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Abstract

Before the Great Recession (i.e., the Financial Crises 2008), young single women in Jordan, like those in other Middle Eastern and North African countries with a strong Islamic cultural tradition, experienced important changes in social roles. In this paper, we claim that economic theory may help to understand some of these changing patterns. It is argued that liberalization in the Jordanian economy resulted in important changes in the Jordanian social norms regarding gender roles, school enrollment, labor participation, marriage, and fertility. In particular, three apparently disconnected contemporaneous developments may be interrelated: the increase in women's marriage age, the growth of young single women's participation in the labor market, and the increase in the young male unemployment rate. This process stopped in the late 2000s, both due to exogenous (the Great Recession after 2008 and the Syrian civil war in 2011) and endogenous (existing attitudes towards working women) reasons. We argue that economic conditions may play a role as the driving forces for social transformation, and opens a window for women's opportunities and empowerment.

Key words: Young single women, gender discrimination, marriage, Jordanian society, social norms, social economic transformation

JEL Codes: J12, J16, N35

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1 INTRODUCTION

Before the Great Recession (i.e., the Financial Crises 2008), young single women in Jordan, like those in other Middle Eastern and North African (MENA) countries with a strong conservative social norms, experienced important changes in their social roles. Mary Kawar (2001) examined women’s life cycle, their economic opportunities, and the nature of the social norms in Jordan.¹ She reported an ever-growing trend in the 90s of young women joining the labor market, becoming an additional source of income for their families, and also getting married at a later stage and having fewer children than their antecessors. This trend has roughly continued at the beginning of the 21st century, although with some disparities, among MENA countries: both women’s female labor force and age at marriage have been rising, while the fertility rate has been falling (see² Figures 1, 2 and 3 and Table 1).³ Some authors view these changes as the dawn of an Islamic women’s revolution defying the social contract (e.g., Omar 2001, p.16), like that previously witnessed in Western societies.

In this note, we claim that economic theory may help to understand some of these changing patterns. It is argued that the economic developments of the Jordan economy in the 1980s, together with the subsequent liberalization and openness process in the 1990s, resulted in important changes in Jordanian social contract regarding gender roles, school enrollment, labor participation, marriage, and fertility. In particular, three apparently disconnected contemporaneous developments may be interrelated: the increase in women’s marriage age, the growth of young single women’s participation in the labor market, and the increase in the young male unemployment rate.

Initially, we review the most important features of Jordanian society (Section 2) and the socioeconomic changes taking place from the 1980s to the Great Recession (Section 3), both described in the Kawar paper. Next, we use economic theory to understand the changing roles of young single women in Jordan before the Great Recession in Section 4. We evidence that economic transformations affected the traditional social norms in Jordan.

These changes and trend stopped in the late 2000s because of several reasons, both exogenous (e.g, the Recession of 2008 and the Syrian civil war) and endogenous (e.g., attitudes towards working women). We review the evidence of this broken trend in the concluding Section 5. As a suggested lesson of this work, we argue that economic conditions may play a role as the driving forces for social transformation, and opens a window for women’s opportunities and empowerment. In addition, as these economic conditions vanish, social transformation stops, then negatively affected women.

¹She describes the results of a 1997 survey interviewing 302 households in 14 locations across the city of Amman. The questionnaire explored family relations, income distribution and management, life and work history, social activity, and views on marriage and work. It was administered to single women between 20 and 30. These women were working, unemployed, or non-working, but not enrolled in education.

²Sources of all figures can be found in Appendix A.2.

³The literature has proposed different explanations for the low female employment rates in Jordan. For instance, Kasoolu et al (2019) suggest traditional social norms and poor public transportation. Al Khatib (2020) indicates that females are at a greater disadvantage compared to males because of three main reasons: *“the lack of jobs in the private sector, [...] the negative perception within the Jordanian population towards vocational training, [and] the way employers perceive females is one of the obstacles attributing to joblessness among Jordanian women.”* Women are perceived as a liability since they may suddenly leave their job and are ‘at the risk of being married at any time’.

2 THE TRADITIONAL “SOCIAL NORMS” IN JORDAN

According to Kawar (2001), the Jordanian tradition treats sons and daughters differently. Tradition assigns sons three main roles. He must marry a woman in exchange for a *mahr*.^{4,5} Besides, in Jordanian marriages, the groom and his family contributed almost all of the cost of marriage, which includes the jewelry, housing and furniture costs, and celebration costs (see Salem 2014, Sec.7.8 and Sieverding et al. 2019, Sec.2.5).

As a second role, a son must also be an income support for his own (new) family, as men have to be “*capable of fulfilling their traditional roles as providers [...] for their brides as is the tradition*” (Kawar, 2001, p.7). Finally, as a third role, a son must take care of his elderly parents later in life: “*Unlike daughters [...] parents consider their sons as their old-age security.*” (Kawar, 2001, p.15). Kawar (2001, p.16) indicates that the income support role is why parents “*cultivate their son’s loyalties*” both by “*expanding [their sons’] economic opportunities [...] not only ensure a better future for sons but also for parents,*” and by permitting them “*more social freedom than daughters*” (p.16) and accepting that “*they need to spend on recreational activities*”.

As for daughters, tradition assigns them two roles. First, “*daughters are expected to marry and live elsewhere.*” (Kawar 2001, p.15) They are expected to be married early, as “[T]he acknowledged stages of Arab women’s life cycles excludes youth and single adulthood.” (Kawar 2001, p.21) Second, daughters are expected to remain under patriarchal hierarchy, dependent and under control, as “*The persistence of the male breadwinner ideology [means that] women still need to depend on a male guardian throughout the different stages of their lives, be it father, bother, husband or son.*” (Kawar 2001, p.17)

Observe, therefore, that sons –and not daughters– are also expected to take care of their mothers as their old-age security. Usually, a daughter has her social life restricted by her parents, as “[Y]oung men and women are not supposed to get to know each other outside of the family domain.” (Kawar 2001, p.23) with lacks income control (“[T]raditionally gold jewellery is one of the only form of wealth that women had exclusive ownership rights.” Kawar 2001, footnote 5) and marriage arrangements (“[P]arents’ attitudes [are that] marriages are arranged and security and reputation rather than love is important.” Kawar 2001, p.23). Very often control goes beyond marriage, since marriage arrangements are arrived at with relatives to keep daughters within the family domain. This is why “*young women [...] prefer to marry non-relatives so that they will have new lives outside of their communities which they often perceive as less constraining.*” Kawar (2001, p.22).

To summarize, the Jordanian traditional “social norms” assigns the subjection of women,

⁴A *mahr* –or *dower* in English– is the obligation, in the form of money or possessions paid by the groom, to the bride at the time of Islamic marriage (Spies 1991). This income or wealth is solely received by the bride, so it is different from other social traits concerning marriage, such as the *bride price* (the income or resources paid by the groom or the groom’s family to the bride’s parents) or the *dowry* (the income or resources brought forth to the marriage by the bride, usually provided by the bride’s parents or family).

⁵ “[S]ons have to save in order to get married. In Jordanian society a man is expected to provide bride-price as well as housing upon marriage. Therefore, marriage is costly for men and it is customary for parents to facilitate their sons’ marriage through financial help. This [...] makes the marriage of a son a costly affair that involves all family members.” (Kawar, 2001, p.16). In many cases, son marriage is arranged, as “Traditionally, parents prefer to arrange their children’s marriages whether for sons or daughters.” (Kawar, 2001, p.22).

first to her family, then to her husbands, and, later in life, to her sons.

3 SOCIAL AND ECONOMIC TRANSFORMATION IN JORDAN BEFORE THE GREAT RECESSION

In this section, we review the most important features of the socioeconomic changes taking place in Jordan before 2008.

3.1 *Economic and social conditions*

The economy of Jordan is classified as an emerging market economy. Concerning economic conditions, the Jordanian economy presented two main milestones for the thirty-year spell previous to the Great Recession.⁶ The first period encompasses the two decades previous to 1990. Living standards rose strongly in Jordan in the period 1972-1982 (Figure 4). But the decline in foreign aid after the oil crash in 1983 was not matched by substantial budgetary cutbacks. Jordanian GNP stagnated between 1982 and 1987, and the economy ended in an economic and financial crisis in 1988 with an external debt default. This crisis brought with higher prices and falling wages⁷ (see Figures 5–6). Accordingly, living standards dropped sharply during most of the 1980s (Figure 4).

The second period begins after 1990. The Jordanian economy embarked on a route of ‘liberalization’ and ‘global integration’ (see Kardoosh, 2019), which attracted both foreign and domestic investment (Figure 7), and created new job opportunities. As a result, there was a spectacular increase in per capita GDP by 47% from 1990 to 2008. Growth was mainly reported in manufacturing industries and technology-related fields. However, the adjustment of the Jordanian economy to the new open and liberalized environment brought with some detriments; in particular, the unemployment rate was higher for both women, 28,7%, and men, 11,6% in 1995 (Figure 8).

Concerning economic conditions, in the 1990s and 2000s, Jordanian society was amid a demographic transition (Figure 9).⁸ The mortality rate declined, as a result of improved health care, while the average number of births per woman in Jordan had been declined from 7,7 in the period 1970-75 to 4 within 2000-2005 (Figure 3 and Table 1). The age structure reveals that 21,6% of the Jordanian population was between 15-24 years old in 1990, and a third of the working population was in that same group (Figures 10 and 11(a)); these numbers were reduced to 19.8% and 29% by 2008, respectively (see World Bank 2022c).

⁶For a more detailed description of the evolution of Female Labor Force Participation in this period, see Boustati (2020, Sec.5).

⁷There is no official series of average wages for the Jordan economy. Although there exists a series of compensation of employees from 1976 at the National Accounts, no long series for labor participation and the number of employees are available. In Appendix A.1, we constructed a series for the average real wage per worker in Jordan from 1976 to 2019.

⁸See Chesnais (1992) for an excellent theoretical and empirical exploration of the theory of demographic transition.

3.2 *The changing economic environment for women: participation in the labor market*

Jordanian women took a more active role in economic activities outside the household in the 1990s and 2000s. There are three features of these women who were incorporated into the labor market (see Kawar 2001, pp.2–3 and 5): they were young, highly educated, and single. First, they were **young**: women ages 15-24's participation increased from 5.7% in 1961 to about 14% by 2000 (Figure 11(b)); and, among actively working women in 2000, 48.9% were below 30 (Figure 12). Second, they were **highly educated**: women's illiteracy rate decreased from 48% in 1979 to 10.1% in 2007; and, concerning young females ages 15-24, the illiteracy rate was below 15% from the 1970s and almost non-existent on the 21st century (Figure 13). Perhaps surprisingly, Jordanian women outstrip men in studying secondary and tertiary education since 1990 (Figure 14).⁹

Finally, they were **single**. Both Jordanian women and men have been delayed marriage: the average age of marriage for women increased from 17 in 1971 to 25.4 in 2004 (see Department of Statistics 1999 –cited by Kawar 2001, p.2– and United Nations 2019, respectively), while the average age for men increased from 25 to 28.6 in the same period (Figure 2). In addition, single women comprised over 50% of economically active women in Jordan before 2008 (Figure 15).¹⁰ These developments have been of crucial interest and led some authors, like Omar (2001, p.11), to suggest that “*with Islam as the predominant religion, women's choice to delay marriage could be seen as a challenge to the religious status quo*”, given that within the Islamic tradition “*marriage holds a primary place from a religious perspective*”.

Kawar (2001, p.4) pointed out several reasons why interviewed young women were entering the labor market: “*Changes in demographic structures and marriage patterns,*” which implies that “*young adult men and women live longer with their parents*”; “*the decline of the extended family*”; and, “*the decrease in real wages and rising costs of living and rising unemployment levels.*” In fact, the survey reports that “*increase household income*” is the most important reason behind young working women's labor force participation (see Kawar, 2001, Table 1).

However, the increase in women's entry into the labor force is simultaneous with an increase in the unemployment rate. Therefore, it is of great interest to ascertain whether there are specific jobs for women. Both in the survey for young workers (Kawar, 2001, p.5) and in official data, jobs are surprisingly segmented by gender (Figure 16). Young men work mainly in more labor-intensive sectors and, hence, earn more, while women perform in more capital-intensive jobs with lower wages, although higher skills may be required. Kawar's survey, carried out in 1997, reported for the private sector that 61% of young male employment is related to construction, trade, transportation, finance, and also the emerging manufacturing sector; meanwhile 65% of young female jobs are in the manufacturing sector

⁹In the survey carried out by Kawar (1997) in Amman, 82% of daughters have a secondary degree (compared to 68% for sons). In fact, daughters are customarily the most highly educated in their families.

¹⁰Concerning previous decades, Shakhatareh (1995, p.138, cited by Omar 2001, p.116) found a higher percentage at the beginning of the 1980s: in the 1982-83 Manpower Survey of Households, carried out by the Department of Statistics (Jordan), single women formed 65.2% of economically active women. Tubbeh (1994, Table V) found a lower percentage at the beginning of the 1990s: in a field survey in 1992, she reported 33.3% active single women, and 42.4% active non-currently marriage female, out of all economically active women.

and technical fields, precisely the most developed sectors as a result of economic growth in the 90s in Jordan. As for the public sector, Kawar's survey reports that jobs are also segmented: 21% of men are in the military since little specialized expertise is required, while 20% of women work in the public sector as teachers, nurses, and medium-level officials.

It is worth commenting that, although wages are low, Kawar's survey reports that 43% of working women in the survey contribute to household expenditure (57% of which contribute with more than half their earnings). This stresses the relevance of young women's earnings to increasing household income, mainly for lower-income families (see Kawar, 2001, p.9). In contrast, there are young working women who do not contribute at all, which mainly belong to upper-income households. For these families, daughters' education and occupation become a "*factor in status*" and a "*source of prestige for the male head*" (Kawar, 2001, p.19).¹¹ Finally, a question not addressed in the Kawar (2001) paper is why young women are "allowed" to participate in the labor force when the male unemployment rate simultaneously increases.

4 AN EXPLANATION USING ECONOMIC THEORY

In this paper, we claim that economic theory may be helpful to understand the underlying relations among apparently disconnected developments described in the previous Section 3. Economists study decisions and the factors that affect these decisions. Their starting point is the assumption that "agents behave rationally," where 'rationality' must be understood in a very wide sense: the purpose of the agent's behavior is to look for their own welfare. Therefore, parents' altruism towards their children is comprehensible because parents' welfare includes their offspring's welfare; parents are behaving rationally when they buy items for their children or educate them, since both decisions make children happier and, therefore, make parents happier.

4.1 *Economic Theory on Fertility and Marriage*

Concerning fertility, it is observed that parents "bear children". The question is why families have children. Given our assumption of rationality in the broad sense, parents who decide to bear many children must find the gains higher than the costs. Economic theory provides three possible reasons for this (see, for example, Stark, 1981). First, children are demanded as a "consumption good", since they may be a source of pleasure and satisfaction for parents. Something biological, the social contract, or in society's mind makes parents happy to have children and to take care of them. This "consumption good motive" to have children entails the elements beyond any explanation provided by economic theory (and, therefore, other sciences must help to enlighten the issue). Economists formalize this intuition by setting the number of children directly to parents' utility function like any other consumption good. Therefore, the standard consumer demand theory can be applied to explain the evolution of family size (see, e.g., Becker 1961).

Second, children are demanded as an "investment good" for their ability to contribute

¹¹This goes in tune with Veblen's (1929) theory of the leisure class and may establish a future trend for middle and lower classes in Jordanian society.

to the family income by working. This is the “income motive” for childbearing. In rural societies, children are usually a cheap labor input for increasing family income, and later, before they marry, their monetary earnings also increase the family income. Finally, parents also choose to have children as an “investment good for old-age security motive” (see Cigno, 1992). Because in this case offspring are seen as a capital good, they are a hedge for parents’ misfortune at the elderly time, with illness and poverty. The social norms in (almost) all cultures is that first parents look after their children and, later, these elderly parents are looked after by their children.¹²

4.2 *Economic Theory and the Traditional Social Norms in Jordan*

In view of the previous arguments, we will next assert that the traditional social norms in Jordanian society establishes that daughters be demanded for the “income motive,” while sons are demanded for the “old-age security motive.” A son will be an old-age insurance for parents since, as is the tradition, he will both remain at home and be the income earner. The social norms make parents to secure their son’s loyalty for old times, and, therefore, to try to brighten their son’s future earning prospects. However, daughters will marry, in exchange for a *mahr* (and other marriage revenues, e.g. housing), and leave home. Daughters, then, become a “cost” for families. If parents are altruist with daughters, then parents consider the *mahr* received by daughters as it would be received by parents themselves. Thus, both early age of marriage for women and arrangement of marriages now become comprehensible, since the sooner a daughter is married and the better the financial situation of the fiancé’s family, the higher the profit of the ratio “dower received” / “family expenditure on a daughter”.

4.3 *Understanding the Changes in Jordanian Society before the Great Recession*

We are now ready to apply economic analysis to understand why young women in Jordan are entering the labor market. The stagnation of the Jordan economy in the 1980s ended up with the economic and financial crises of 1988-89, which brought with high price levels, unemployment, and a decrease in the standards of living (Figures 4–6). The conditions of the Jordanian economy after the liberalization and openness process in the 1990s (Figure 7) resulted in Jordanian less competitive sectors declining, thereby further increasing unemployment during the adjustment process, while raising the standard of living. These, in turn, brought about two consequences. First, families needed more income to recover (and achieve a higher) standard of living. Second, a higher number of unemployed males –and, in particular, single young males (Figure 8(a))– gave rise to fewer available young single men who could provide a *mahr* and bear other marriage costs, besides affording family costs if married. The scarcity of financially-sound potential grooms entails that more young women remained single for a long in the 90s, therefore delaying their marriage; hence, the age of marriage increased (Figure 2) and fertility reduced (Figure 3).

The responsibility of a high *mahr* and other marriage costs in delaying marriage, and thus an increase in the age of marriage, is still a subject of controversy (see Singerman 2007, Salem 2014 and Sieverding et al. 2019). As already reported by Salem (2014, Sec.2.5) and

¹²See Nugent (1985) for an identification of the basic conditions to justify the old-age security hypothesis.

Sieverding et al. (2019, Sec.2.5), the cost of marriage in Jordan (measured in real terms) increased until the late 90s and it has been decreasing thereafter (Figure 17). To get a fair idea of the difficulties to accrue enough monetary resources to afford marriage costs, we can measure the number of years required to save all wage income for an average Jordanian worker. In Figure 18, we report that it was needed 3 years by saving the entire wage income to afford the cost of marriage from the late 1970s to the middle 2000s. Yet, after the financial crises of 1988-89 young male unemployment increased, and the likelihood to find a job (and receive a wage compensation) decreased. So if we consider the wage income that a male young age 15-24 (or, alternatively, a single male) *expects* to receive, then Figure 18 also reports that in 1990 he has to save for 5 years his overall (expected) wage income, and 4 years for the period 1995-2005.¹³ Accordingly, these findings suggest that it was the surge of single-young-male unemployment after the financial and economic crises of 1988-89, and not the increase in *mahr* and other marriage costs, what resulted in an increase in the age of marriage in Jordan, both for female and male.

The consequences of this new social environment turned out to be (perhaps) unexpected. First, as the period of *waithood* –in Singerman (2007)’s terminology– enlarged after the 1990s, single, young women were able to devote more time resources to acquire human capital, hence increasing the enrollment ratio at secondary and tertiary education level (Figure 14).¹⁴ Second, more single women live longer at home, therefore increasing the “cost burden” for their families. Family financial needs to increase (and recover) standard of living, required single daughters to contribute to household income. In the 1990s and 2000s, these single, young, educated women are ready to enter the labor market with the appropriate skills suited for emerging sectors and to earn money (Figure 1). This allows parents to recover part of their losses in the profit rate because of delayed marriage. The parent’s expected return on daughters as an “income motive” –which decreased as a consequence of daughters’ delayed marriage and higher costs of staying at home– is then partially mitigated by direct daughters’ contribution with their labor earnings. These extra earnings can also help to pay for their bother’s *mahr* (and other marriage costs) as required by the tradition since the whole family is involved in this duty.

Yet, there might exist an alternative explanation to developments described in the previous Section 3. The growth of the Jordanian economy has created new jobs in particular sectors, such as the tourism sector that demands more female-oriented jobs. Given gen-

¹³Interestingly, Ajaka (2014) reported that “The average cost of marriage in Jordan is \$14,000, while the average salary for a Jordanian hovers around \$500 per month,” which means 2.3 years saving full wage income. Our computations for 2014 in Figure 18 obtain the following numbers: 1.9 years for the cost of marriage over wages, and 2.5 years for the cost of marriage over expected wages, either for a young male ages 15-24 or a single male.

¹⁴Accordingly, high young-male unemployment might be also the reason for other regularities observed concerning the overall improvement of the general education level of the labor force over the time in Jordan (see Al-Kahldi 2006): i) the increasing demand for education in Jordan; ii) the higher ratio of educated male to female at various levels of education; iii) the higher proportion of educated labor force to the total labor force; and, iv) the spectacular increase in the proportion of the labor force with professional educational attainment. This suggests that the opportunity cost of unemployed young-male’s and single young-female’s time is very high, and thus they devote their temporal resources to education to improve their future economic prospects (which, according to Salem 2014, Fig.21, also increases their *mahr*, and thus their requirements concerning any potential husband).

der segmentation of the labor market, it may be the case that these jobs are not socially acceptable for men. Hence, due to changes in the economic conditions, parents prefer for their daughters to work at these jobs and appropriate their income, delaying their marriage. And, to improve their daughter's employability they are more willing to invest in their human capital. However, Kawar (2001, p.23) reports in the survey that "*The households where parents objected to daughters marriage in order to retain their income were minimal in number*". So we think that this alternative explanation is not valid for the Jordanian case and that tradition has greater weight.¹⁵

In conclusion, it seems that there is a reproduction of the traditional gender roles already existed when women married earlier. One might consider that nothing has changed. With this respect, "[H]ouseholds maximise the use of daughters wages and expand benefits and advantages for sons [...] because there are high expectations from sons and no expectations for daughters in the future." Kawar (2001, p.17). However, become money earners opened new opportunities for single women and transformed daughters' social position, improving their reputation within the family, and to allow them to receive more affection and more respect, and to become more involved in family decisions (see Kawar 2001, p.12 and 18).

5 DISCUSSION AND LESSONS FOR THE FUTURE

We have presented an economic theory explanation for understanding the changes in the female roles in Jordanian society before the Great Recession. This paper suggests that economic developments in the Jordanian economy, initially in the 80s and subsequently after the liberalization process in the 90s, resulted in important changes in the Jordanian social norms concerning gender roles, school enrollment, labor participation, marriage, and fertility.

Summary. We can summarize our argument as follows. The stagnation of the Jordanian economy in the 1980s brought with high price levels, unemployment, and decrease in the standards of living. The subsequent economic liberalization in the 90s (helped by the favorable environment created after the signature of the Peace Treaty with Israel in 1993), restructured the Jordan economy, increasing the unemployment in less productive sectors while increasing the employment opportunities in the tech and manufacturing sectors. In this environment, a young single male did not earn enough to afford *mahr* (and other marriage costs) and to sustain the expenditures of his (potentially) new family. In consequence, young males, and thus young women, delayed marriage. In addition, families found themselves at home with more young single women –who devoted their *waithood* spell improving their educational level–, ready to participate in the labor market because of higher qualified employment opportunities; thus, young females became an additional income source to families. Accordingly, the age of marriage increased, the fertility rate dropped, female education level and young female labor participation both rose. The higher educated females were, the higher *mahr* was required (see, e.g., Salem 2014, Fig.21), then resulting in

¹⁵Interestingly, Wolf (1990) reports two polar cases that might play a role in explaining the decision-making process in households concerning young women's involvement in employment: Javanese daughters seek employment against their parents' wishes, while Taiwanese daughters may be obliged to submit to parental decisions and work to contribute to household income. Our explanation argues that Jordanian daughters' circumstances are analogous to those of Javanese daughters.

a feedback on this dynamics. In this regard, we disagree with Omar (2001, p.16)'s views on women's challenging the Islamic tradition. Instead, we support the view that economic motivations, shared by all human communities, allow us to understand these apparently challenging social phenomena before the Great Recession.

Social developments after the Great Recession and the Syrian war. Social improvements of Jordanian women, however, stopped after the Great Recession and the Syrian war, and the social change dynamic mechanism above mentioned broke. The economic activity deteriorated after 2008 (Figure 4). FDI, Exports, Investment and the tourism sector slumped (Figure 7). Labor opportunities for young people worsened dramatically, specially for single female Jordanians (Figure 8). This break in women's advancement might be exacerbated by the Jordan society's social attitude towards women's right to work, namely the conception that women become competitors in men's labor opportunities. This phenomenon, known as "*lump of labor fallacy*,"¹⁶ might generate rejection towards working women and might amplify the negative effects of the economic downturn after the Great Recession and the Syrian war. Indeed, this negative attitude has not progressed and has remained virtually stagnant since the early 2000s (Figure 19).¹⁷ Finally, it was evidenced an interruption of the rise in the age of marriage for both men and women (Figure 2), although the age of marriage did not decrease. Moreover, highly educated young females (Figures 13-14), together with a steady decreasing fertility –already envisaged by Roudi (2001)– (Figure 3), are trends in the Jordan society that remained despite the Great Recession.

Social developments without the Great Recession and the Syrian war: a counterfactual analysis. It is always difficult to carry out a counterfactual analysis of Jordanian women's improvement if its course would not be interrupted by the events followed by the Great Recession and the Syrian war. Yet, the economic theory that allowed us to uncover social-change dynamic mechanisms in Jordanian society can also be useful to devise the social developments should no economic and war strongly hit the Jordanian economy. Under this radically different scenario, Jordan might have been taking the similar social and economic path as other industrialized countries did in the past. Our economic analysis allows us to assert several counterfactual statements on Jordanian society. First, there would have been **changes in the marriage institution**. Although conservative social norms limits freedom of choice for daughters to obey their parents' commandments, daughters' earnings could increase their own bargaining power in choosing a partner, in particular one outside the family linkage. Second, as indeed happened, there would have been a **decrease in fertility rates in Jordan**, as the delay of marriage age will further decrease fertility, since fecundity ages would be also reduced. In addition, the (eventual) introduction of a more developed

¹⁶This phenomenon is generated by the misconception that there is a fixed amount of work and the erroneous perception that if a job is occupied by a woman, then it cannot be occupied by a man. This fallacy is often related to the competition in the labor market between immigrant and native workers, between young and old workers, and it has also been argued at the time women were incorporated into the labor market in developed countries. Empirically it was found incorrect: the more immigrants, the older workers, and the more women participate in the labor market, the higher is the GDP growth and the lower is the unemployment rate.

¹⁷Boustati (2020, Table 1) reports that a majority of the Jordanian population holds egalitarian views: 71,2% of women and 86.1% of men in 2016 reports an *agree* answer with the statement **Women should be allowed to work**. Yet, this support has decreased since 2010, when 90,4% of women support this statement.

welfare state in Jordan would diminish the old-age security motive to have children.¹⁸ Third, there would have been changes in women's role in Jordanian society. Young women's attitudes towards the future reported in 1997 indicated that young working women favor the idea of working after marriage (see Kawar 2001, p.24). Although they would like to keep working until their first child, and then assume the 'natural' role as mothers, we somewhat doubt that this could be carried out if the husband's earnings are not enough to achieve a desired standard of living. Judging from the experience of other countries, women would have kept working even after their children were born, although some would have left the labor market.

Should all these changes have been accomplished, Jordanian women would have been more integrated in the labor market (with full rights and responsibilities) and, thus, more income-independent. This might have resulted in changes in the Jordanian social contract based on male guardianship, not without conflicts;¹⁹ and, also, in changes of daughters' status for parents, weakening the "income motive" while strengthening the "old-age security motive" for fertility, (eventually) replacing sons. Hence, women may achieve equality with men first in the labor market, and then inside families.

Lessons for the future. In our view, two lessons for the future can be drawn from the Jordanian experience. Firstly, in middle income countries –such as Jordan–, it is essential that the process of women's empowerment be accompanied by an economic bonanza. As soon as the economic situation worsens, women are the first to suffer the consequences. Alon et al. (2020a, 2020b) report that the worsening of working women's opportunities also takes place in developed countries. The "*shecession* (she-recession)" –a term coined by these authors for the case of the US– might be even more exacerbated in poor countries. Secondly, to achieve continued progress in the advancement of women, and to prevent it from being interrupted by economic cycles –as seen in the case of Jordan–, it is necessary a strong State that consolidates all progress accomplished in favor of women's well-being and independence. The state potentially has very effective tools for this task by deploying spending programs to support women or implementing legislation that empowers women and gives women freedom and independence.

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¹⁸See Olmsted (2001) for a description of some MENA welfare states and Yousef (2001) for a claim of a redefinition of the role of the state in MENA countries. For a reinterpretation of the welfare state, see Becker et al. (1988), Boldrin et al. (2005), and Conde-Ruiz et al (2010, Sec.5).

¹⁹Income earning raises daughter status, threatening fathers' positions as household head, who may become more authoritative. See Kawar (2001, p.19)

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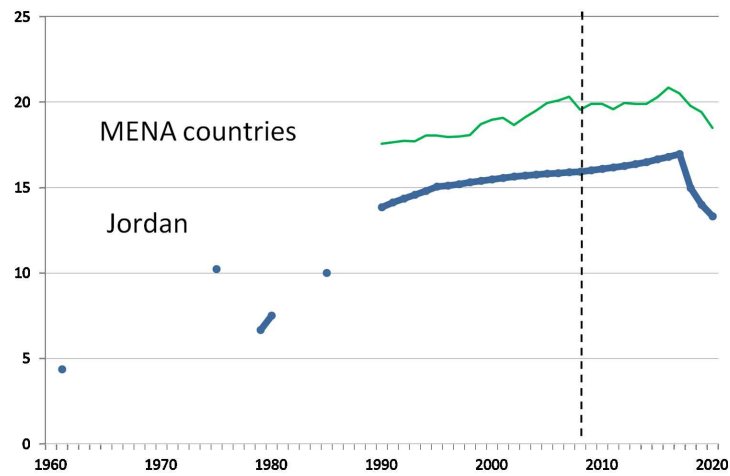
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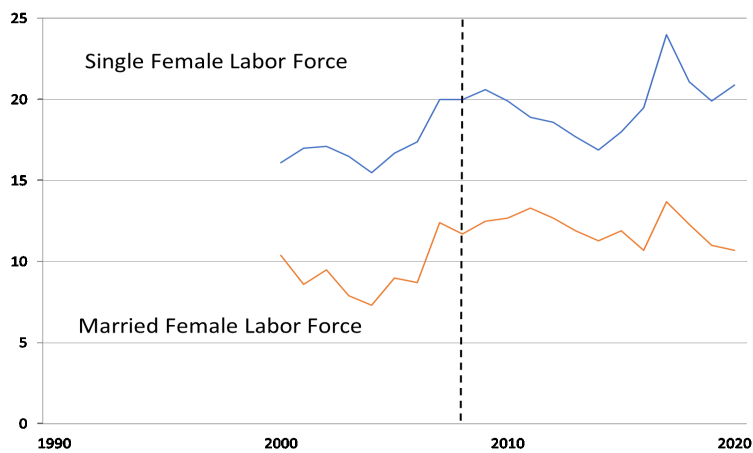
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	Female Labor Force				Mean age at marriage					Fertility rate							
	1990	2000	2010	2020	1960s	1970s	1980s	1990s	2000s	2010s	1960-65	1970-75	1980-85	1990-95	2000-05	2010-15	2015-19
Algeria	12,4	14,0	16,9	19,3		21	23,7	25,9	29,5	28,3	7,6	7,5	6,2	4,0	2,4	3,0	3,0
Bahrain	17,7	21,4	21,0	19,4			25,5	26,6	26,3	26,9	7,2	5,9	4,6	3,4	2,6	2,1	2,0
Egypt, Arab Rep.	24,1	22,3	23,5	18,7		21,4	21,4	22,3	22,9	22,3	6,6	6,0	5,4	4,1	3,1	3,4	3,3
Iraq	9,8	11,4	14,4	13,3			22,3	24	25,3	22,7	6,7	7,2	6,3	5,6	4,7	4,2	3,7
Jordan	16,3	18,4	20,1	17,5	18	21,5	21,5	24	25,4	24,6	8,0	7,7	6,9	5,0	4,0	3,3	2,8
Kuwait	26,4	26,7	27,6	24,5	19,6	20,5	21,7	25,2	27,5	25,7	7,3	6,6	4,8	2,7	2,6	2,1	2,1
Lebanon	22,0	23,4	24,2	24,5			27,9	27,8			5,6	4,6	3,7	3,1	2,1	2,1	2,1
Libya	28,4	32,1	34,7	35,8		18,7	23	29,2			7,4	8,1	6,6	4,1	2,6	2,4	2,3
Mauritania	29,6	30,2	30,9	30,8	19,5	19,5	20,5	23	22	21,8	6,8	6,7	6,3	5,7	5,3	4,8	4,6
Morocco	22,9	25,2	26,9	25,7		22,2	24	26,3	26,4	24,4	7,1	6,4	5,3	3,6	2,6	2,6	2,4
Oman	16,0	17,6	15,9	12,3			20,7	21,7	24,8	25,6	7,3	7,5	8,3	6,1	3,2	2,9	2,9
Qatar	14,7	16,7	11,6	13,8			22,7	25,3	25,8		7,0	6,7	5,3	3,7	2,9	2,0	1,9
Saudi Arabia	11,0	13,9	14,8	20,9			21,7	24	24,1	26,6	7,2	7,3	6,9	5,4	3,6	2,7	2,4
Sudan	24,0	28,4	29,3	29,9		21,4	24,1	22,7	24,2	21,9	6,8	6,9	6,6	6,0	5,3	4,7	4,4
Syrian Arab Republic	18,5	20,4	15,2	18,2	20,7	22,2			25,4		7,5	7,5	6,7	4,8	3,9	3,1	2,8
Tunisia	22,9	25,0	26,9	28,3		22,6	24,3	26,6	28,7	28,2	7,0	6,3	4,8	2,9	2,0	2,2	2,2
United Arab Emirates	11,0	12,1	11,5	16,7		18	23,1	24,4	25,3		6,9	6,4	5,3	3,8	2,3	1,7	1,4
Yemen, Rep.	19,5	22,6	12,9	8,3		18	18,3	20,5	22,2	22,8	8,0	8,5	8,8	8,0	5,8	4,3	3,8
MENA countries	17,9	19,8	20,4	19,6							6,9	6,6	6,0	4,3	3,0	2,9	2,8

Table 1: **MENA countries: Female labor force (% of total labor force), Mean age at marriage and Fertility rate.** Remarks. The *Mean age at marriage* for each decade is taken from different surveys found in United Nations (2019) and carried out in particular years, so the data is the closest to the decade. For the *Fertility rate*, we have computed the average value of five-period year. Sources: World Bank (2022a) for Female Labor Force as % of total labor force; United Nations (2019, Sheet SMAM) for Age of Marriage (except average of Kawer 2001, p.2 and Courbage1999, T.3, for 1960s); World Bank (2022c) for Fertility rate.



(a) **Female Labor Force participation rate, 1960-2020.** Female Labor Force as % of female population over 15 in Jordan and the MENA countries, and Female Labor Force age 14-25 in Jordan. *Source:* World Bank (2022a,2022b) and Shakhathreh (1995, Table 7.1).



(b) **Single and Married Female Labor Force, 2000-2020.** *Source:* Department of Statistics (2022c, Table 5.1, 2022d).

Figure 1: **Female Labor Force in Jordan.**

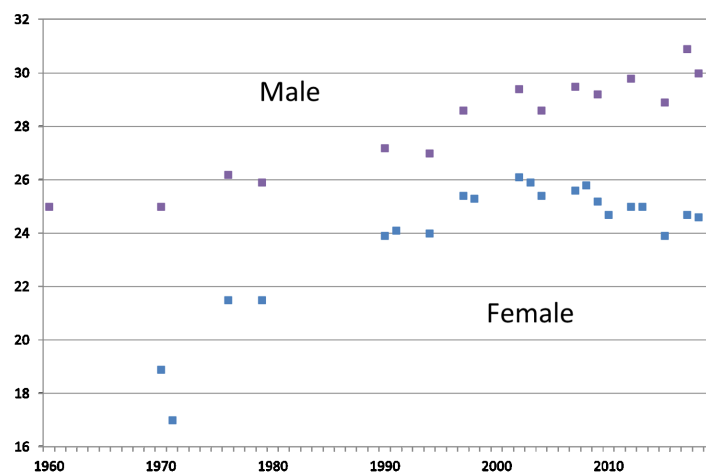


Figure 2: **Age of Marriage in Jordan, 1960-2018.** *Source:* United Nations (2019, Sheet SMAM), Miles (2002, p.416), Courbage (1999, T.3) and Department of Statistics (1999).

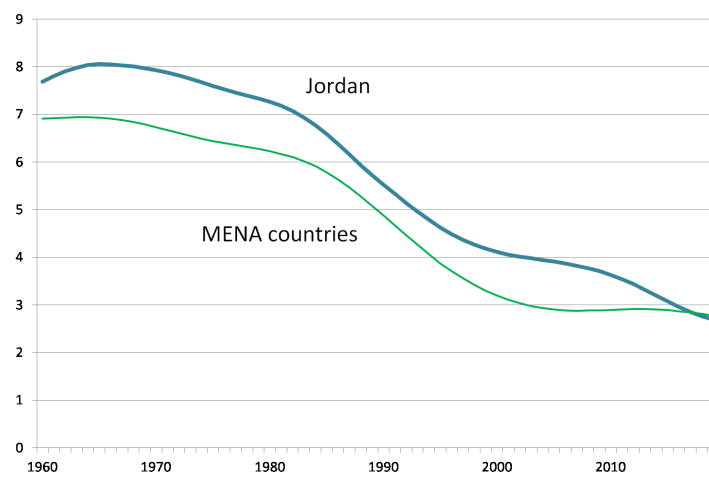


Figure 3: **Fertility rate, 1960-2019.** Births per women in Jordan and the MENA countries. *Source:* World Bank (2022c).

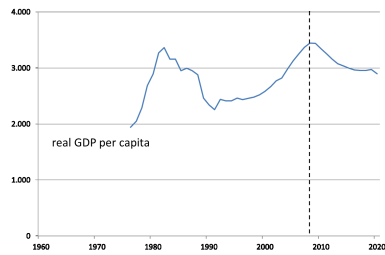


Figure 4: **Real GDP per capita in Jordan** (2016 Jordan Dinars). *Source:* World Bank (2022d).

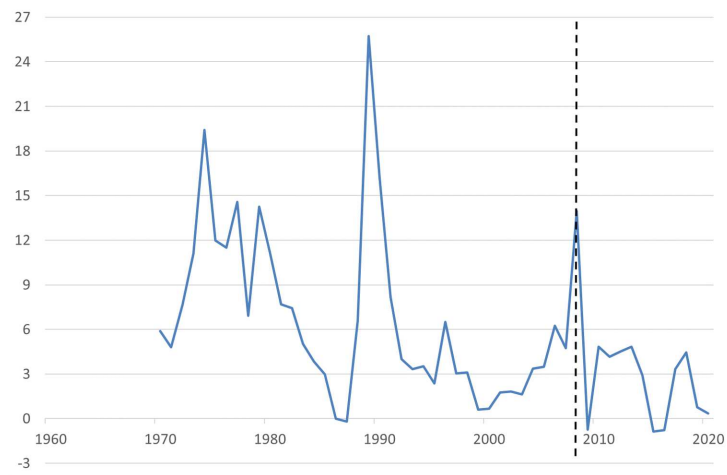
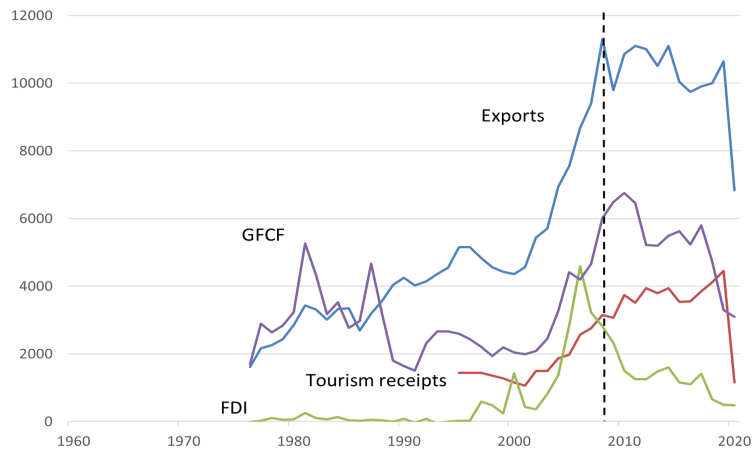


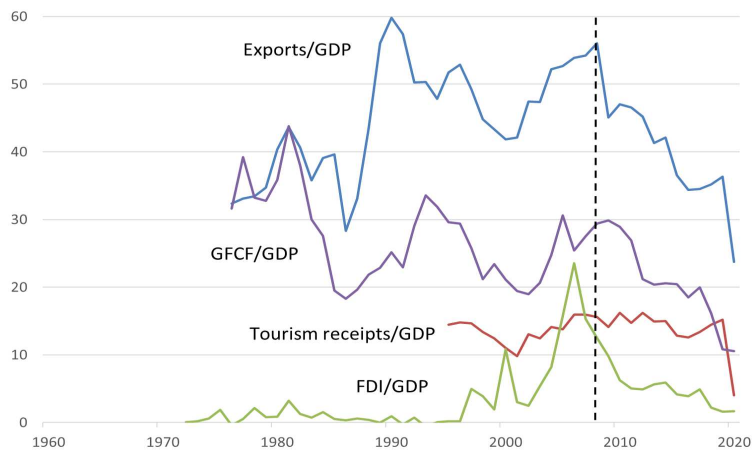
Figure 5: **Inflation, consumer prices (annual %)**. *Source:* World Bank (2022d)



Figure 6: **Average real wages** (2016 Jordan Dinars). *Source:* Own computations from Department of Statistics (2022a, 2022b) and World Bank (2022d) (see Appendix A.1).

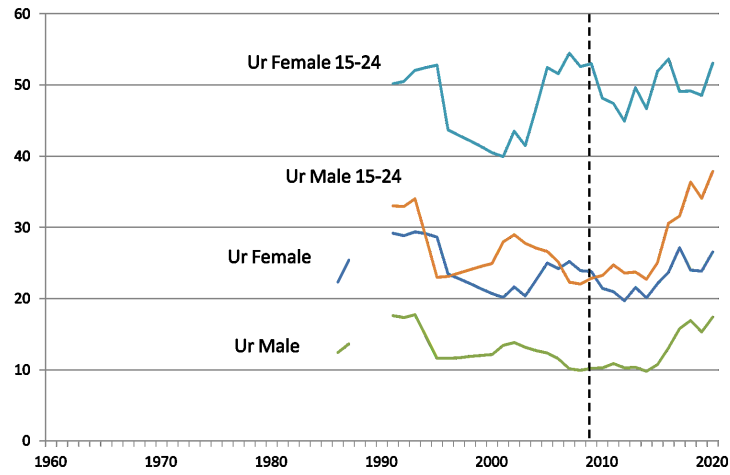


(a) Exports, Formation of Fix Capital, Tourism receipts and Foreign Direct Investment (in 2016 constant millions Jordan Dinars). *Source:* World Bank (2022d).

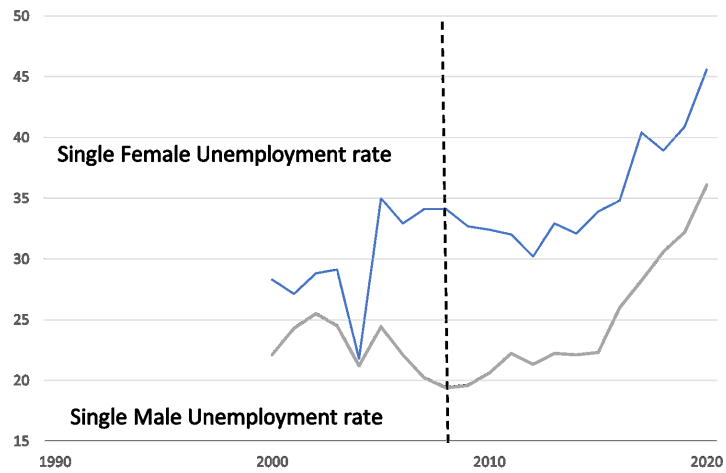


(b) Percentage of Exports, Formation of Fix Capital, Tourism receipts and Foreign Direct Investment with respects of GDP. *Source:* Own computations from World Bank (2022d).

Figure 7: ‘Liberalization’ and “global integration” in Jordan after 1990s.



(a) **Unemployment rate in Jordan, 1986-2020.** Unemployment rate for female and male (total and ages 15-24). *Source:* World Bank (2022d).



(b) **Single Unemployment rate, 2000-2020.** *Source:* Department of Statistics (2022c Table 2.6, 2022d).

Figure 8: **Unemployment rate in Jordan**

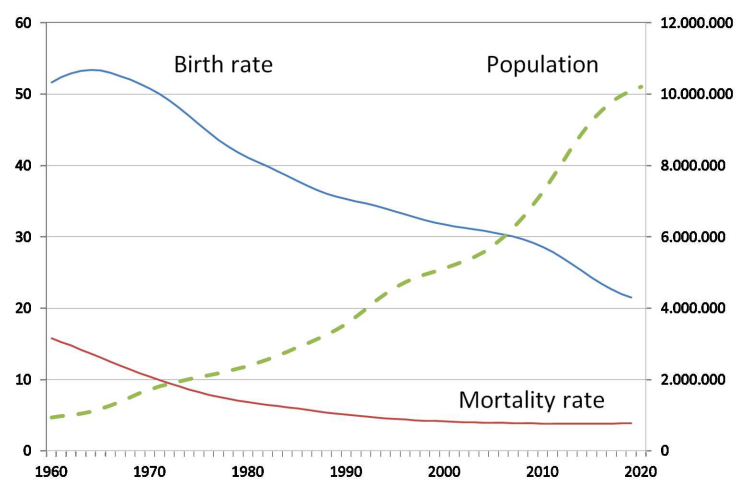


Figure 9: **Demographic transition in Jordan, 1960-2002.** Left scale: *Crude birth rate (per 1,000 people)* and *Death rate, crude (per 1,000 people)*. Right scale: *Population, total*. Source: World Bank (2022d).

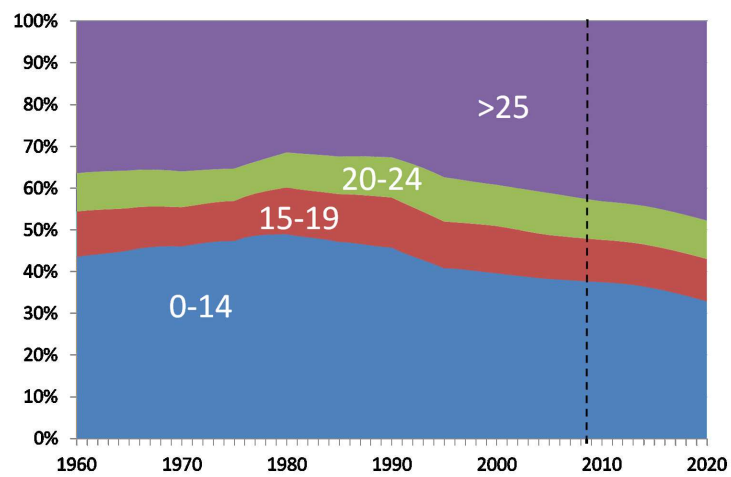
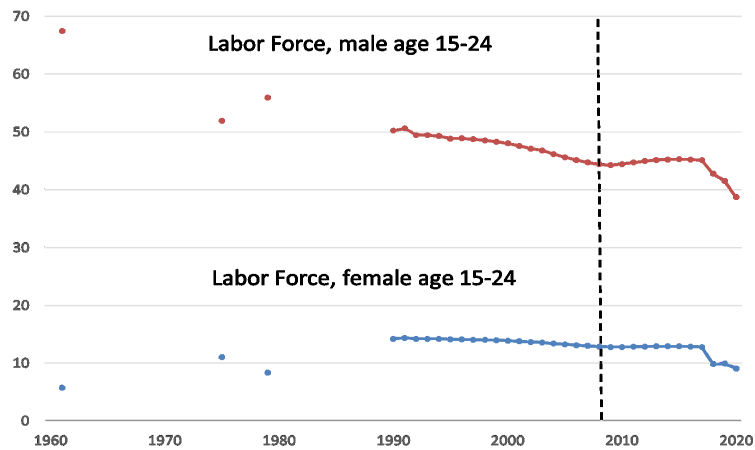


Figure 10: **Age Structure in Jordan, 1960-2020.** In 1990, 67,4% of the population in Jordan was below 24 years old, while it was 52.3% in 2020. *Source:* World Bank (2022d).



(a) Employment (ages 15-24) over Employment (Total) (%) in Jordan, 1990-2020. *Source:* World Bank (2022d).



(b) Female and Male Labor force participation rate for ages 15-24 (%) in Jordan, 1961-2020. *Source:* World Bank (2022d).

Figure 11: Jordanian female and male ages 15-24 and the labor market, 1961-2020.

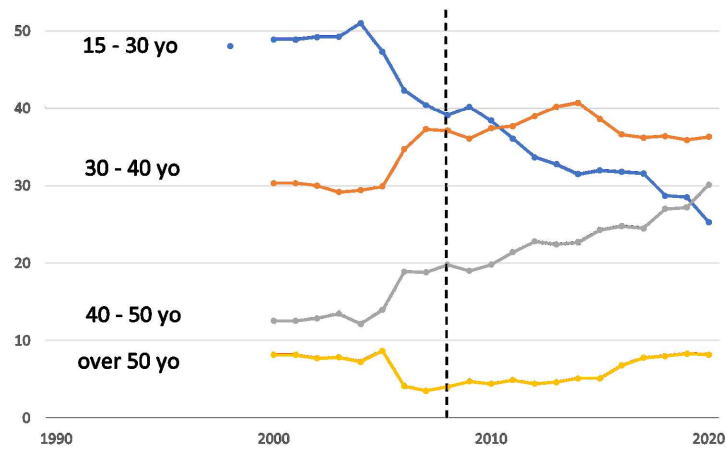


Figure 12: **Female Employed Persons by broad Age Groups (percentage), 1998-2020.** *Source:* Department of Statistics (2022c, Tables 4.1 and 5.1) and Kavar (2001, p.2).

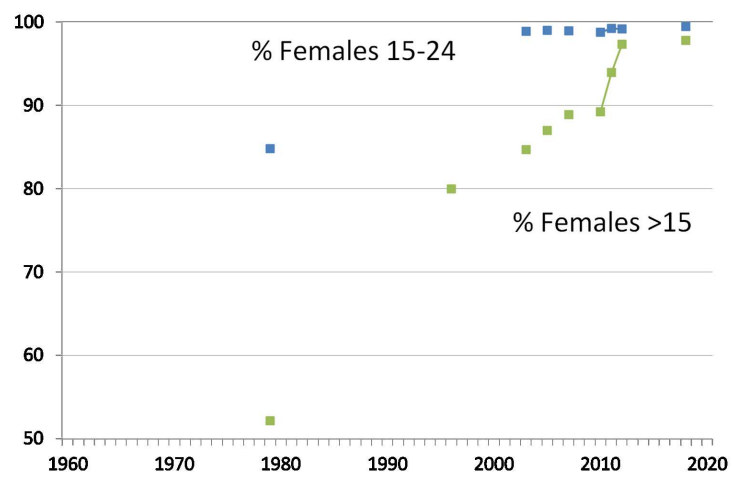


Figure 13: **Female Literacy rate in Jordan, 1979-2020.** *Source:* World Bank (2022d) and Kawar (2001, p.2)

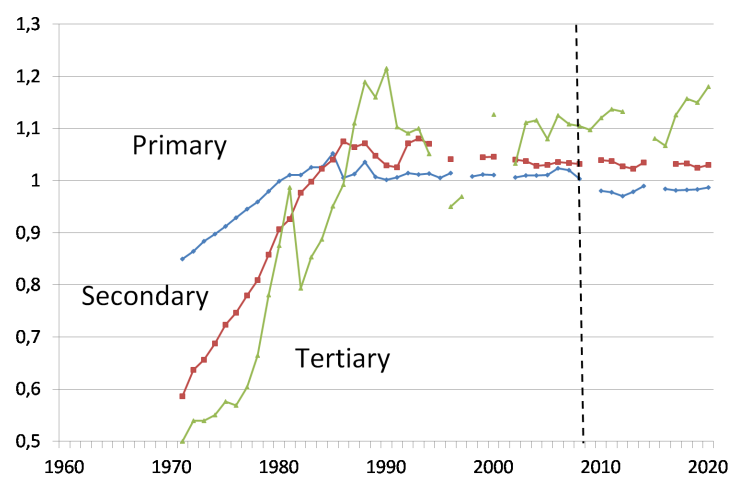


Figure 14: **Gender Parity Index for school enrollment ratio, for primary, secondary and tertiary studies in Jordan, 1971-2020.** *Gender parity index for gross enrollment ratio at each education level is the ratio of girls to boys enrolled at secondary level in public and private schools. A number above 1 means that there is more female than male studying such a degree. Source: World Bank (2022d).*

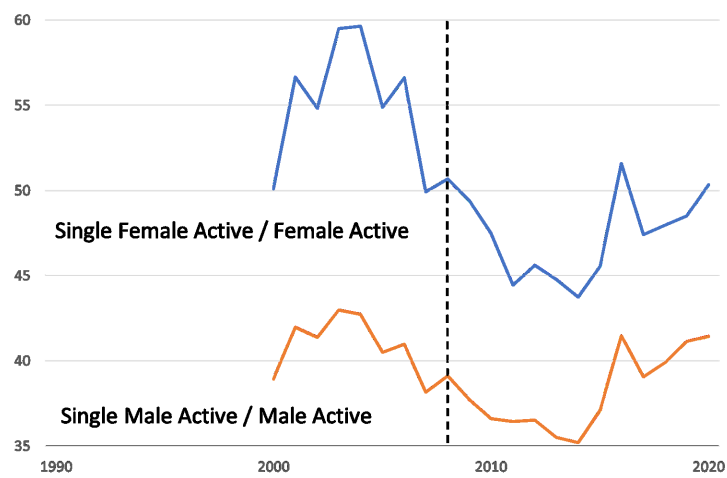
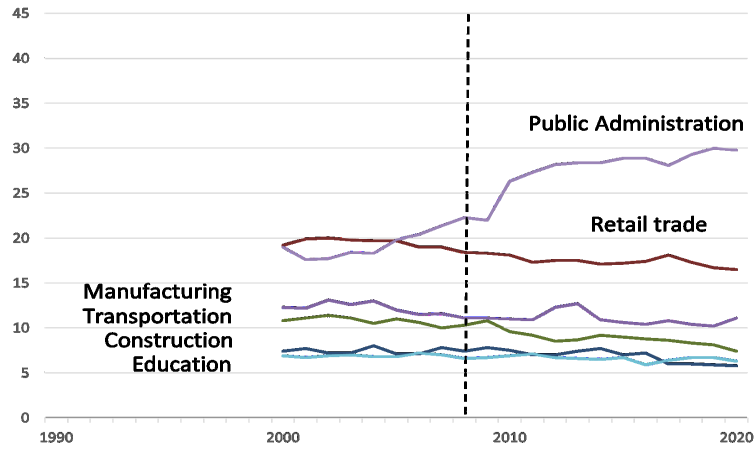
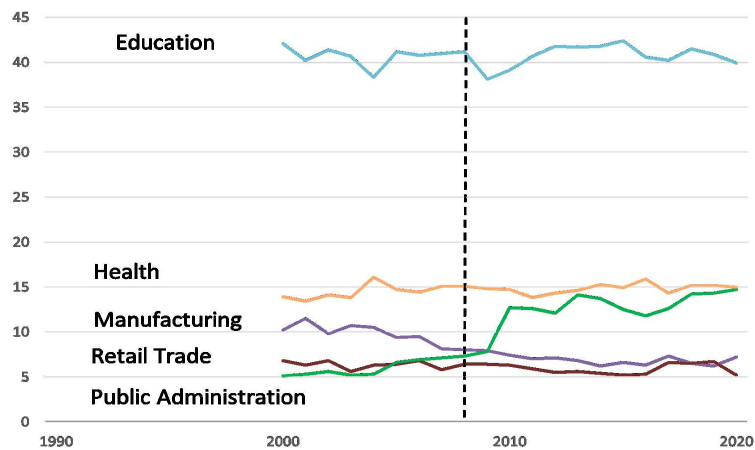


Figure 15: **Economically active single Jordanian population over Total economically active Jordanian population by gender, 2000-2020.** *Source:* Own computations from Department of Statistics (2022c, Table 5.1) and Department of Statistics (2022d).



(a) **Male Main Economic Activities (%)**, 2000-2020.
Source: Department of Statistics (2022c, Tables 4.4 (only Jordanian) and 5.18)



(b) **Female Main Economic Activities (%)**, 2000-2020.
Source: Department of Statistics (2022c, Tables 4.4 (only Jordanian) and 5.18)

Figure 16: **Jordanian employed persons age over 15 years by main current economic activity** (percentage distribution).

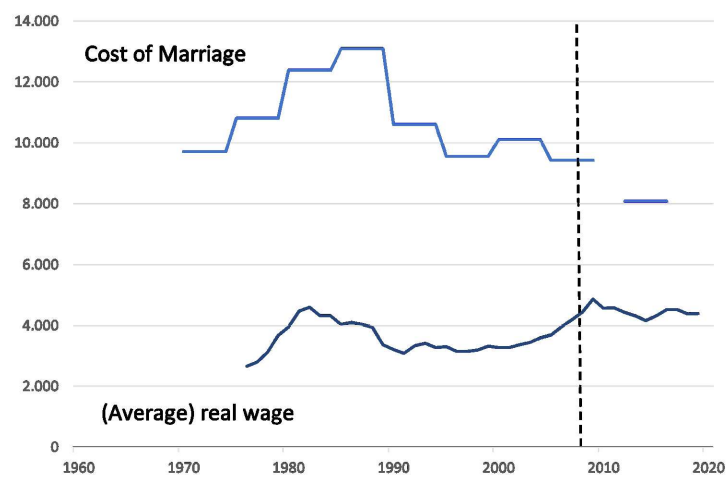


Figure 17: **The Cost of Marriage and the average wage rate in Jordan (in 2010 Jordan Dinars), 1970-2016.** *Source:* Salem (2014, Table 7.10) and Sieverding et al. (2018, Table 7), and own computations from Department of Statistics (2022a, 2022b) and World Bank (2022d) (see Appendix A.1).

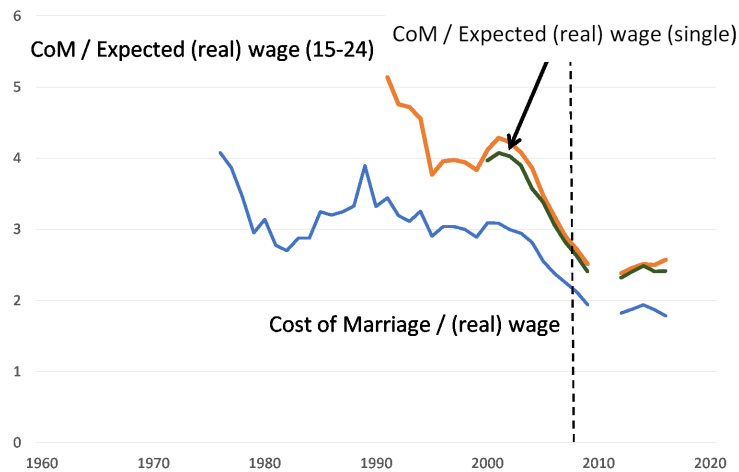


Figure 18: **Number of years required to save all (real) wages income in Jordan, 1976-2019.** The number of years is obtained by dividing the cost of marriage (in 2010 Jordanian Dinars) by annual (real) wages (in 2010 prices). The expected real wage is obtained by multiplying the real wage (in 2010 prices) times the probability of finding a job (i.e., 1 minus the rate of unemployment). The unemployment rate refers to the young male ages 15-24, and the never-married male. We are implicitly assuming that finding a job follows an iid process. *Source:* Own computations from Salem (2014, Table 7.10), Sieverding et al. (2018, Table 7), Department of Statistics (2022a, 2022b) and World Bank (2022d) (see Appendix A.1).

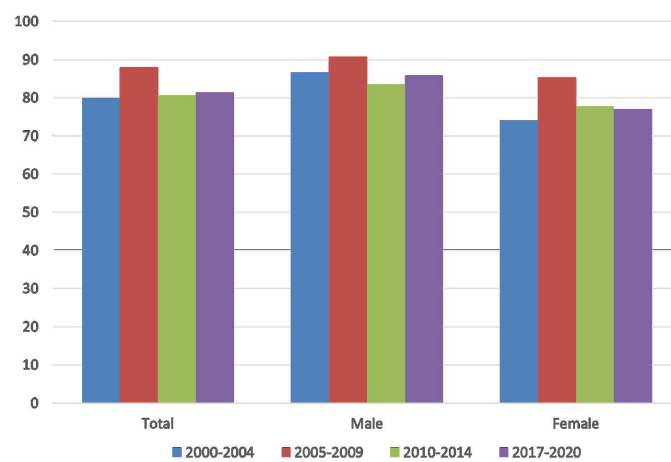


Figure 19: **Negative Attitudes toward Women’s Right to Work in Jordan, 2000-2020.** Percentage of *strongly agree* and *agree* answers with the statement Men should have more right to a job than women. *Source:* Own computation from Inglehart et al. (2022).

APPENDICES

A.1 Series of average (real) wages per worker for Jordan

Consider the following series:

- (1) *Compensation of employees (current LCU)* Millions: Department of Statistics (2022a, Table 2 and 2022b), range: 1976-2016.
- (2) *Compensation of employees (current LCU)*: World Bank (2022d, series GC.XPN.COMP.CN), range: 1990-2019.
- (3) *Employment to population ratio, 15+, total (%)* (modeled ILO estimate): World Bank (2022d, series SL.EMP.TOTL.SP.ZS), range: 1991-2020.
- (4) *Population, total*: World Bank (2022d, series SP.POP.TOTL), range: 1960-2020.
- (5) *Population ages 0-14, total*: World Bank (2022d, series SP.POP.0014.TO), range: 1960-2020.
- (6) *Consumer price index (2010 = 100)*: World Bank (2022d, Series FP.CPI.TOTL), range: 1969-2020.
- (7) *GDP per capita (constant 2016 LCU)*: World Bank (2022d, Series NY.GDP.PCAP.KN), range: 1976-2020.

Initially, we complete the series *Compensation of employees* (1) for the years 2017-2019. Let us denote the growth rate of series (2) for the period t as

$$g_{t+1}^{(2)} = \frac{(2)_{t+1}}{(2)_t}, \quad \text{for } t = 2016, 2017, 2018.$$

Then, we can enlarge forward recursively the series (1) for 2017, 2018 and 2019, to obtain the new series *Compensation of employees* (1^e) with a range 1976 to 2019. That is,

$$(1^e)_{t+1} = (1^e)_t \cdot g_{t+1}^{(2)}, \quad \text{for } t = 2016, 2017, 2018,$$

and given the initial value $(1^e)_{t=2016} = (1)_{t=2016}$.

The number of employees (N) for each period t is found by multiplying

$$N_t = (3)_t \cdot \{(4)_t - (5)_t\}, \quad \text{for } t = 1991, \dots, 2019.$$

Then, the average (nominal) wage per worker at current prices (w) for each period t is obtained as

$$w_t = \frac{(1^e)_t}{N_t} = \frac{(1^e)_t}{(3)_t \cdot \{(4)_t - (5)_t\}}, \quad \text{for } t = 1991, \dots, 2019.$$

To obtain the average (real) wage per worker at 2010 Jordanian Dinar constant prices ($w_{real(2010)}$) for each period t , we divide the nominal average wage by the consumer price index at 2010 prices

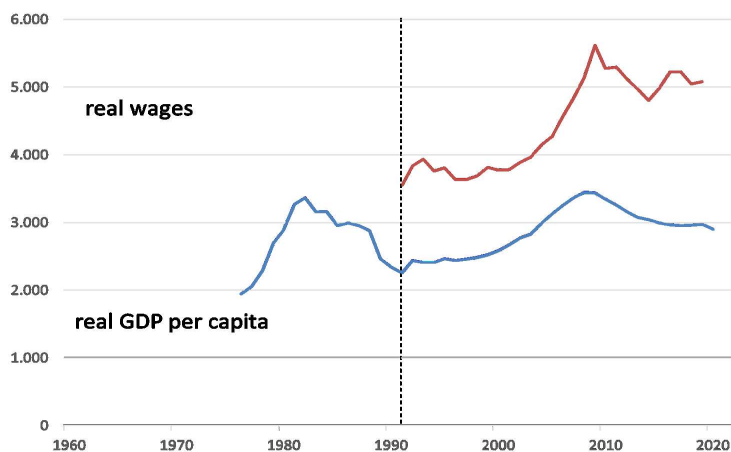
$$w_{real(2010)} = \frac{w_t}{(6)_{t(2010)}}, \quad \text{for } t = 1991, \dots, 2019.$$

This series ranges from 1991 to 2019.

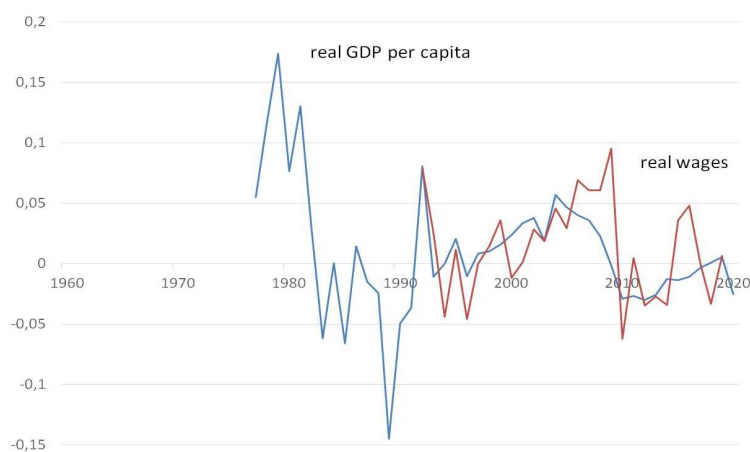
Interestingly, the series *GDP per capita* is very similar to the *average wage per worker*: instead of considering the overall final output and the overall population, the average wage per worker is considering the share of GDP to compensate the labor factor (series (1^e)) and only those members of the population who works (series N). Accordingly, if both series have the same profile, we can use the growth rates of the *real GDP per capita* to enlarge backwards the series of *average real wage per worker*.

Initially, observe that both series display a different base year. The series *real GDP per capita* in (7) is 2016, while the base period for the series *average real wage per worker* $w_{real(2010)}$ is 2010. So we can find the average wage per worker at 2016 Jordanian Dinar constant prices ($w_{real(2016)}$), by dividing

$$w_{real(2016)} = \frac{w_t}{(6)_{t(2010)} \cdot \frac{100}{(6)_{2016(2010)}}}, \quad \text{for } t = 1991, \dots, 2019.$$



(a) Original series.



(b) Growth rates

Figure A.1: Real GDP per capita and (average) real wages in Jordan, and their growth rates, 1976-2020

If we draw the series *real GDP per capita* and the average wage per worker at 2016 Jordanian Dinar constant prices and their growth rate, we find that both shows a similar pattern (see Figure 1(b)).

Let us denote the growth rate of the GDP per capita for the period t as

$$g_{t+1}^{GDPpc} = \frac{(7)_{t+1(2016)}}{(7)_{t(2016)}}, \quad \text{for } t = 1976, \dots, 1991.$$

Then, we can enlarge backwards the series of wages starting from 1990, recursively, to 1976. That is,

$$wreal_{t-1(2016)} = \frac{wreal_{t(2016)}}{g_t}, \quad \text{for } t = 1991, \dots, 1977,$$

and given the initial value $wreal_{1991(2016)}$.

	Total wages millions DJ (1 ^e)	<i>N/Pop</i> > 15 (3)	Pop Total (4)	<i>Pop</i> < 14 (5)	Employees N	CPI 2010=100 (6)	wreal 2016=100 original	GDPpc 2016=100 (7)	GDPpc(2016) growth rate <i>g^{GDPpc}</i>	wreal 2016=100 enlarged
1976			2.123.180	1.022.364		15,2		1942,2		3062,1
1977			2.179.361	1.059.639		17,4		2049,1	0,1	3230,7
1978			2.237.936	1.092.914		18,6		2288,4	0,1	3608,0
1979			2.303.116	1.126.856		21,2		2686,3	0,2	4235,2
1980			2.377.997	1.164.721		23,6		2892,7	0,1	4560,6
1981			2.464.870	1.196.983		25,4		3270,1	0,1	5155,7
1982			2.563.525	1.236.671		27,3		3365,2	0,0	5305,6
1983			2.671.413	1.280.745		28,7		3157,6	-0,1	4978,3
1984			2.784.457	1.324.678		29,8		3159,4	0,0	4981,2
1985			2.900.055	1.366.702		30,7		2951,4	-0,1	4653,2
1986			3.015.294	1.415.924		30,7		2994,8	0,0	4721,7
1987			3.131.800	1.460.894		30,6		2950,4	0,0	4651,7
1988			3.256.552	1.507.490		32,6		2878,9	0,0	4538,9
1989			3.399.333	1.563.486		41,0		2462,0	-0,1	3881,7
1990	994,6		3.565.888	1.632.100		47,7		2340,6	0,0	3690,2
1991	1.074,4	32,5	3.760.493	1.678.129	677.018,21	51,5	3555,5	2255,1	0,0	3555,5
1992	1.287,7	32,3	3.977.667	1.736.406	723.210,13	53,6	3835,9	2438,0	0,1	3835,9
1993	1.462,6	32,2	4.201.559	1.796.418	775.273,18	55,4	3933,9	2411,6	0,0	3933,9
1994	1.598,3	33,4	4.410.357	1.844.258	855.947,96	57,3	3761,4	2411,7	0,0	3761,4
1995	1.808,0	34,4	4.588.842	1.872.302	935.168,87	58,7	3804,9	2461,6	0,0	3804,9
1996	1.921,8	34,8	4.732.848	1.925.886	978.085,94	62,5	3630,9	2436,5	0,0	3630,9
1997	2.036,5	34,8	4.848.536	1.961.993	1.005.729,28	64,4	3631,5	2457,0	0,0	3631,5
1998	2.181,7	34,8	4.943.975	1.985.953	1.030.190,31	66,4	3684,2	2482,2	0,0	3684,2
1999	2.323,1	34,8	5.031.754	2.006.447	1.052.595,04	66,8	3816,3	2521,6	0,0	3816,3
2000	2.358,5	34,7	5.122.495	2.029.215	1.074.172,47	67,2	3771,5	2582,1	0,0	3771,5
2001	2.425,5	34,2	5.217.328	2.050.674	1.083.629,04	68,4	3777,8	2668,7	0,0	3777,8
2002	2.574,5	33,9	5.317.514	2.074.380	1.097.995,41	69,7	3886,2	2769,9	0,0	3886,2
2003	2.759,2	34,1	5.434.036	2.104.290	1.136.342,38	70,8	3959,9	2823,3	0,0	3959,9
2004	3.055,0	33,9	5.580.241	2.145.881	1.163.767,28	73,2	4141,9	2984,9	0,1	4141,9
2005	3.348,2	33,6	5.765.639	2.204.965	1.197.276,63	75,8	4263,4	3124,2	0,0	4263,4
2006	3.980,8	33,8	5.991.547	2.282.747	1.252.943,94	80,5	4558,7	3249,7	0,0	4558,7
2007	4.660,0	34,0	6.255.290	2.372.917	1.319.890,41	84,3	4836,4	3367,2	0,0	4836,4
2008	5.933,0	34,1	6.556.473	2.476.614	1.389.967,17	96,1	5130,3	3444,9	0,0	5130,3
2009	6.784,0	34,0	6.893.258	2.593.462	1.461.672,63	95,4	5620,0	3441,2	0,0	5620,0
2010	7.109,0	34,3	7.261.541	2.721.450	1.557.296,55	100,0	5272,1	3342,3	0,0	5272,1
2011	7.867,0	34,3	7.662.858	2.859.831	1.646.958,00	104,2	5296,2	3253,9	0,0	5296,2
2012	8.515,0	34,7	8.089.963	3.001.705	1.766.592,39	108,9	5113,4	3157,0	0,0	5113,4
2013	9.181,0	34,7	8.518.992	3.137.427	1.867.456,88	114,1	4975,5	3076,3	0,0	4975,5
2014	9.717,0	35,1	8.918.822	3.252.332	1.988.484,62	117,4	4806,1	3037,8	0,0	4806,1
2015	10.345,0	34,7	9.266.573	3.333.810	2.061.338,44	116,4	4979,5	2996,8	0,0	4979,5
2016	10.935,0	34,0	9.554.286	3.388.133	2.094.642,25	115,5	5220,5	2964,5	0,0	5220,5
2017	11.308,1	32,9	9.785.840	3.413.910	2.096.365,07	119,3	5220,6	2954,8	0,0	5220,6
2018	11.424,4	32,0	9.965.322	3.412.673	2.097.175,38	124,7	5047,1	2957,7	0,0	5047,1
2019	12.106,1	32,6	10.101.697	3.390.356	2.190.850,22	125,6	5080,9	2974,8	0,0	5080,9

Table A.1: Average real wages (in 2016 Jordanian Dinar) in Jordan, 1976-2019.

A.2 Figures: Sources

Figure 1(a).

- Labor force participation rate, female (% of female population ages 15+): World Bank (2022a, series SL.TLF.CACT.FE.ZS) for 1961, 1975 and 1979, Shakhathreh (1995, Table 7.1) for 1979 and 1985, and World Bank (2022b, series SL.TLF.CACT.FE.ZS) for 1990-2020.
- Labor force participation rate, female ages 15-24 (% of female population ages 15-24): *Labor force participation rate for ages 15-24, female (%)* World Bank (2022d), series SL.TLF.ACTI.1524.FE.ZS) for 1961, 1975 and 1979, and World Bank (2022b, series SSL.TLF.ACTI.1524.FE.ZS) for 1990-2020.

Figure 1(b).

- Single Female Labor Force (%) and Married Female Labor Force (%): Department of Statistics (2022c, Table 5.1) from 2000-2016, and Department of Statistics (2022d) from 2017-2020.

Figure 2.

- Age of Marriage: United Nations (2019, Sheet SMAM) for years 1976-2018, Miles (2002, p.416) for male in 1960 and 1970, Courbage (1999, T.3) for female in 1970, and Department of Statistics (1999) for female in 1971 (cited by Kawar 2001, p.2).

Figure 3.

- Fertility rate: World Bank (2022c, series SSP.DYN.TFRT.IN).

Figure 4.

- Real GDP per capita: World Bank (2022d, series NY.GDP.PCAP.KN).

Figure 5.

- Inflation, consumer prices (annual %): World Bank (2022d, series FP.CPI.TOTL.ZG).

Figure 6.

- Average real wages: Own computations from Department of Statistics (2022a, 2022b) and World Bank (2022d) (see Appendix A.1).

Figure 7(a).

- Exports: World Bank (2022d, series NE.EXP.GNFS.KN).
- Formation of Fix Capital: World Bank (2022d, series NE.GDI.FTOT.KN).
- Tourism receipts: Own computation from World Bank (2022d) by multiplying *International tourism, receipts (% of total exports)* (series ST.INT.RCPT.XP.ZS) times *Exports of goods and services (constant LCU)* (series NE.EXP.GNFS.KN); and,
- Foreign Direct Investment, Own computation from World Bank (2022d) by multiplying *Foreign direct investment, net inflows (% of GDP)* (series BX.KLT.DINV.WD.GD.ZS) times *GDP (constant LCU)* (series NY.GDP.MKTP.KN).

Figure 7(b).

- Formation of Fix Capital/GDP: World Bank (2022d, series NE.GDI.FTOT.ZS);
- Foreign Direct Investment/GDP: World Bank (2022d, series BX.KLT.DINV.WD.GD.ZS);
- Exports/GDP: Own computations from World Bank (2022d) by dividing *Exports of goods and services (current LCU)* (series NE.EXP.GNFS.CN) by *GDP (current LCU)* (series NY.GDP.MKTP.KN);
- Tourism receipts/GDP: Own computations from World Bank (2022d) by multiplying Exports/GDP times *International tourism, receipts (% of total exports)* (series T.INT.RCPT.XP.ZS).

Figure 8(a).

- Ur Female 15-24: *Unemployment, youth female (% of female labor force ages 15-24) (modeled ILO estimate)* World Bank (2022d, series SL.UEM.1524.FE.ZS), range 1991-2020;
- Ur Male 15-24: *Unemployment, youth male (% of male labor force ages 15-24) (modeled ILO estimate)* World Bank (2022d, series SL.UEM.1524.MA.ZS), range 1991-2020;
- Ur Female: *Unemployment female (% of female labor force)* World Bank (2022d, series SL.UEM.TOTL.FE.ZS) for 1991-2020, except for 1983, 1986 and 1987 taken from World Bank (2022d, series SL.UEM.TOTL.FE.NE.ZS);
- Ur Male: *Unemployment male (% of male labor force)* World Bank (2022d, series SL.UEM.TOTL.MA.ZS) for 1991-2020, except for 1983, 1986 and 1987 taken from World Bank (2022d, series SL.UEM.TOTL.MA.NE.ZS).

Figure 8(b).

- Single Female Unemployment rate (%) and Single Male Unemployment rate (%) Department of Statistics (2022c, Table 2.6) from 2000-2016, and Department of Statistics (2022d) from 2017-2020.

Figure 9.

- Birth rate: *Birth rate, crude (per 1,000 people)* World Bank (2022d, series SP.DYN.CBRT.IN), range 1960-2019;
- Mortality rate: *Death rate, crude (per 1,000 people)* World Bank (2022d, series SP.DYN.CDRT.IN), range 1960-2019;
- Population: *Population, total* World Bank (2022d, series SP.POP.TOTL), range 1960-2020.

Figure 10. Age Structure in Jordan.

- (1) *Population ages 0-14, male (% of male population)*: World Bank (2022d, series SP.POP.0014.MA.ZS), range 1960-2020;
- (2) *Population ages 15-19, male (% of male population)*: World Bank (2022d, series SP.POP.1519.MA.5Y), range 1960-2020;
- (3) *Population ages 20-24, male (% of male population)*: World Bank (2022d, series SP.POP.2024.MA.5Y), range 1960-2020;
- (4) *Population ages 15-64, male (% of male population)*: World Bank (2022d, series SP.POP.1564.MA.ZS), range 1960-2020;
- (5) *Population ages 65 and above, male (% of male population)*: World Bank (2022d, series SP.POP.65UP.MA.ZS), range 1960-2020;
- (6) *Population ages 0-14, female (% of female population)*: World Bank (2022d, series SP.POP.0014.FE.ZS), range 1960-2020;
- (7) *Population ages 15-19, female (% of female population)*: World Bank (2022d, series SP.POP.1519.FE.5Y), range 1960-2020;
- (8) *Population ages 20-24, female (% of female population)*: World Bank (2022d, series SP.POP.2024.FE.5Y), range 1960-2020;
- (9) *Population ages 15-64, female (% of female population)*: World Bank (2022d, series SP.POP.1564.FE.ZS), range 1960-2020;
- (10) *Population ages 65 and above, female (% of female population)*: World Bank (2022d, series SP.POP.65UP.FE.ZS), range 1960-2020;
- (11) *Population, male*: World Bank (2022d, series SP.POP.TOTL.MA.IN), range 1960-2020;
- (12) *Population, female*: World Bank (2022d, series SP.POP.TOTL.FE.IN), range 1960-2020;
- (13) *Population, total*: World Bank (2022d, series SP.POP.TOTL), range 1960-2020.

Variables:

- Population ages 0-14, total (% of population)= $(1)*(11)/(13)+(6)*(12)/(13)$.
- Population ages 15-19, total (% of population)= $(2)*(11)/(13)+(7)*(12)/(13)$.
- Population ages 20-24, total (% of population)= $(3)*(11)/(13)+(8)*(12)/(13)$.
- Population ages above 25, total (% of population)= $[(4)-(2)-(3)+(5)]*(11)/(13)+[(9)-(6)-(7)+(10)]*(12)/(13)$.

Figure 11(a).

- (1) *Employment to population ratio, 15+, total (%) (modeled ILO estimate)*: World Bank (2022d, series SL.EMP.1524.SP.ZS);
- (2) *Employment to population ratio, ages 15-24, total (%) (modeled ILO estimate)*: World Bank (2022d, series SL.EMP.TOTL.SP.ZS).

Variables:

- Employment, ages 15-24, to Total Employment, total (%)= $(1)/(2)$

Figure 11(b).

- Female Labor force participation rate for ages 15-24: *Labor force participation rate for ages 15-24, female (%) (modeled ILO estimate)* World Bank (2022d, series SL.TLF.ACTI.1524.FE.ZS), range 1990-2020 except for 1961, 1970 and 1979 taken from World Bank (2022d, series SL.TLF.ACTI.1524.FE.NE.ZS).;
- Male Labor force participation rate for ages 15-24: *Labor force participation rate for ages 15-24, male (%) (modeled ILO estimate)* World Bank (2022d, series SL.TLF.ACTI.1524.MA.ZS), range 1990-2020 except for 1961, 1970 and 1979 taken from World Bank (2022d, series SL.TLF.ACTI.1524.MA.NE.ZS).

Figure 12.

- Female Employed Persons by broad Age Groups (percentage) Department of Statistics (2022c), Table 5.1 from 2000-2016, Table 4.1 (only Jordanian) from 2017-2020, except Kawar 2001, p.2) for 1998. For shorter range of years, a proportional distribution among years have been assigned.

Figure 13.

- % Females 15-24: *Literacy rate, youth female (% of females ages 15-24)* World Bank (2022d, series SE.ADT.1524.LT.FE.ZS);
- % Females ≥ 15 : *Literacy rate, adult female (% of females ages 15 and above)* World Bank (2022d, series SE.ADT.LITR.FE.ZS) all years except Kawar 2001, p.2) for 1996.

Figure 14.

- Primary: *School enrollment, primary (gross), gender parity index (GPI)* World Bank (2022d, series SE.ENR.PRIM.FM.ZS);
- Secondary: *School enrollment, secondary (gross), gender parity index (GPI)* World Bank (2022d, series SE.ENR.SECO.FM.ZS);
- Tertiary: *School enrollment, tertiary (gross), gender parity index (GPI)* World Bank (2022d, series SE.ENR.TERT.FM.ZS).

Figure 15.

- Single Female Active over Female Active (%) and Single Male Active over Male Active (%) Own computations from Department of Statistics (2022c, Table 5.1) from 2000-2016, and Department of Statistics (2022d) from 2017-2020.

Figure 16.

- Male Main Current Economic Activity (percentage) and Female Main Current Economic Activity (percentage): Department of Statistics (2022c, Table 5.18) from 2000-2016, and Department of Statistics (2022c, Table 4.4 (only Jordanian)) from 2017-2020.

Figure 17.

- The Cost of Marriage in Jordan (in 2010 Jordan Dinars): Salem (2014, Table 7.10) from 1970-2010. For period 2012-2016 we have taken data from Sieverding et al. (2018, Table 7) and multiplied the (real) growth rate of the cost of marriage between the periods 2005-2009 and 2012-2016.
- Average real wage (in 2010 Jordan Dinars): Own computations from Department of Statistics (2022a, 2022b) and World Bank (2022d) (see Appendix A.1). To obtain the series of average real wage in 2010 Jordan Dinars, we have multiplied the series of the real wage by the CPI of 2016 (column (6) in Table A.1) and divided the result by 100.

Figure 18.

- The Cost of Marriage over (real) wages: Own computations dividing The Cost of Marriage in Jordan (in 2010 Jordan Dinars) from Figure 17, by the *real wage (in 2010 Jordan Dinars)* computed in Section A.1, range 1976-2019.
- The Cost of Marriage over expected (real) wages, age 15-24: Own computations dividing The Cost of Marriage in Jordan (in 2010 Jordan Dinars) from Figure 17 by the expected real wage (in 2010 Jordan Dinars). *Expected real wage (in 2010 Jordan Dinars)* is computed by multiplying the *real wage (in 2010 Jordan Dinars)*, computed in Section A.1, times the probability a young male ages 15-24 finds a job. The probability a young male ages 15-24 finds a job is 1 minus the young-male-age-15-24, unemployment rate, i.e. the *Unemployment, youth male (% of male labor force ages 15-24) (modeled ILO estimate)* World Bank (2022d, series SL.UEM.1524.MA.ZS), range 1976-2019. Thus, we are implicitly assuming that finding a job follows an independent and identically distributed process.
- The Cost of Marriage over expected (real) wages, single male: Own computations dividing The Cost of Marriage in Jordan (in 2010 Jordan Dinars) from Figure 17 by the expected real wage (in 2010 Jordan Dinars). *Expected real wage (in 2010 Jordan Dinars)* is computed by multiplying the *real wage (in 2010 Jordan Dinars)*, computed in Section A.1, times the probability a single male finds a job. The probability a single male age finds a job is 1 minus the single-male, unemployment rate, i.e. the *Single Male Unemployment rate (%)* Department of Statistics (2022c), Table 5.1 from 2000-2016, and Department of Statistics (2022d) from 2017-2020, range 2000-2019. Thus, we are implicitly assuming that finding a job follows an independent and identically distributed process.

Figure 19.

- Agree: the percentage of *strongly agree* and *agree* answers with the statement *Men should have more right to a job than women*, Own computation from the World Values Survey, Inglehart et al. (2022).