age population are those between the ages of 15 and 64. Figure 5 similarly shows the level of education for Jordanians only. First, looking at the total in Figure 4, we see that in 2016, more individuals reported read and write (20%) than in 2010 (13%). However, among Jordanians only, we see just a three percentage point increase in read and write (from 13% to 16%), driven primarily by a four percentage point decrease in illiteracy. The large increase in read and write in the total population was driven by the influx of refugees. Although illiteracy has remained about 10% of the total population, there were lower shares with basic, secondary, and post-secondary in the population as a whole. Similar shares of university (12-14%) and post-graduate (2%) persisted. The modal education level was basic in both time periods, remaining stable for Jordanians at 33-34%. From 2010 to 2016 there was a slight drop in the share of Jordanians with post-secondary degrees, from 10% to 8%, but an increase in the share with university degrees, from 12% to 15%. Average years of schooling for Jordanians of working age increased very marginally from 11.0 to 11.1 from 2010 to 2016, but actually declined from 10.9 to 10.3 years for the country as a whole due to the influx of less educated refugees during that period.

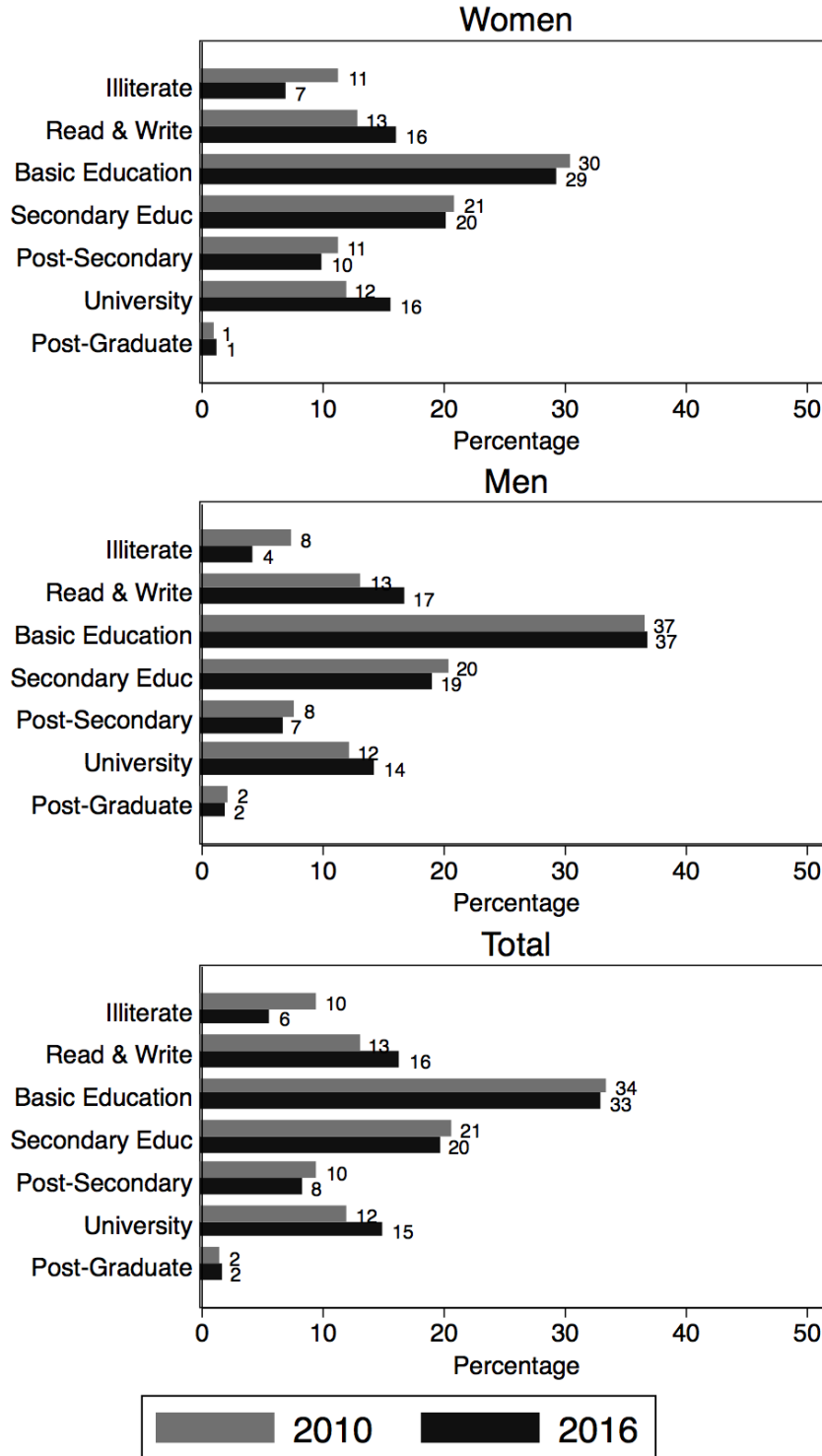
¹⁰ Basic education includes the first ten years of schooling and is the equivalent of lower secondary in other contexts. Those who completed six years of primary and three years of lower secondary school prior to the 1991 reforms that extended mandatory schooling to tenth grade are classified as having completed basic education. Secondary schooling consists of two additional years of schooling. Post-secondary schooling in Jordan consists of two years of community college education and university education is a 4-year bachelor degree.

Figure 4. Education levels (percentage), by sex, ages 15-64, 2010 and 2016



Source: Authors' calculations based on data from JLMPS 2010 and JLMPS 2016

Figure 5. Education levels (percentage), by sex, Jordanians aged 15-64, 2010 and 2016

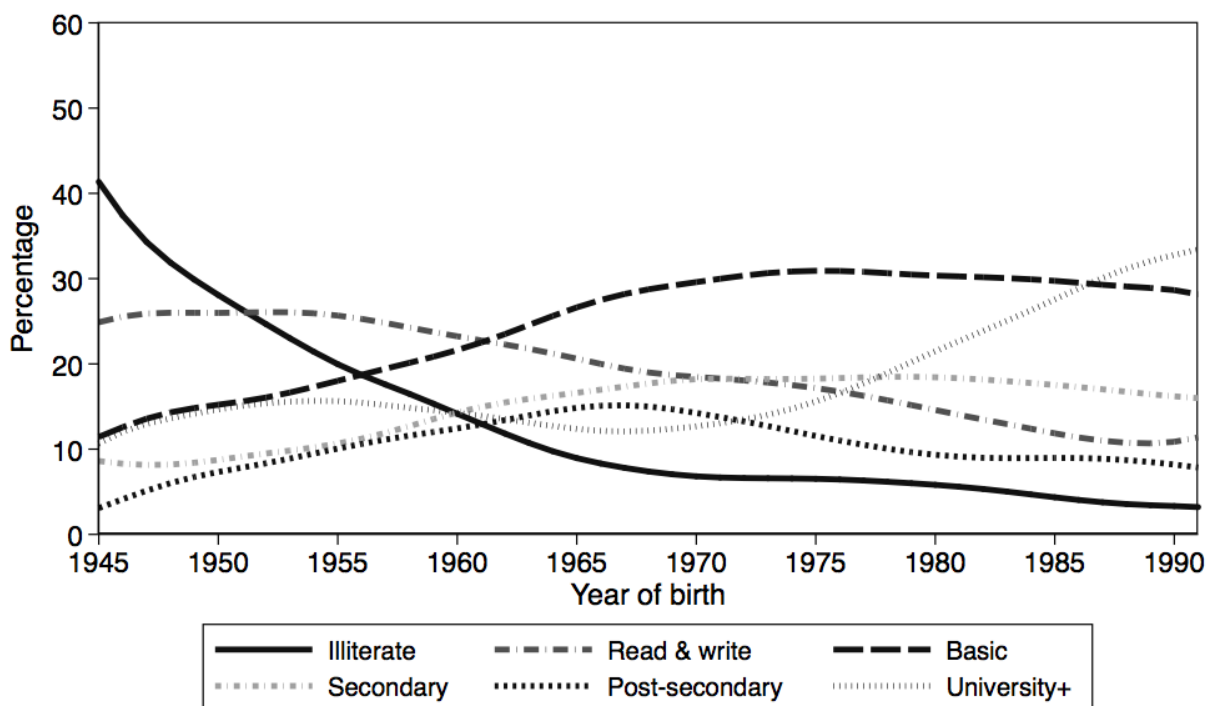


Source: Authors' calculations based on data from JLMPS 2010 and JLMPS 2016

Educational attainment has been increasing steadily across cohorts among Jordanians, with recent cohorts being much more likely to acquire university education. As shown in Figure 6, the proportion of illiterates declined sharply from the 1945 birth cohorts to the 1965 cohort and then the decline slowed thereafter. By the 1990 birth cohort, illiterates make up no more than 2-3%.

The share of those with basic education grew steadily to reach a maximum at just over 30% for those born in 1975 and declined very slowly since then. The share of those with secondary education also rose steadily to reach a maximum of about 20% for those born around 1970. The trend in the rise of post-secondary and university degrees across cohorts is notable. Post-secondary education rose rapidly at first to reach more than 15% of the population around the 1965-1969 birth cohort. As soon as the share of those with university education started accelerating, the share of those with post-secondary degrees began declining, only to stabilize somewhat since the 1980 cohort. The most notable trend by far is the rapid increase in those with university education, which greatly accelerated with those born in the early 1970s and continued to rise all the way to the youngest cohorts shown, who were 25 years of age in 2016. The share with university education among Jordanians more than doubled from about 15% (1970s cohort) to 35% (1990s cohort) across a single generation.

Figure 6. Education levels (percentage) by year of birth, Jordanians, 2016



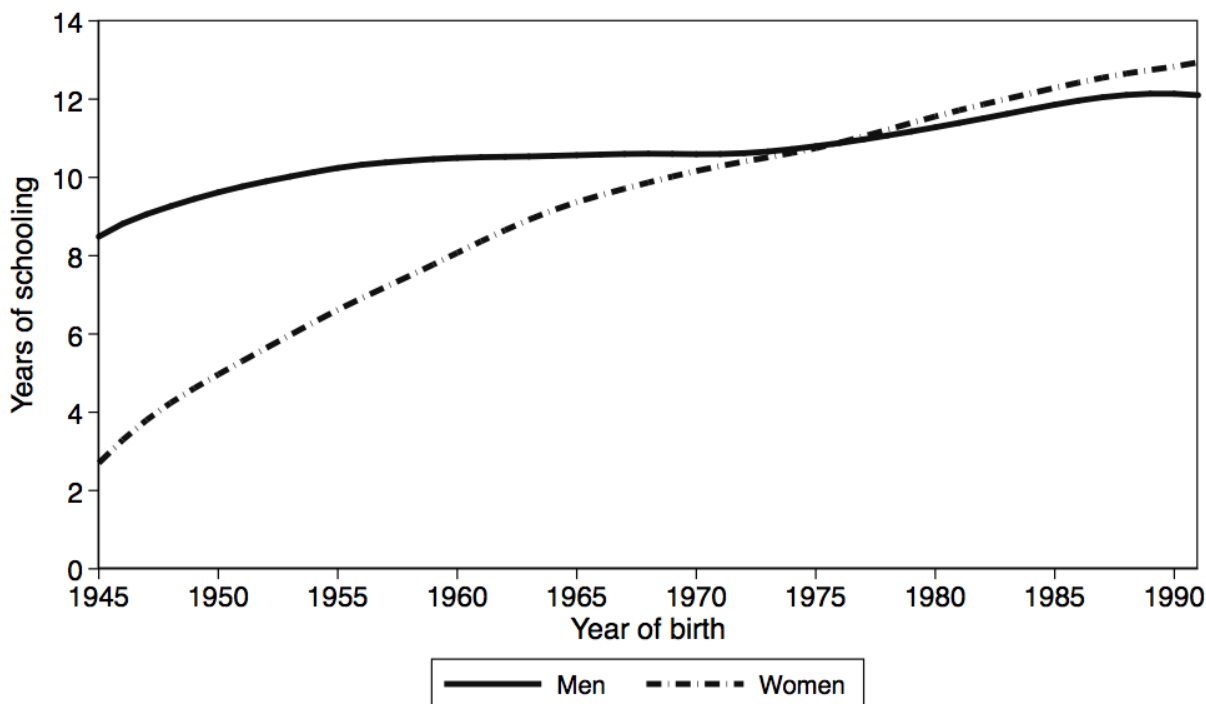
Source: Authors' calculations based on data from JLMPS 2016

Notes: Lowess smoothed with bandwidth 0.5. Restricted to those cohorts aged 25+ to ensure educational attainment is the final degree.

Gender gaps in educational attainment in the working age population continued to narrow somewhat during the 2010 to 2016 period. Average years of schooling for Jordanian men of working age actually declined slightly from 11.2 to 11.1 years, but increased for their female counterparts from 10.7 to 11.0. The narrowing and even reversal of the gender gap in education is quite apparent when we look at the average years of schooling across birth cohorts. As shown in Figure 7, Jordanian women born in 1945 had about one third the average years of schooling of their male counterparts. This gap narrowed very rapidly and actually closed completely by the 1975 birth cohort. In the subsequent birth cohorts, the gap has reversed in favor of women. By the 1990 birth cohort, women have almost a year more of education than men. This closing or even reversal of the gender gap in education is also apparent in the stock of educational attainment of

the Jordanian working age population (Figure 5). By 2016 more women of working age (16%) had university degrees than men (14%), despite having the same share (12%) in 2010.

Figure 7. Average years of schooling by year of birth and sex, Jordanians, 2016



Source: Authors' calculations based on data from JLMPS 2016

Notes: Lowess smoothed with bandwidth 0.5. Restricted to those cohorts ages 25+ to ensure educational attainment is the final degree.

3. The Evolution of the Working Age Population, the Labor Force and Labor Force Participation

3.1 Trends in Working Age Population and the Labor Force

The working age population represents the potential labor supply. For both sexes, the working age population in Jordan grew very rapidly between 2010 and 2016. It grew by approximately 2.3 million people in six years, a 60% increase, which represents an annual growth rate of 8.2% per year (Figure 8). As shown in Figure 9, the working age population among Jordanians increased by less than half the overall figure (800 thousand or 24.7%). This was still a very rapid rate of growth of approximately 3.7% per annum. As expected, the largest increase among non-Jordanians was among Syrians, who went from 19 to 644 thousand and among “other Arabs” who increased from 181 to 488 thousand. Other Arabs include Iraqis and Palestinians who were not Jordanian citizens. Despite the inflow of Syrian and Palestinian refugees, the number of working age Egyptian migrants also increased by 391 thousand.¹¹ Because of the influx of refugees, Jordan experienced

¹¹ The Jordanian Department of Statistics only changed its sampling frame for Employment and Unemployment Surveys to fully include non-Jordanians in 2017 (Azzeh 2017). Non-Jordanians tend to be under-represented in various surveys. Although we address this in the JLMPS 2016 data with nationality-specific weights from the 2015 census, the 2010 data preclude such a correction. We may thus be under-estimating non-Jordanians in 2010 relative to 2016, potentially inflating the growth of the non-Jordanian population. However, data from the 2004 Population Census, which did capture non-Jordanians, corroborates that there has been an increase in the number and share of non-Jordanians over time.

a dramatic increase in potential labor supply, on top of an already rapid increase in the working age population of Jordanians that is due to the young age structure of the population.

Because participation rates are quite low in Jordan, only a fraction of the working age population is economically active and thus part of the labor force. We distinguish in what follows between the market labor force and the extended labor force. The market labor force includes those engaged in economic activity for the purposes of market exchange or those seeking such opportunities. This definition of the labor force ignores the time and efforts of those who only produce goods and services solely for the purpose of own household consumption. The extended labor force adds to the labor force those who are involved in the production or processing of primary commodities for own household consumption (i.e. subsistence labor). Neither of the labor force definitions include those who produce other goods and services for own household consumption that do not involve the production or processing of primary commodities. The distinction between the market labor force and the extended labor force could potentially be important if a large fraction of the population is exclusively engaged in subsistence activities. While this is common, especially among rural women in many developing countries, it is not likely to be a very important distinction in Jordan where a small fraction of the population lives in rural areas and where subsistence agriculture is relatively limited in scope.

Another important distinction in quantifying the labor force is how unemployment is defined. All definitions of unemployment require that an individual did not work the preceding week (not even for one hour), desires to work, and is available to start work within two weeks if a job were available. The standard definition of unemployment requires the additional criterion of active search, which is that an individual actively searched for employment or took steps to start a business within the past four weeks. The broad definition of unemployment does not impose the active search criterion and thus includes among the unemployed those who did not actively search in the past four weeks, usually referred to as the “discouraged unemployed.” The combination of two definitions of work and two definitions of unemployment produces four possible definitions of the labor force: (i) the standard market labor force, which is the narrowest definition and requires production for market exchange and active search for inclusion, (ii) the standard extended labor force, which includes those undertaking subsistence work among the employed, but requires active search to count as unemployed, (iii) the broad market labor force, which includes only those producing for the market among the employed, but drops the active search criterion for the unemployed, and finally (iv) the broad extended labor force, the most inclusive definition, which includes those undertaking subsistence work among the employed and the discouraged unemployed among the unemployed.

Figure 8 reveals that the labor force size was only marginally different according to whether or not subsistence work is included. For men in 2016, the standard market labor force was 1.837 million and the standard extended labor force was 1.843 million, a difference of 6 thousand individuals. Similarly, for women in 2016 the standard market labor force was 364 thousand and the standard extended labor force was 377 thousand, a somewhat larger difference of 13 thousand. The distinction between the broad and standard labor force, which is essentially made up of the discouraged unemployed, was slightly more important. For men in 2016, the broad market labor force was 1.873 million, thus adding 36 thousand discouraged unemployed to the standard market definition. Among women, the broad market definition adds 21 thousand individuals to the standard market definition. Nonetheless, because the estimates were fairly close according to the various definitions, we use the standard market definition hereafter, but discuss the discouraged unemployed separately in the section on unemployment.

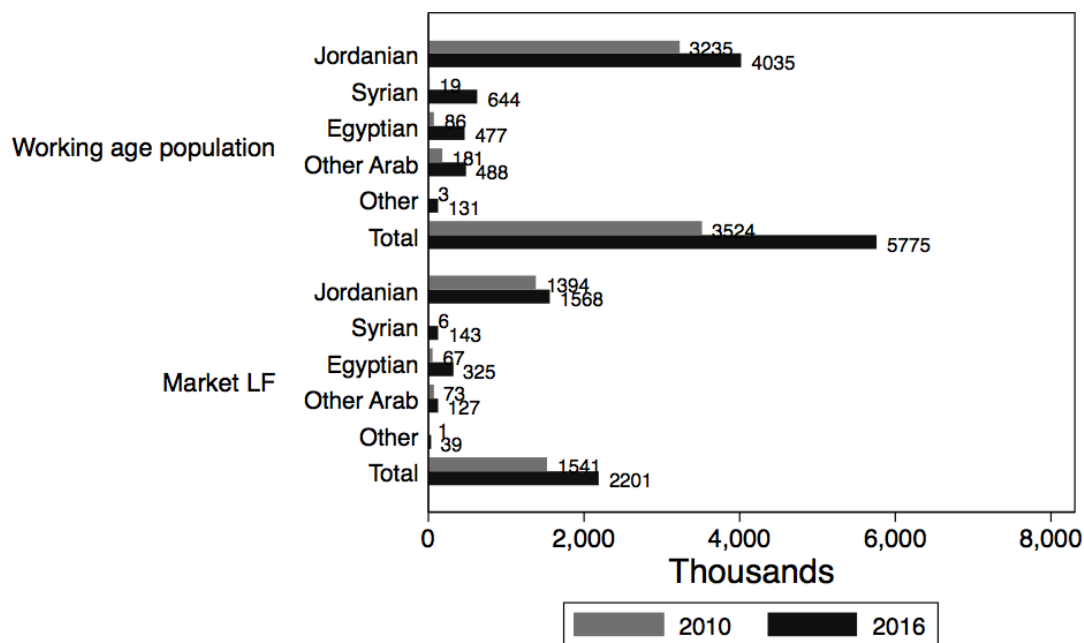
The growth of the labor force in Jordan between 2010 and 2016 was slower than that of the working age population, suggesting that participation rates were low among the incoming refugee population. The (standard market) labor force grew by 660 thousand or 42%, which was equivalent to an annual rate of 5.9% per annum. As shown in Figure 9, the labor force among Jordanian citizens grew from 1.394 to 1.568 million, an increase of 174 thousand or 12%. The annual rate of growth was 2.0% per annum, a rate that was about half as high as that of the Jordanian working age population (3.7% per annum).

Figure 8. Size of working age population and labor force (thousands), by definition and sex, ages 15-64, 2010 and 2016



Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
 Notes: The estimates provided here are the current labor force, which is based on a 7-day reference period

Figure 9. Size of working age population and standard market labor force (thousands), by nationality, ages 15-64, 2010 and 2016



Source:

Authors' calculations based on JLMPS 2010 and JLMPS 2016

Notes: The estimates provided here are the current labor force, which is based on a 7-day reference period

3.2 Trends in Labor Force Participation

A direct examination of labor force participation rates among those aged 15-64 demonstrates that participation has declined among Jordanians from 2010 to 2016, with the decline being particularly large among Jordanian men. As shown in Figure 10, overall participation among Jordanians fell from 43% to 39%. The decline among Jordanian men, whose participation went from 70% to 63%, is particularly concerning. Even at 70% in 2010, Jordanian working age male participation was very low by international standards. According to the ILO modeled estimates, the world average participation rate for men aged 15-64 in 2010 was 81% and the average for Arab States was 78% (ILO 2017a). Previously, low participation was attributed to the unusually early retirement among Jordanians of working age (Al Hawarin 2014). At 63% in 2016, Jordan would have the sixth lowest participation rate among men 15-64 in the world.¹²

Participation among Jordanian women was 17% in both 2010 and 2016. The ILO modeled estimate for Jordan in 2010 was 16%, putting Jordan in the fifth lowest place in the world. Its modeled estimate for Jordan in 2016 was 15% putting Jordan at the second lowest place in the world after Syria (ILO 2017a). This stagnation in Jordan's already very low female participation rates comes at a time when education among women in Jordan has caught up with that of men.

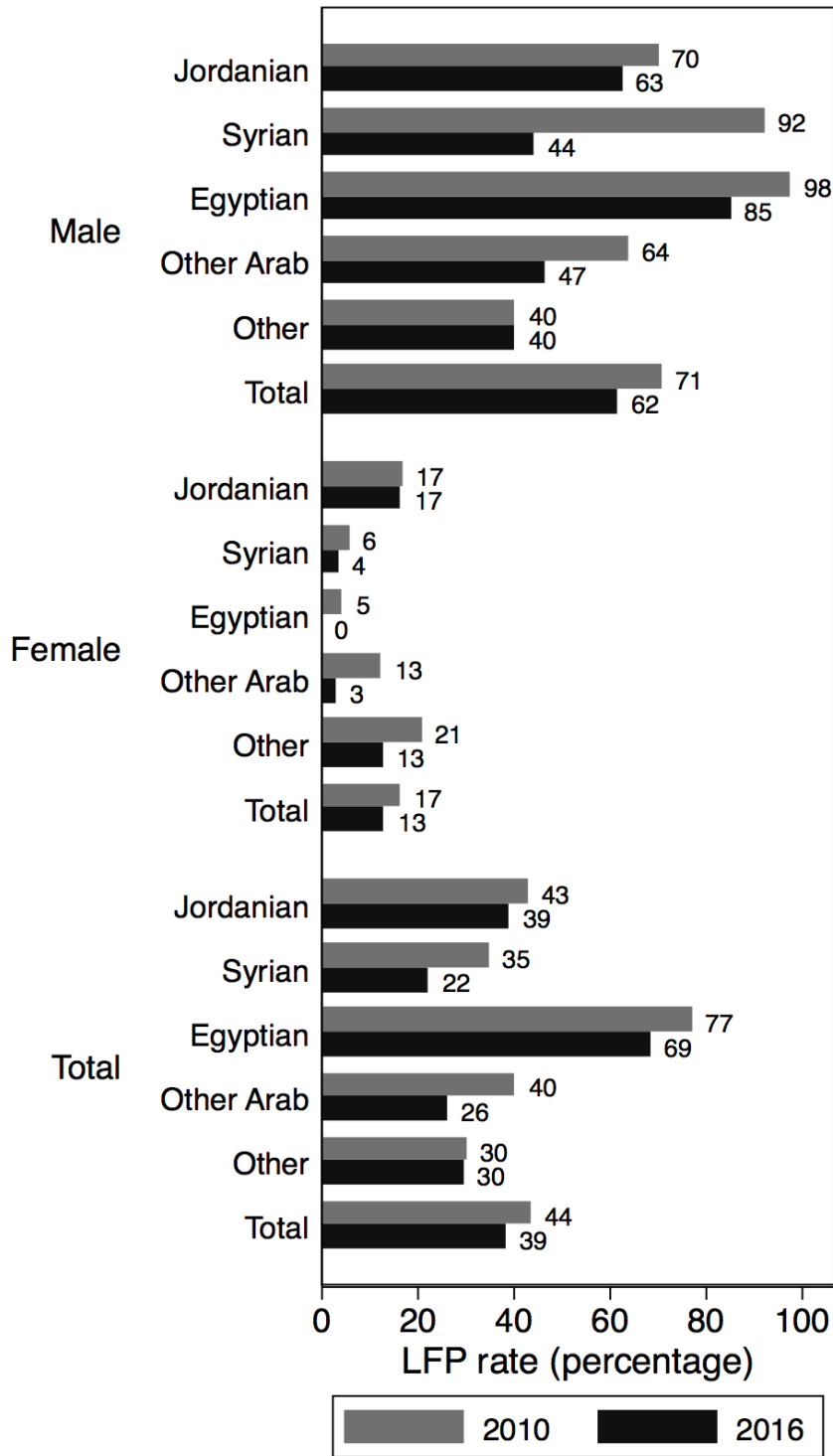
As shown in Figure 10, participation has also declined among other nationality groups residing in Jordan. One needs to interpret the decline in the participation of other nationality groups with caution due to the large compositional changes that occurred in these groups as a result of migration and forced migration from 2010 to 2016. As expected, participation declined the most

¹² The ILO modeled estimate for male 15-64 participation in Jordan in 2016 was 68% putting it at the fourteenth place from the bottom (ILO 2017a). The models have likely not caught up with recent developments.

among Syrian men who were made up primarily of migrant workers in 2010 and therefore participating at very high rates (92%), and were mostly made up of refugees in 2016 who were participating at much lower rates (44%). Participation rates also declined substantially among Egyptian men, who were almost exclusively temporary migrant workers who come to Jordan without their families. The reduction in participation among Egyptian men is a little more difficult to explain, since those who were unable to find work among them should have either left the country or declared themselves unemployed, since they were in Jordan in order to work. It is possible that some of these non-employed Egyptian men were reluctant to declare themselves as unemployed in an official survey out of fear of being deported.

Participation among non-Jordanian women dropped as well across the board. For Syrian women, it dropped from 6% to 4%. For the very few Egyptian women that reside in Jordan, it dropped from 5% to 0%. It also dropped substantially among “other Arabs” and non-Arab nationalities.

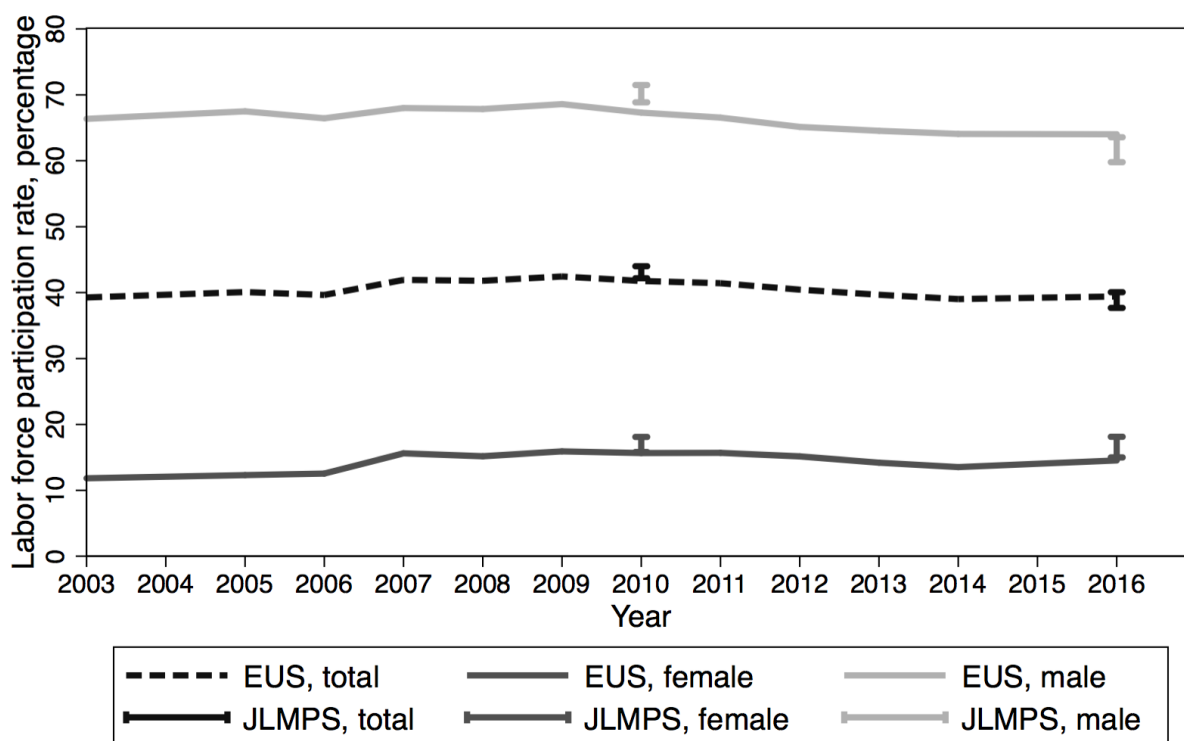
Figure 10. Labor force participation rate (percentage), standard market definition, by sex and nationality, ages 15-64, 2010 and 2016



Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
 Notes: 7-day reference period

The trends in participation captured in the two JLMPS waves were consistent with trends observed in the Employment and Unemployment Survey (EUS), the official quarterly labor force survey of the Jordanian government (Figure 11). The total participation rate in 2016 was the same across the EUS and JLMPS—39%. According to the EUS data, male participation rates peaked at 69% in 2009 and declined steadily since then to 64% in 2016. The JLMPS 2010 found a 70% participation rate for men, in line with 69% in 2009 and 67% in 2010 from the EUS. The JLMPS 2016 male participation rate of 62%¹³ was slightly lower than the EUS estimate of 64%, but to a similar degree as the JLMPS 2010 was higher. The female participation rate in the JLMPS 2016 (17%) was two percentage points higher than the EUS (15%). Female participation rates remained consistently low throughout the preceding decade.

Figure 11. Trends in the labor force participation rate (percentage), by sex, Jordanians aged 15-64, 2003-2016



Source: Authors' calculations based on DoS, EUS Survey, Various Years and JLMPS 2010 and 2016

Notes: Bars indicate 95% confidence intervals from JLMPS, accounting for strata and PSUs under which household was initially sampled.

3.3 The Age Profile of Participation in the Labor Force

As shown in Figure 12, male labor force participation dropped for every age group of men with the possible exception of the oldest. The steepest declines were for men in the prime working ages of 35 to 55. In 2010, there was almost universal participation among men aged 30 to 40, but by 2016, participation rates among this group had fallen to around 88-89%.¹⁴ In 2010, male

¹³ Statistics in this figure are slightly different than in preceding figures due to the inclusion of those out of the manpower basis (permanently disabled) as non-participating in the JLMPS data in order to maintain comparability with the EUS.

¹⁴ The participation rates we observe in the JLMPS at 88-89% for 30-34 and 35-39 were just slightly below those in the census of 92-91%.

participation fell steeply after age 40, a symptom of the excessively early retirement problem (Al Hawarin 2014). Changes in pension regulations adopted in 2010 (Alhawarin and Selwaness 2018) were supposed to stem this tide of early retirement, but the effects of reform appear to have been counteracted by the deteriorating national economic conditions. The gradient with which participation declined after age 55 in 2010 seems to have moderated somewhat by 2016. The age profile of female participation was much more stable than that of male participation. Participation remained almost the same across the age profile.

Figure 12. Labor force participation rate (percentage), standard market definition, by sex and age, Jordanians aged 15-64, 2010 and 2016

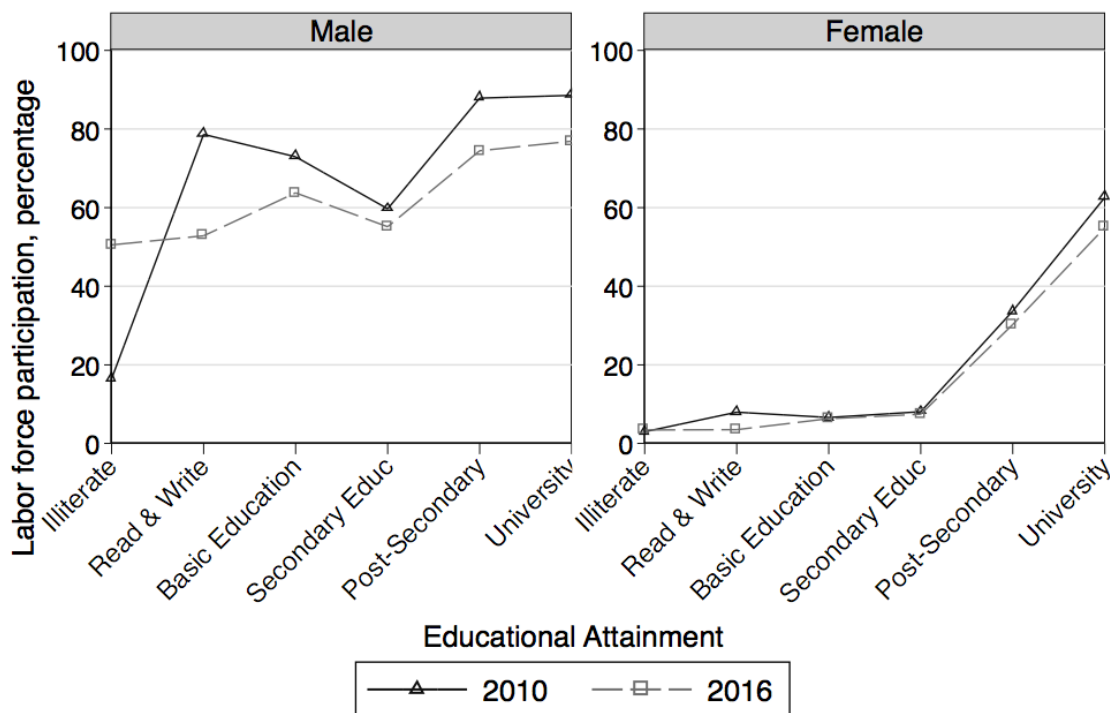


Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
Notes: 7-day reference period

3.4 The Education Profile of Labor Force Participation

As was the case by age, Jordanian male participation rates declined across the entire education spectrum between 2010 and 2016. The only exception was an increase in the very low participation rates recorded for illiterate Jordanian men in 2010. As shown in Figure 5, illiterates made up only 8% of the male working age population in 2010, a share that fell to 4% in 2016. Their participation was unusually low in 2010 and in 2016 was more in line with that of other Jordanian men. Male participation generally rises with education in Jordan, with a dip at the secondary level that reflects young men that are continuing to study. Post-secondary and university degrees are generally terminal degrees in Jordan and thus have the highest participation rates. In 2010, the participation rate at these education levels were more than 10 percentage points higher than the level with the next highest rates, which was for men who were just literate but had no degrees. In 2016, participation rates followed a similar pattern, albeit shifted downward overall, with those with the highest education having the greatest participation. Among women, participation was very rare until at least a post-secondary, and more frequently a university degree. At these levels, there was a slight decrease in participation from 2010 to 2016.

Figure 13. Labor force participation rate (percentage), standard market definition, by education, Jordanians aged 15-64, 2010 and 2016



Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
Notes: 7-day reference period

4. The Evolution of Employment in Jordan

A major component of the economically active population are those who are in employment. According to our market labor force definition, these include all those who were occupied for at least one hour per week in any activity producing a good or service for the purpose of market exchange, either as employees receiving a monetary or in-kind wage or salary, or as employers, self-employed workers, or unpaid family workers. We begin by examining trends in employment rates by sex, followed by the age and education profile of employment.

4.1 Trends in the Employment-to-Population Ratio

The employment to population ratio (EPR), or the employment rate for short, was very low for Jordanians in 2010 and became even lower by 2016. Overall, only 38% of all Jordanians 15-64 were employed in 2010, a figure that dropped to 32% by 2016 (Figure 14). The ILO estimate of the 15+ EPR in Jordan for 2016 was 35%, which makes Jordan the third lowest country on that measure after the Occupied Palestinian Territories and Bosnia and Herzegovina (ILO 2017b). The ILO estimate for the male EPR for the population 15+ in 2016 was 57%, which was slightly higher than our measured estimate of 55% for the 15-64 population. The ILO estimate places Jordan at number 31 from the bottom in the world. At 52% it would be at number 19 from the bottom. The ILO estimate of the female 15+ EPR was 11% compared to 9% in JLMPS 2016 for those 15-64. This was the second lowest female EPR in the world after Syria.

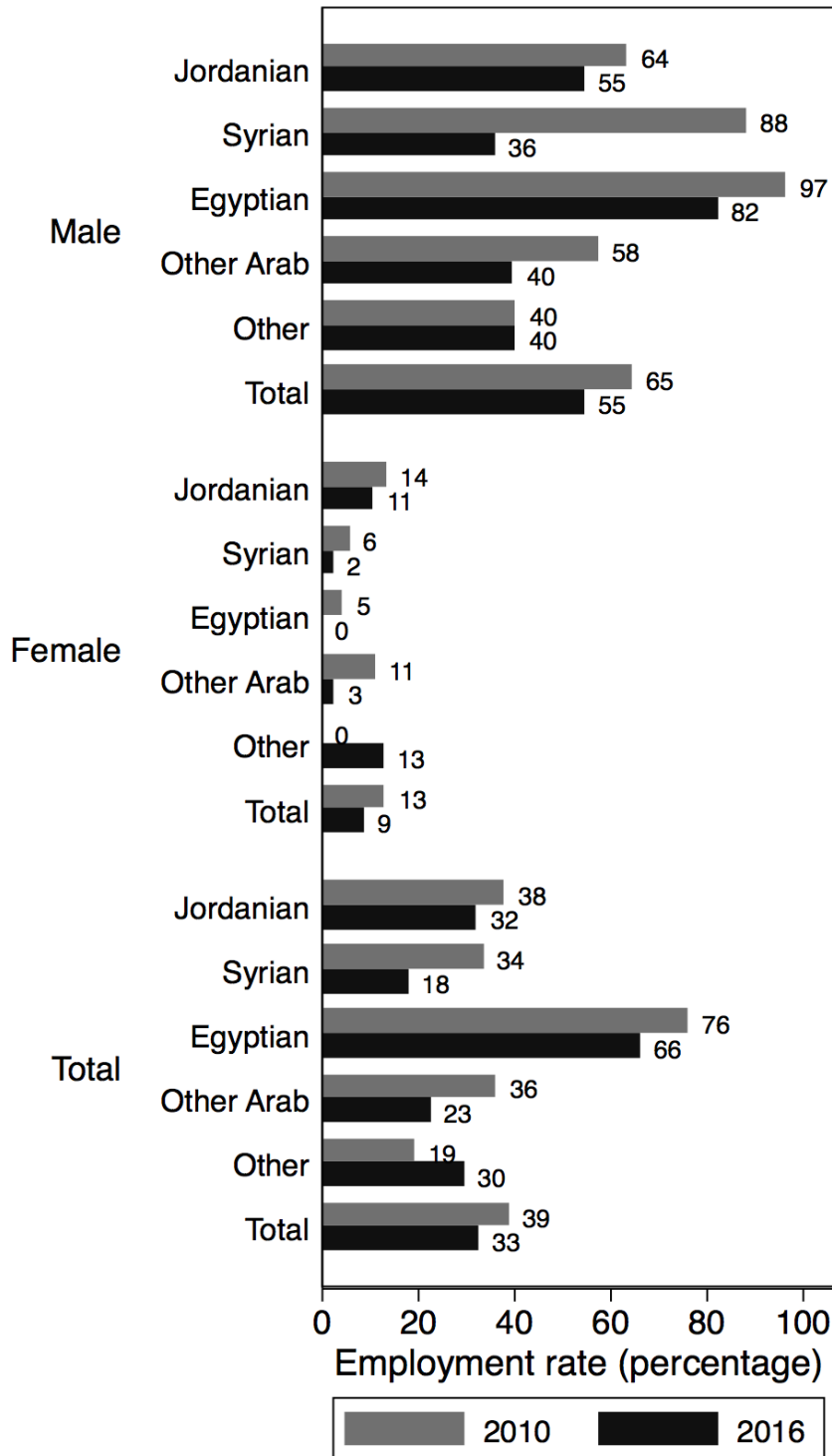
The fall in the EPR is apparent for other nationality groups residing in Jordan as well. With the change in the mix of Syrians present in Jordan going from migrant workers to refugees, the EPR

among Syrian men fell from 88% to 36%. Among Syrian women, employment rates fell from 6% in 2010 to 2% in 2016. These low employment rates among Syrian refugees are examined in more detail in Krafft et al. (2018).

The almost universal employment among Egyptians men in 2010 was to be expected, since they were mostly in Jordan as temporary migrants in order to work. However, even among this group of migrants, employment rates for men have fallen in 2016 to 82%, showing the impact of deteriorating economic conditions on migrant workers as well. The few Egyptian women who were in Jordan were generally not engaged in employment.

Other Arabs, which were mostly made up of Iraqis and Palestinians from Gaza had somewhat lower employment rates than Jordanians to start with. For the men among them, employment rates fell by 18 percentage points from 58% in 2010 to 40% in 2016. For Other Arab women, employment rates fell even more from 11% to 3%. Other nationalities in Jordan were mostly made up of South and Southeast Asians, particularly Pakistanis. They were the only group for whom employment rates increased from 2010 to 2016, from 19% to 30%.

Figure 14. Employment rate (percentage), market definition, by sex and nationality, ages 15-64, 2010 and 2016

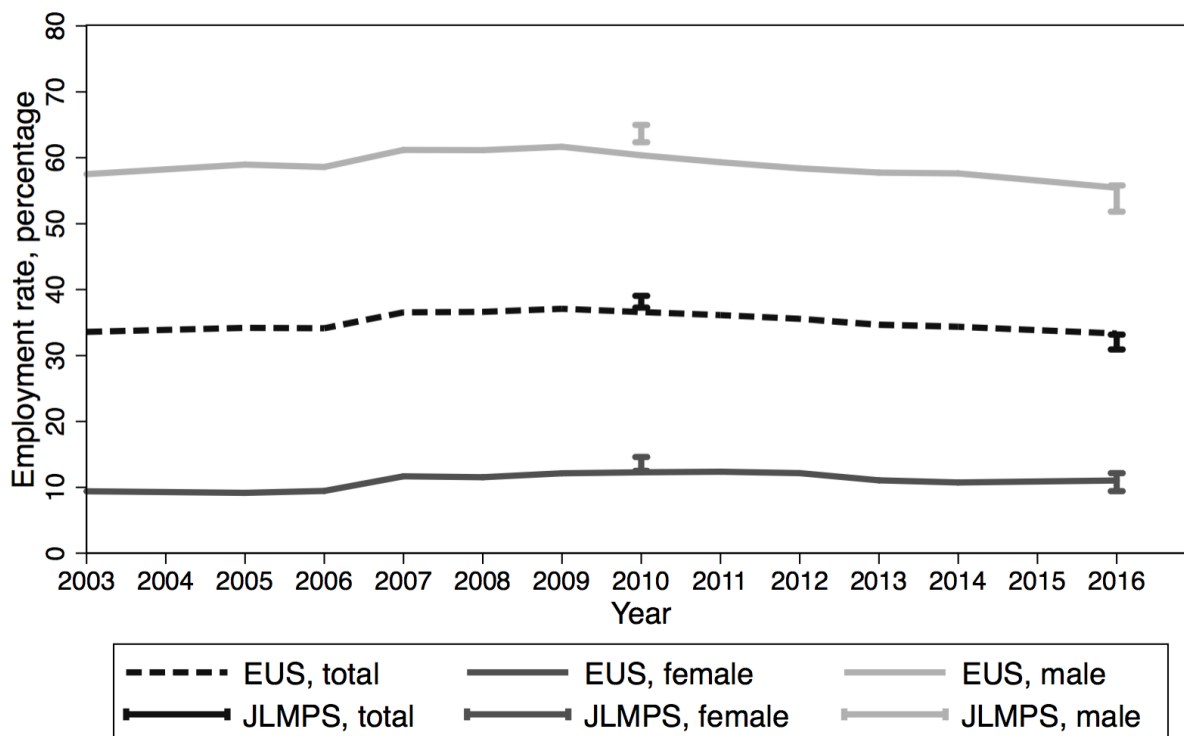


Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
 Notes: 7-day reference period

Figure 15 places the decline in employment observed in the JLMPS in the larger context of EUS trends for Jordanians. The JLMPS estimate of employment in 2010, at 38%, was similar to the

EUS estimate of 37%. The 2016 estimate of 32% from the JLMPS was similar to the EUS estimate of 33%. For men, employment in the EUS peaked at 62% in 2009 and has been declining ever since. In the EUS data employment rates peaked for women at 12% around 2011. Although the JLMPS 2016 estimates were lower than EUS 2016, they were consistent with the declining trend.

Figure 15. Trends in employment rates (percentage), by sex, Jordanians aged 15-64, 2003-2016



Source: Authors' calculations based on DoS, EUS Survey, Various Years and JLMPS 2010 and 2016
 Notes: Bars indicate 95% confidence intervals from JLMPS, accounting for strata and PSUs under which household was initially sampled.

4.2 The Age Profile of Employment Among Jordanians

Figure 16 shows the employment rate by age and sex in 2010 and 2016 among Jordanians. The profiles are quite similar to those of participation. Again, the main notable points are the decline in employment rates after age 35 for men, a phenomenon that was noted in 2010, but continued unabated through 2016, despite changes to the social insurance and early retirement rules.¹⁵ For women, besides the decline after age 30-35, the striking result is how low the employment rates were and the fact that they have declined even further from 2010 to 2016. This decline occurred despite a substantial change in the educational composition of the female working age population toward university education over the six-year period.

¹⁵ See Alhwarin and Selwaness (2018), who discuss changes in social insurance regulations in Jordan and their effect on early retirement.

Figure 16. Employment rate (percentage), market definition, by sex and age, Jordanians aged 15-64, 2010 and 2016

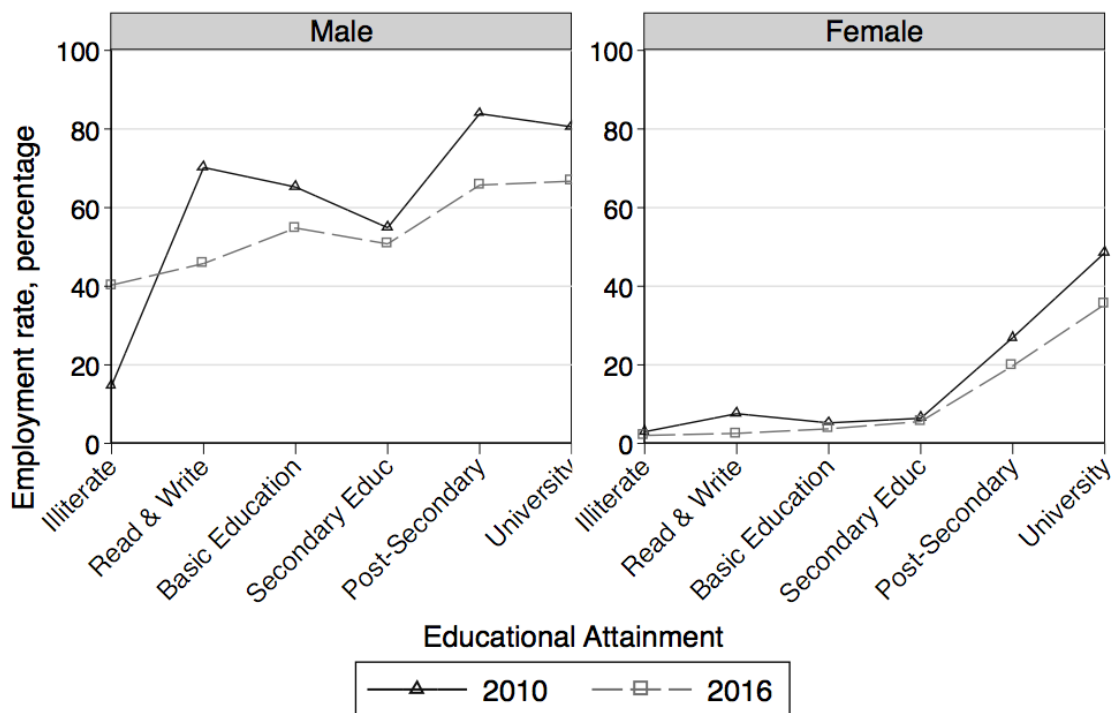


Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
 Notes: 7-day reference period

4.3 The Education Profile of Employment among Jordanians

Figure 17 shows the employment rate by education level for Jordanians (aged 15-64). This figure confirms the decline in employment rates among men at all educational levels except for the small group of illiterates. Among women, employment rates increase with education, especially after the secondary level. However, despite the substantial increase in the share of university-educated women, overall female employment rates have still fallen. This finding is explained by the substantial decline in the employment rate among educated women. In fact, the employment rate among university-educated women appears to have declined by around 10 percentage points between 2010 and 2016, a relative decline of about one fifth.

Figure 17. Employment rate (percentage), market definition, by education, Jordanians aged 15-64, 2010 and 2016



Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
 Notes: 7-day reference period

5. The Evolution of Unemployment in Jordan

The second component of labor force participation besides employment is unemployment, or those not working even for a single hour during the reference week, but seeking employment. We start with the standard definition that requires a non-employed person desiring and available for work to have actively searched for employment in the four weeks prior to the interview. We then move to add those who are not working, ready and available for work, but who have not taken any steps to seek work, the so-called discouraged unemployed. Together these form the unemployed according to the broad definition.

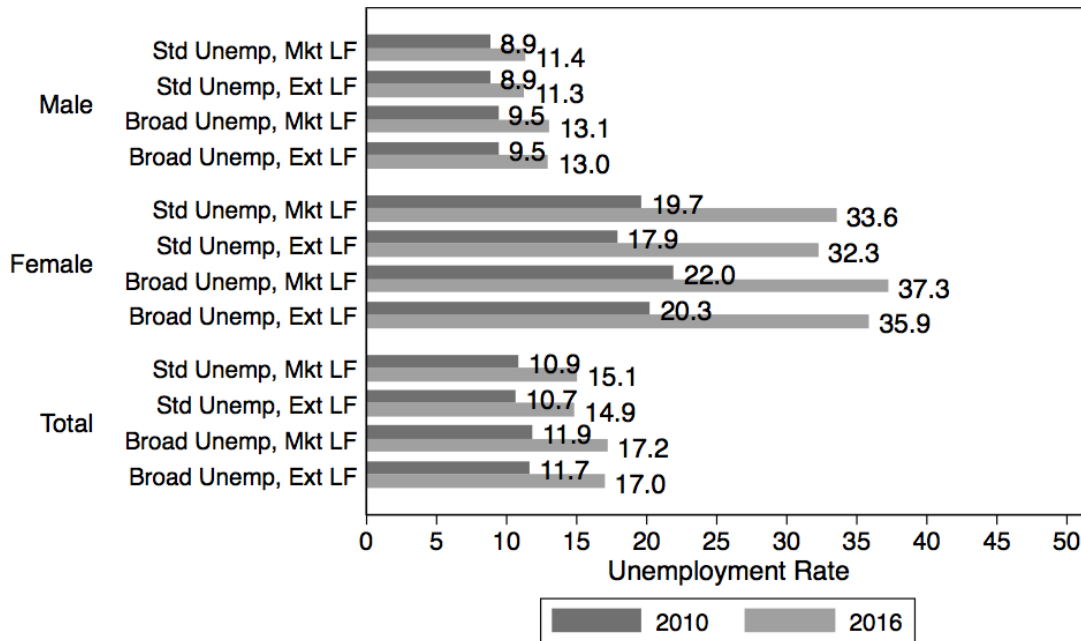
5.1 Trends in Unemployment

Examining unemployment for the population as a whole, first, i.e. including migrants and refugees, we can see that unemployment in Jordan was substantially higher in 2016 compared to 2010, irrespective of the definition of labor force and unemployment used. Figure 18 shows the unemployment rate—unemployment as a share of the labor force—under each of these definitions. Figure 19 restricts this analysis to only Jordanians, whose unemployment rates were slightly higher but otherwise follow similar patterns. Focusing on the standard market definition of unemployment in Figure 18, overall it rose from 10.9% to 15.1% from 2010 to 2016. It rose from 8.9% to 11.4% for men and from 19.7% to 33.6% for women.

The difference across these two sets of definitions shows the extent of discouraged unemployment in Jordan, which appears to have approximately doubled over the period. For men, the proportion

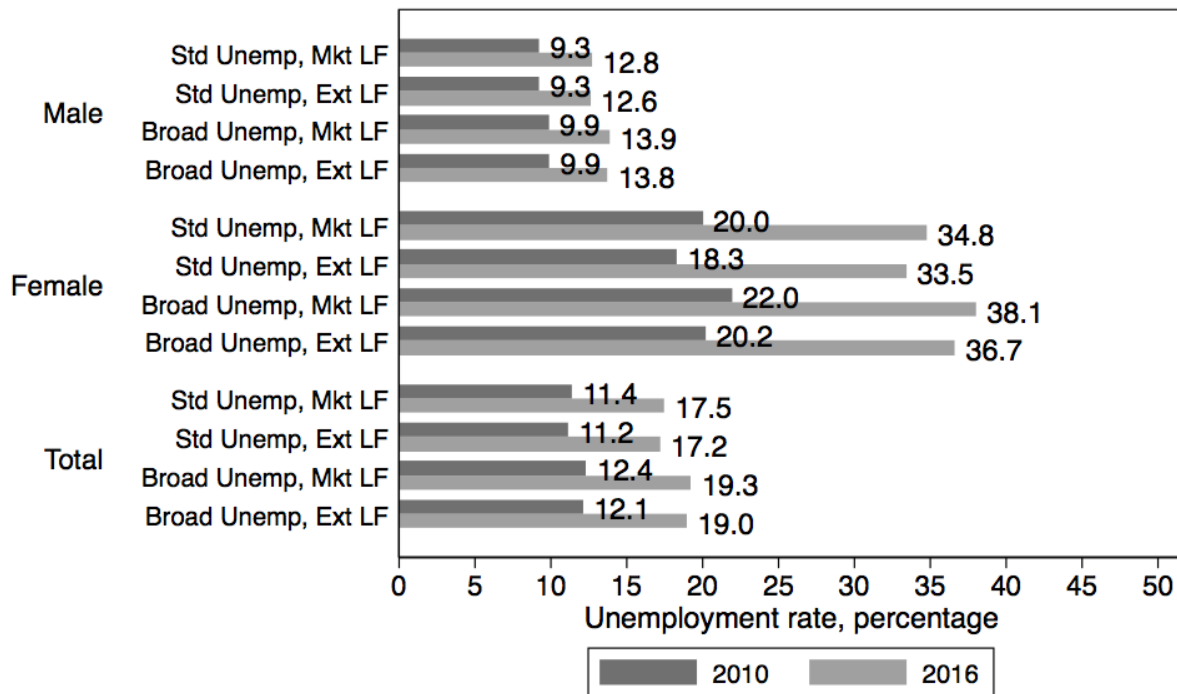
of discouraged unemployed in the labor force increased from 0.6% in 2010 to 1.7% in 2016 (using the market definition of labor force). For women, the proportion of discouraged unemployed in the labor force went from 2.3% in 2010 to 3.7% in 2016. As such, the discouraged unemployed made up about a tenth of both the male and female unemployed, broadly defined. Such a large increase in the share of the discouraged indicates that a large number of job seekers were ceasing to actively search for employment because they believed there were no jobs to be had.

Figure 18. Unemployment rate (percentage), by definition and sex, ages 15-64, 2010 and 2016



Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
 Notes: 7-day reference period.

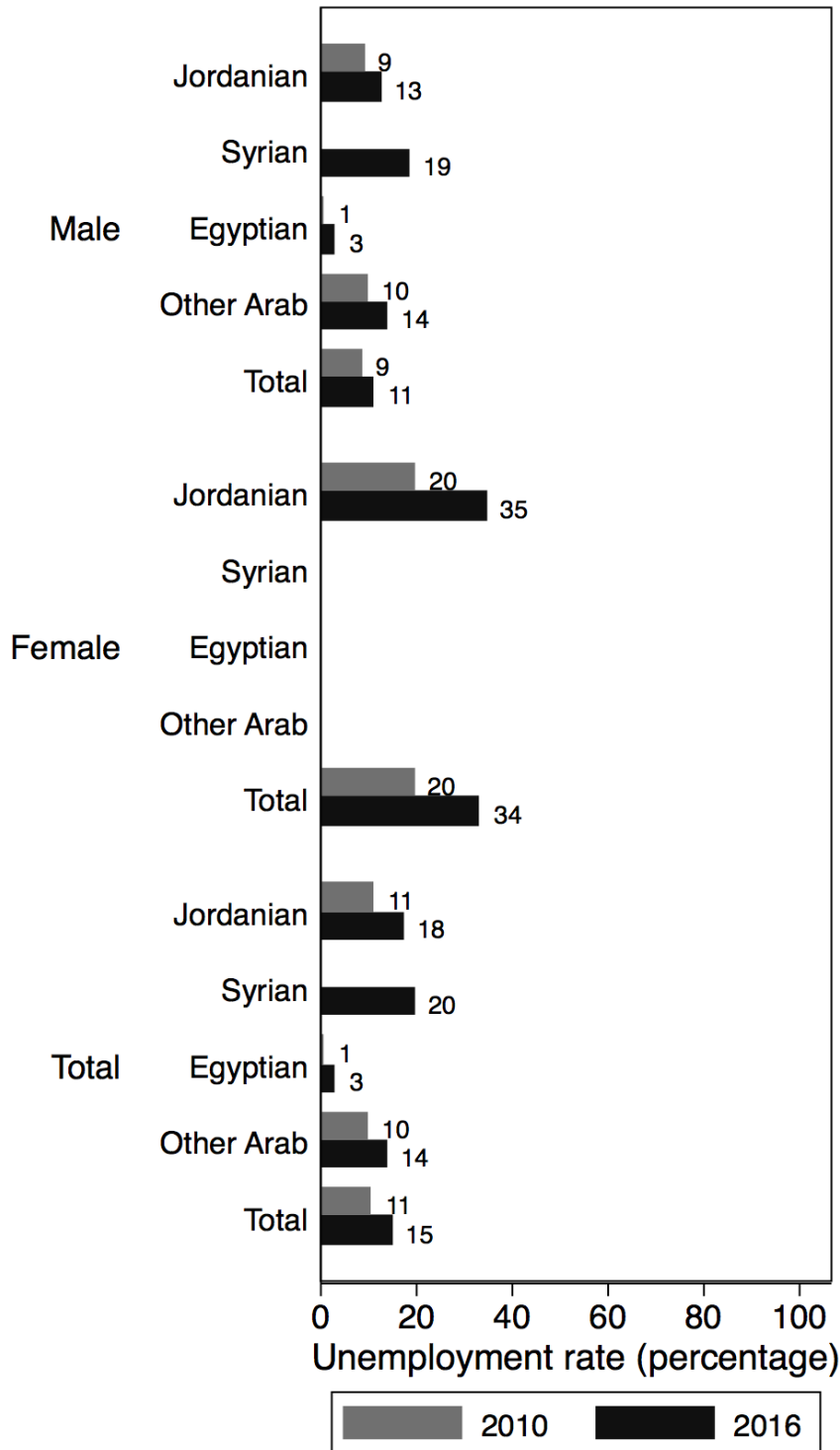
Figure 19. Unemployment rate (percentage), by definition and sex, Jordanians aged 15-64, 2010 and 2016



Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
 Notes: 7-day reference period.

Figure 20 shows the unemployment rate using the standard market definition by sex and nationality. Unemployment among Jordanian men rose 5 percentage points, from 9% to 13% between 2010 and 2016. Jordanian women experienced a 15 percentage point rise in unemployment between 2010 (20%) and 2016 (35%). Non-Jordanian women (Syrian, Egyptian, and other Arabs) were largely not in the labor force (Figure 10), and thus unemployment rates for these groups are missing (i.e. number of observations in the data are under 50). Therefore, male unemployment almost entirely drives total unemployment of non-Jordanians in both 2010 and 2016. In 2016, the unemployment rate was 20% for Syrians, 3% for Egyptians, and 14% for other Arabs in Jordan. We saw however that employment rates have fallen substantially for Egyptian men from 2010 to 2016, but these Egyptians who were not working in 2016 appear not to be declaring themselves as unemployed, probably because they fear being deported if they do.

Figure 20. Unemployment rate (percentage), standard market definition, by sex and nationality, ages 15-64, 2010 and 2016

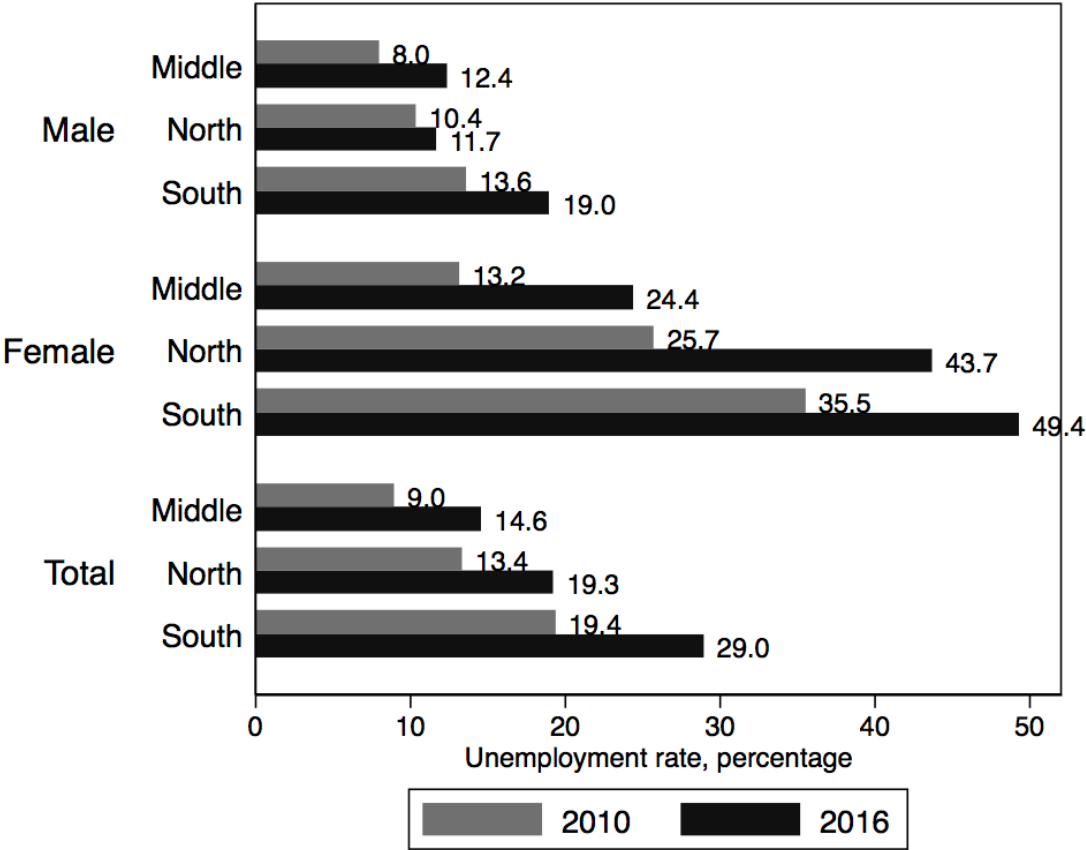


Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
 Notes: 7-day reference period. Missing categories indicate number of observations < 50

Figure 21 shows the unemployment rate among working age Jordanians by region and sex. The unemployment rate increased in all regions for both men and women. Although in 2010 the male

unemployment rate was lowest in the Middle region (8.0%) followed by the North (10.4%) and the South (13.6%), the relative increase in unemployment was the lowest in the North, turning this region into the lowest region for Jordanian male unemployment in 2016. It is notable that the highest rate of refugee influx was in the North region, yet the largest increases in unemployment were in the South, a region with almost no refugee influx.¹⁶ For Jordanian women, the lowest relative increase in unemployment was in the South region, which was the highest unemployment region. Female unemployment rates doubled in the Middle region from 13.2% to 24.4%, and increased from 25.7% to 43.7% in the North region. Female unemployment rates doubled in the Middle region from 13.2% to 24.4%, and increased from 25.7% to 43.7% in the North region.

Figure 21. Unemployment rate (percentage), standard market definition, by sex and region, Jordanians aged 15-64, 2010 and 2016



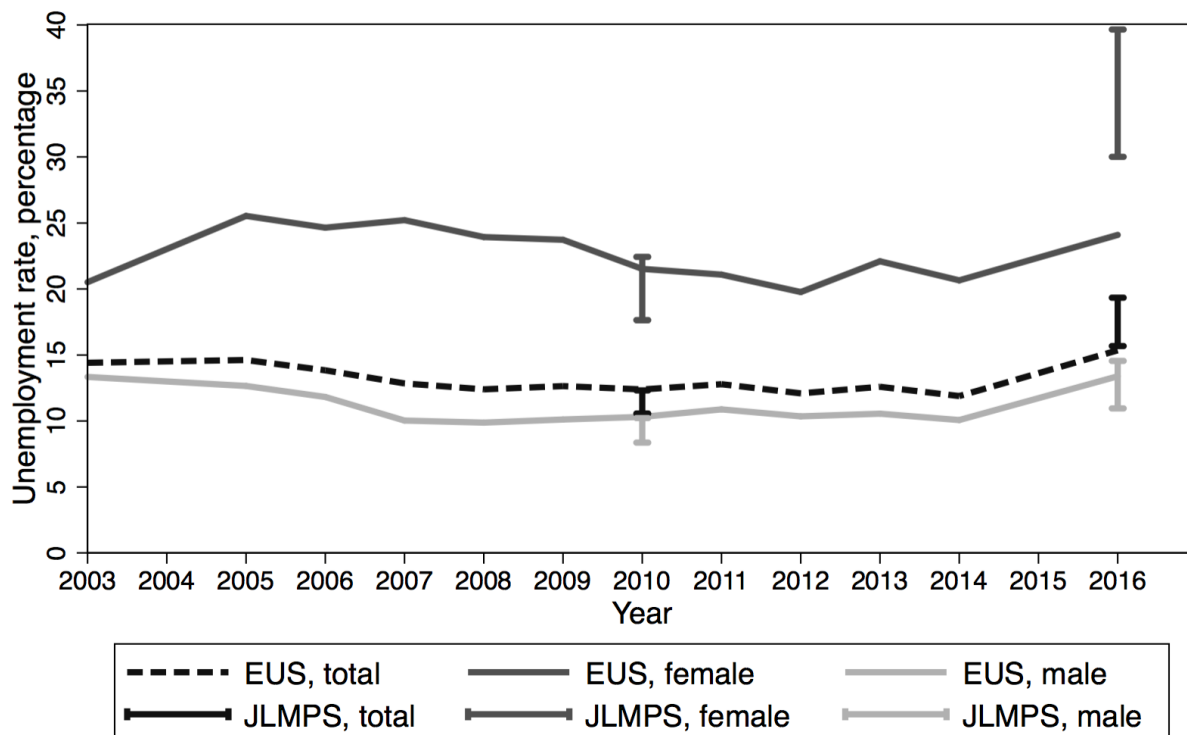
Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
 Notes: 7-day reference period.

The increase in unemployment since 2010 represents a reversal of the previous decline in unemployment. Figure 22 presents trends in unemployment for Jordanians from the JLMPS and EUS. The JLMPS 2010 estimated a total unemployment rate of 11.4%, close to the 12.4% for the EUS and representing a gradual decrease from the preceding decade. The JLMPS 2016 estimated a total unemployment rate of 17.5%, higher than the 15.4% of the EUS. However, it must be kept in mind what the timing of the JLMPS was. The survey started at the end of Q4 of 2016 (December)

¹⁶ Analyses of the EUS, although they generate somewhat different unemployment rates by region in 2016, confirm the general pattern of higher unemployment rates in the South for men, dating back to 2008.

and continued through April 2017 (Q1 and Q2 of 2017). Although the 2017 EUS microdata were not yet available for analyses, the press release for Q2 of 2017 of the EUS shows an unemployment rate of 18.2% in Q1 and 18.0% in Q2 of 2017 (Department of Statistics (Jordan) 2017b). These results were very closely aligned with the JLMPS 2016 results. In particular, the press release notes an unemployment rate of 33.0% for women in Q1 and 33.9% in Q2. The 34.8% female unemployment rate from JLMPS 2016 was in line with these results, as well as the 36.2% female unemployment rate observed in the 2015 census (Department of Statistics (Jordan) 2015b).

Figure 22. Trends in the unemployment rate (percentage), by sex, Jordanians aged 15-64, 2003-2016



Source: Authors' calculations based on DoS, EUS Survey, Various Years and JLMPS 2010 and 2016

Notes: Bars indicate 95% confidence intervals from JLMPS, accounting for strata and PSUs under which household was initially sampled.

5.2 The Age Profile of Unemployment among Jordanians

Unemployment is primarily a challenge involving new entrants in Jordan, and remained so despite rising unemployment rates. As shown in Figure 23, unemployment of men in 2010 peaked around age 20 at around 20%. For male youth (aged 15-24), 15-20% were unemployed in 2010. Unemployment among Jordanians increased between 2010 and 2016, primarily for young entrants. Male youth, particularly the youngest men, had unemployment rates above 40% in 2016. Rates remained above 20% up to around age 25, and higher than in 2010 through age 35. The unemployment rate for older adult men (35-65) was stable at about 5%. For women in 2010, the unemployment rate was also highest for youth. Unemployment of Jordanian women peaked around 22 years old at 40%. After the peak at 22 years old, the rate decreased to below 5% by age

45. Unemployment rates rose over time across all ages for women, but were highest in 2016 among youth, above 70% for the youngest entrants,¹⁷ and remained above 20% through age 35.

Figure 23. Unemployment rate (percentage), standard market definition, by sex and age, Jordanians aged 15-64, 2010 and 2016



Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
Notes: 7-day reference period

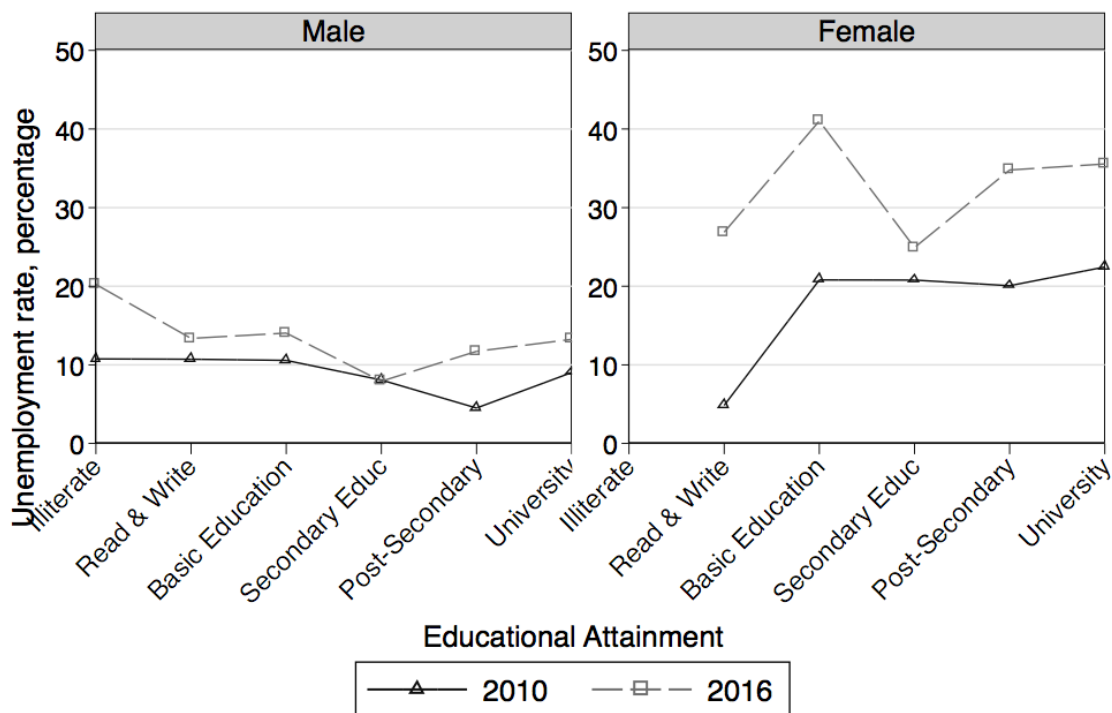
5.3 The Education Profile of Unemployment

Figure 24 shows the unemployment rate by education level for Jordanians (aged 15-64). In 2010 Jordanian male unemployment was similar at around 10% for all education levels except for post-secondary, where it was 5%. In 2016, male unemployment increased at every level of education, except secondary. In particular, the most pronounced increases in unemployment were for illiterates and those with post-secondary education. The unemployment rates for less educated Jordanian women must be viewed with some caution given their very low participation. Although in 2010 unemployment was lowest for the least educated, in 2016 it was highest for those with a basic education. In 2010 the levels with modest participation, secondary through university, had similar unemployment rates. Female unemployment rose slightly with education across secondary, post-secondary, and university in 2016.¹⁸

¹⁷ These very high entry unemployment rates are consistent with the 2015 census, which found an unemployment rate of 42.3% for men aged 15-19 and 25.4% for men aged 20-24. The census found an unemployment rate of 78.3% for women aged 15-19 and 60.3% for women aged 20-24 (Department of Statistics (Jordan) 2015d).

¹⁸ Because the unemployment rate is as a share of the labor force, there are more differences between our statistics and the census simply due to sampling variability. However the general pattern of unemployment being higher at some of the lower education levels for men and higher—but very variable—at lower levels of education for women holds (Department of Statistics (Jordan) 2015b).

Figure 24. Unemployment rate (percentage), standard market definition, by education and age, Jordanians aged 15-64, 2010 and 2016



Source: Authors' calculations based on JLMPS 2010 and JLMPS 2016
 Notes: 7-day reference period. Missing categories indicate number of observations<50

6. Conclusion

Jordan has experienced an enormous demographic shift as a result of the Syrian conflict and refugee influx. This paper has shown a large increase in the working age population of Jordan since 2010, both as a result of the increase in the Jordanian population as well as that of refugees and migrants. At the same time, regional and national economic conditions have become increasingly challenging, limiting the potential absorption of this expanding labor supply. Consequently all indicators of participation in economic activity show some decline, not only for the incoming refugee population, but also for Jordanians. Employment rates for Jordanians, already at very low levels in comparison to other countries, have declined substantially for both men and women. These declining employment rates were partly accommodated through rising unemployment rates, but also through declining participation rates, as discouragement and early withdrawal from the labor force increased. While Jordan has one of the lowest female participation rates in the world, second only to its northern neighbor Syria, it also has the sixth lowest male participation rate in the world and that rate has fallen steadily.

A number of policy changes have been introduced in recent years to discourage early retirement among Jordanian men (Alhawarin and Selwaness 2018). However, the challenging regional economic conditions that Jordan experienced since 2011 may have limited the effectiveness of these policies. With rapidly rising educational attainment, especially among women, Jordan must find ways to make better use of its existing human resources to achieve higher levels of growth and human development.

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