

Informal Employment in Era of Asylum: insights from the Second Highest Worldwide Host Country of Refugees

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Abstract

Purpose: This paper examines the key microeconomic drivers of informal employment in Jordan, the second highest worldwide host country of refugees on per-capita basis. The primary goal is to evaluate the main variables indicating the likelihood of an individual being employed informally; without a contract or social security

Design/methodology/approach: Microdata from Jordanian labor market panel surveys performed in 2010 and 2016 and Probit model for binary outcomes is used to assess the influence of a socioeconomic set of variables on the likelihood that an individual works informally.

Findings: Between 2010 and 2016, the likelihood of men working in the informal sector increased by almost 10 percentage points. After the post-secondary threshold, education diminishes the likelihood of working informally. The likelihood of being an informal employee was highest among refugee workers, and least common among foreign labors. Public administration and defense, education, water and energy, and health were, in order, the least likely to employ informal labor relative to agricultural, construction, and service sectors. Statistically significant differences in the likelihood of informal employment were found by age group, marital status, and area of residence. Finally, the massive infusion of refugee employees into the labor market raised the proportion of informal employment among refugees, and dropped average wage.

Originality/value: Our findings aggravate the challenge for government policies to promote formality in the labor market, to eliminate discrimination, and to bridge the gaps in employment opportunities across labors.

Keywords: *informal employment, microeconomic determinants, refugees, Jordan.*

1. Introduction

Over the past three decades, reducing the high unemployment rate and generating new jobs for the country's economy have been major concerns of the Jordanian government's agenda. The Jordanian economy still faces many political and economic difficulties, such as a high unemployment rate of 24% in 2022 (International Monetary Fund, 2023), a meager real economic growth of 1.06% on average between 2017 and 2021, and high energy costs, particularly in the wake of the Russian-Ukrainian war (currently US\$1.67 per liter of gasoline or US\$6.32 per gallon) (Central Bank of Jordan 2022). Due to these reasons, the Jordanian economy is particularly susceptible to periodic fluctuations and high unemployment. Additionally, they make the issue of scarce water sources worse and

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make the region's political shocks more unpredictable, especially in light of the substantial influx of Syrian refugees.

Numerous studies have been conducted on informality because it is an increasing issue in the majority of emerging economies. Research has been done on informality's definition, measurement, costs, benefits, and, in particular, its micro- and macro-determinants (Chen 2012; Angle-Urdinola and Tanabe 2012; Ben Salem and Bensidoun 2012; Aikaeli and Mkenda 2014; Williams et al. 2016; Igudia et al. 2016; Hassan 2018).

Jordan is home to migrant workers from many countries including Egypt, Yemen, India, Bangladesh, and others. However, since 2011, the influx of Syrian immigrants has exacerbated issues with the informal labor market. Both the conventional and unofficial economies in Jordan contribute to employment. There is, however, a tremendous lot of controversy, mostly among government officials, about whether Jordan's informal sector should be made legal. Their beliefs are essentially based on the notion that transitioning to a formal economy is essential for boosting economic performance, lowering employee vulnerability, upgrading working conditions, enabling skills and performance, and expanding social security coverage.

A framework titled "Towards a National Framework for a Transition to Formal Economy in Jordan," approved by Jordan in 2015, aims to upgrade and regulate the country's informal economy by helping unofficial businesses and workers improve living and working conditions and foster economic growth to ensure a smooth transition to a formal economy. (ILO 2015).

Therefore, the best way to enhance the performance of the labor force in Jordan's informal sector and create sustainable jobs is to study and analyze the key characteristics of workers there. This is because employment and the efficient use of human resources have a strikingly positive impact on economic performance. Additionally, public-private cooperation is needed for mutual changes in labor skills, credit, tax costs, and regulatory compliance costs in order to increase performance (Benjamin et al. 2014).

The research problem of the paper is to identify the main micro socio-economic determinants of employment in the informal sector in Jordan during the period (2010-2016) and provide policy implications to the decision-makers in this context using the most recent Jordan Labor Market Panel Survey (JLMPS) conducted in 2016. As there hasn't been much analysis of this topic, the projected findings of this effort may close a research gap on the subject, and will also help shape policies that will either encourage the unofficial sector or, in some situations, formalize it.

The paper proceeds as follows. Section two deals with the theoretical background and a literature evaluation. Section three provides trends of informality around the world. Section four introduces the statistical methods, section five discusses the empirical results, and section six concludes the study.

2. Theoretical Background

There is no universal agreement on how to define the informal economy in the literature. Depending on the nation and the researcher, a certain economic unit, sector, or activity may be defined as formal or informal in a variety of ways. Different definitions are largely a result of different study goals among academics and researchers from a variety of fields. Accordingly, informality might be defined in terms of productivity or/and legal reasons. One description is based on the characteristics of the employed, such as non-professional employees, workers in unskilled jobs, family employees, self-employed people, and employees of small firms. Disregard for social security and labor law norms and regulations is another. Therefore, persons who are self-employed or do not have

access to the social security system are included in this idea of informality. (Khamis 2012; Baez-Morales 2015).

The characteristics of relevant firms, employees, and untaxed activities, according to Angel-Urdinola and Tanabe (2012), can be utilized to identify informality. According to this definition, the informal sector consists of both employers and employees who operate small, unregistered enterprises as well as unpaid self-employed individuals who own and operate family businesses. These businesses frequently don't employ more than five people and focus on industries other than agriculture. Some of these illegal actions are covered up to avoid having to pay taxes or adhere to other legal obligations. Other programs work to meet necessities.

The term "informal economy" refers to all economic activities by workers and firms engaged in the production of goods and services with the primary objective of generating employment and income for the persons concerned that are - in law or in practice - not covered or insufficiently covered by formal arrangements, according to International Labor Organization (ILO) 2023A.

According to the International Labor Organization (ILO 2023A), employment in the informal sector is "comprising all jobs in informal sector enterprises, or all persons who, during a given reference period, were employed in at least one informal sector enterprise, irrespective of their status in employment and whether it was their main or secondary job." One of the key objectives of developing the informal sector is to provide jobs. Therefore, what constitutes an informal job is a work relationship that is neither legally nor practically covered by national labor laws, income taxation, social protection, or the right to specific employment benefits. Examples of informal employment include work at unregistered or undeclared firms, industrial outwork, domestic work, and casual or temporary employment.

Although there is debate over the definition of the "informal sector," it is generally agreed that it refers to all currently unregistered economic activities (Feige 1990; Lubell 1991; MOP 2010; Subrahmanyam 2016); Hartzenburg and Leimann (1990) define it as all economic activities carried out without the approval of the relevant authorities.

On whether market rivalry or labor market fragmentation is to blame for the growth of the informal sector, researchers and policymakers continue to dispute. recently, it has been argued that neither of the two hypotheses sufficiently explains informal employment and that the informal sector has a heterogeneous structure. The informal economy can be a desired employment alternative for some employees, but it can also be a last-ditch effort for others (Günther and Launov 2012). In each state of Mexico, where FDI has little impact on microbusiness informality, Baez-Morales (2015) found evidence on the significance of market size, education, corruption, and income in driving informality.

In order to determine formality, the existing literature uses two different methods: a direct method that involves directly interviewing participants (employers and employees) in the labor market about their activities, and an indirect method that examines issues like electricity use, currency demand, and other issues. Collecting accurate measures is still quite difficult, especially when seeking to gauge clandestine or illegal behavior (Hassan 2018).

De Paula and Scheinkman (2007) examined the variables influencing the informal sector using two equilibrium models of informality, testing the implications of their findings through a survey of Brazilian small firms. They characterized informality as tax evasion since people are more likely to work in the informal sector and avoid paying taxes when taxes are burdensome. In addition, they argued that informal sector businesses incur higher capital costs and size limitations despite the fact that they are not paying taxes. Because of this, informal enterprises are smaller and have lower capital to labor ratios. To support their views, they found empirical data. They came to the conclusion that

informality is a fiscal problem and that there was growing evidence that informal businesses were less successful, maybe as a result of their small size and lack of access to the formal sector's infrastructure of legal protection or credit.

All nations are affected negatively by informality, but those that are extremely poor are more affected. They discovered evidence of significant and expanding variation over time within informal employment in terms of poverty, age, gender, socio-religious communities, educational attainment, and industry classification. To address the many forms of informality in the nation, this poses significant policy problems for various employment groups' decision-makers (Sahoo and Neog 2017).

One of the main reasons why people choose informal employment over legal employment in Tanzania's construction industry, according to Aikaeli and Mkenda (2014), is the greater remuneration in the former. Lack of finances, poor education, and workers' restricted skill sets are further reasons why people chose informal work. Being a woman and the potential for obtaining inadequate remuneration from employers are additional factors that raise the likelihood of working informally. According to Forbes (2014), the primary reasons people choose to work in the informal economy are to avoid paying income taxes, fees to the government, social security contributions, and other legal labor market requirements. These findings call for specific policy adjustments in the areas of risk management, credit rules, and funding constraints.

Unemployment, the need for survival, government corruption, and tax evasion are among the problems that contribute to the emergence and expansion of the informal economy for Nigeria (Igudia et al. 2016). Despite being country-specific, their findings and advice could be used to the development of policies in other countries with economic systems similar to Nigeria.

Williams et al. (2016) conducted a survey of 300 informal microenterprises in the Pakistani city of Lahore, and found that the characteristics of the entrepreneur and business, rather than their motivations or the larger formal and informal institutional compliance environment, are the key predictors of their level of informality. Lower degrees of informality are generally associated with female business owners, older, more educated, higher-income entrepreneurs, and older manufacturing enterprises.

Hassan (2018) claimed that Bangladesh and other developing countries throughout the world frequently experience a high degree of the informal or hidden economy. The informal sector evolved as a result of bureaucracy, corruption, low tax enforcement, and a weak sense of the rule of law. Due to poorer productivity, informality may momentarily promote economic growth, but in the long run, it impedes economic development. A sizeable informal economy also demonstrates significant discrimination and governmental shortcomings. This needs to be fixed by reducing pointless taxes, stabilizing the macroeconomy, and improving the regulatory environment.

Finally, Andrews et al. (2011) claimed that informal work has numerous social and economic repercussions in their cross-country study on informality. Their cross-country data revealed that informality is multidimensional, necessitating the use of many measurements and definitions to adequately reflect its range of characteristics. They continue to assert that measurement issues decrease the trustworthiness of the empirical data on the scope and motivators of informal activities and cause cross-country estimates of informality to deteriorate. There is no question, according to Becker (2004), that the informal economy has a substantial task and income creation potential.

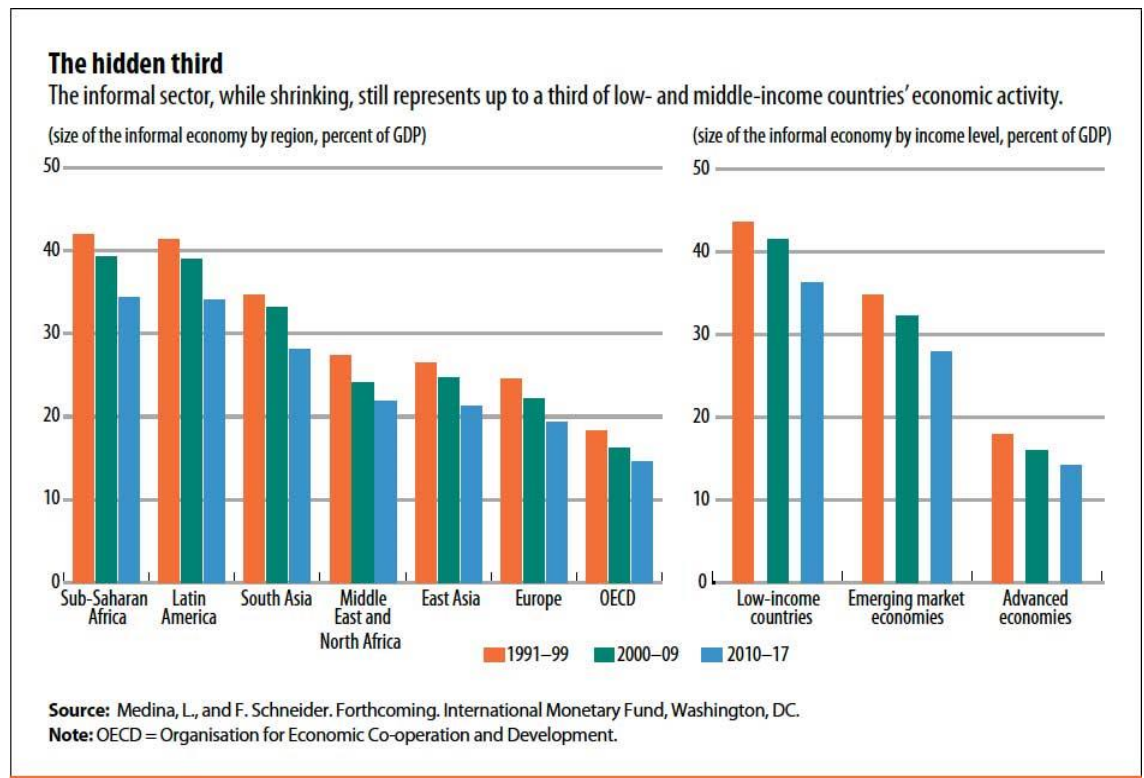
3. Informality around the world

Although defining informal activities can be difficult, Medina and Schneider (2019) estimated that from 1991 to 2017, the informal sector in 157 countries accounted for

around 30.9% of GDP, or nearly one-third of global GDP. According to Charmes (2012), the informal economy accounts for 58–70% of non-agricultural employment. Figure 1 shows that while the informal economy represents just 16% of GDP on average in OECD countries, it represents an average of 39% of GDP in Sub-Saharan Africa and Latin America.

The informal economy is large as a percentage of GDP in some countries, such as Bolivia (63%), Georgia (61.7%), and Georgia, and minor as a percentage of GDP in other countries, such as Switzerland (6.4%) and the United States (7.6%). The share of the informal economy in the GDP has, however, consistently decreased over the course of the study period, suggesting that informality has decreased in prevalence. It's also intriguing that, generally speaking, low-income countries have a high informal economy percentage of GDP while advanced economies have a low informal economy share of GDP (IMF, 2018). Furthermore, 93% of the employed people worldwide are found in emerging and developing nations (ILO, 2023B), where the informal economy employs more than 60% of all employed individuals worldwide. For example, compared to all other parts of the world, the informal sector is particularly widespread and common in Sub-Saharan Africa (Ali, 2017).

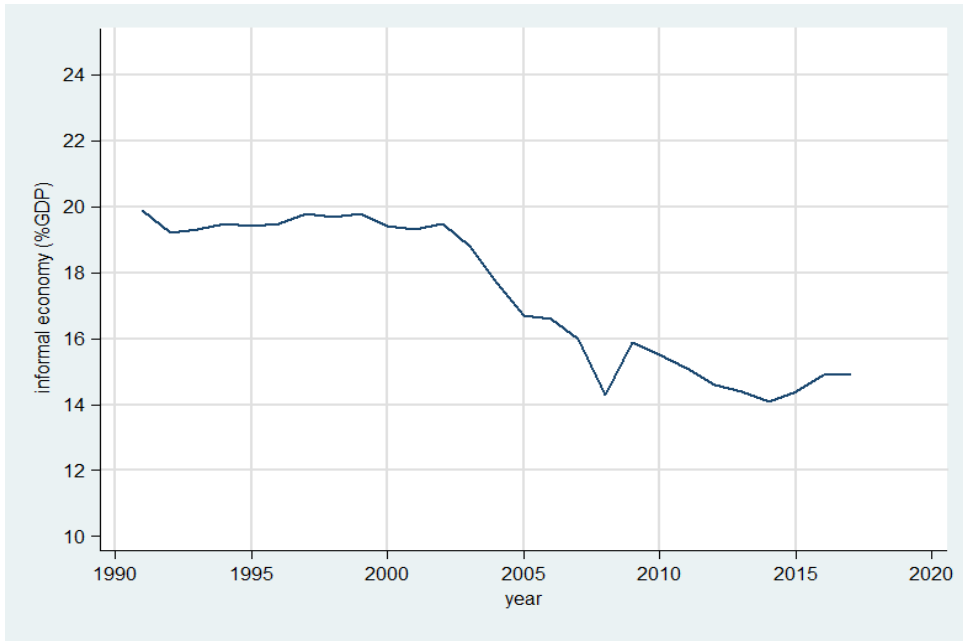
Figure 1: The Hidden Third



3.1 Informality in Jordan

Jordan's informal economy generated 17.3% of the GDP, with the lowest proportion occurring in 2014 at 14.1% and the largest percentage occurring in 1991 at 19.9% (Figure 2). Even though Jordan is a member of the Middle East and North Africa, as a whole, its share of the informal economy is lower (24.1%). According to 2015 ILO estimates, the informal sector accounted for more than half of employment in Jordan. The majority of these employees are characterized by low wages, a lack of legal protection, inadequate skills, and poor working conditions (Gunther and Launov, 2012).

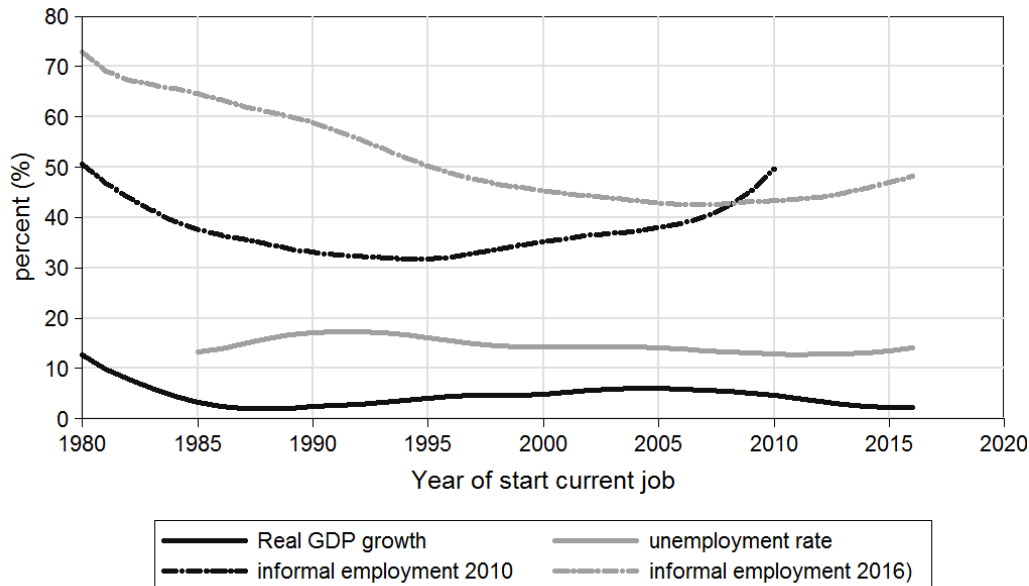
Figure 2: Informal Economy in Jordan (% of GDP)



Source: Based on Medina and Schneider, 2019 data; pp (40-46)

Jordan approved a national framework for managing the informal economy drawn up by the ILO in 2015 to increase productivity and economic growth. By assisting unofficial firms and ensuring that people have access to adequate jobs and living conditions, this framework seeks to legalize the informal sector in Jordan.

Figure 3: Economic growth, Unemployment and informality in Jordan



Source: Authors based on JLMPS 2010 & 2016

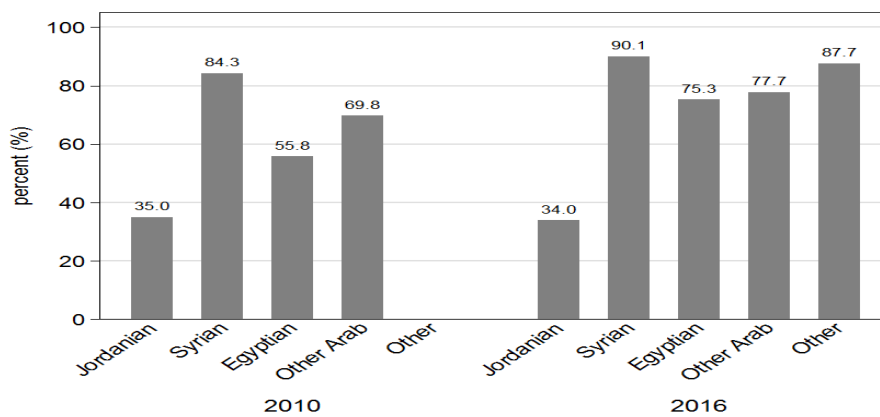
JLMPS data showed that among workers aged 20 to 59 years, the percentage of informal employment increased in 2016 compared to 2010; this increase may be related to the startling increase in the number of refugees, particularly those from Syria. Between 2010 and 2016, Jordan's gender distribution of informal laborers was compared in Table 1. From 38.7% in 2010 to 48.5% in 2016, the proportion of informal employees increased dramatically by 9.8 percentage points (about one-quarter). This increase was principally

brought on by a significant rise in the number of male informal employees, as the percentage of female informal workers fell (from 21.3 to 19.4%). The significant increase in non-Jordanian employees, especially Egyptians and Syrians, may explain these changes in the informal sector, as seen in Figure 4.

Table 1: Informal employment by gender (%)

| Gender | 2010 | 2016 |
|--------|-------|-------|
| Male | 42.3 | 52.8 |
| Female | 21.3 | 19.4 |
| Total | 38.7 | 48.5 |
| N | 5,957 | 6,342 |

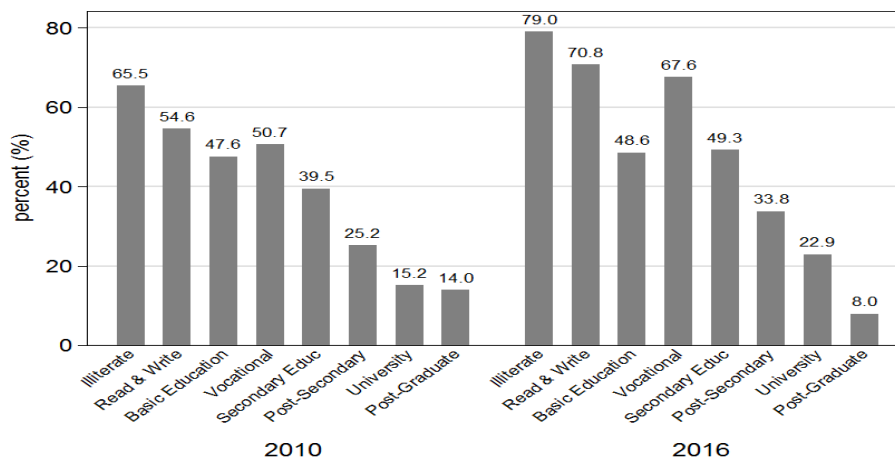
Figure 4: Informal employment by nationality, age 15 – 64 years (%)



Source: Authors based on JLMPS 2010 & 2016

Figure 5 illustrates the inverse relationship between educational attainment and employment in the informal sector, demonstrating that people with only a secondary education are more likely to work in this sector. Compared to the situation in 2010, this tendency became more prominent in 2016. In addition, JLMPS records showed that, notably in 2016, the average number of years of schooling for workers in the informal sector was much lower than that of workers in the formal sector, and there was a noticeable wage gap of about 90JD (126.5US\$).

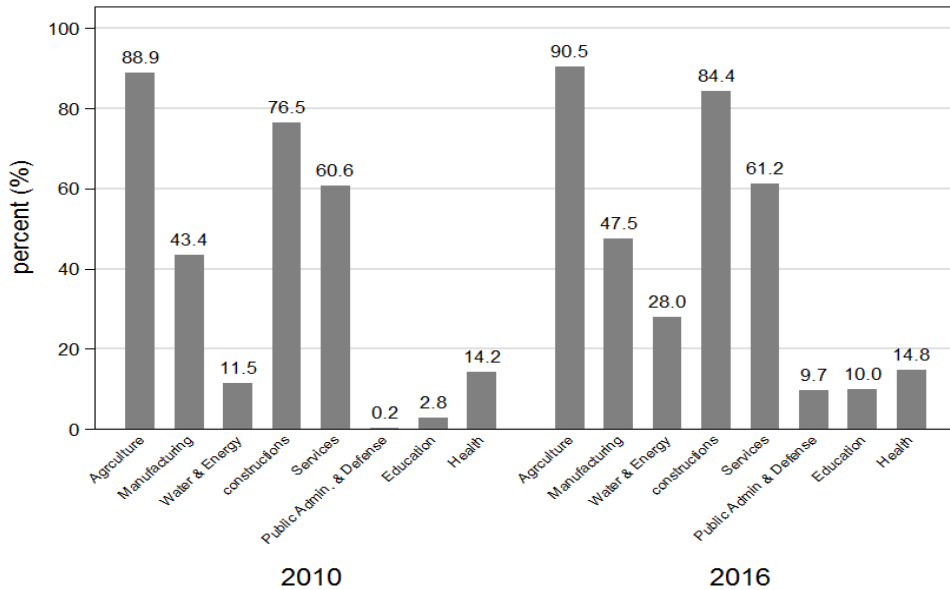
Figure 5: Informality by educational attainment, age group 25 – 64 years



Source: Authors based on JLMPS 2010 & 2016

With increasing concentration patterns over time, the majority of informal employment is concentrated in the manufacturing, services, construction, and agriculture industries. In 2016, it was estimated that 90% of employees in the agriculture sector, 84% of employees in the construction industry, 61% of employees in the services sector, and 47.5% of employees in manufacturing were classified as informal laborers. Additionally, it is more exciting and begs for official policy involvement since an increasing percentage of individuals employed in public administration and education (about 10% in 2016) were informal workers (Figure 6). These two sectors are essential for the government and society.

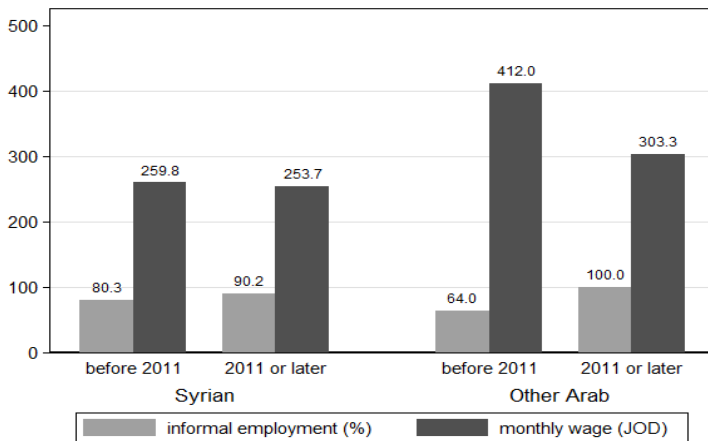
Figure 6: Informal employment by sector and round



Source: Authors based on JLMPS 2016

Since 2011, there were significant refugee inflows as a result of the Syrian civil war, which resulted in a massive infusion of new employees into the labor market in Jordan, raised the proportion of informal employment, and dropped average wage. Figure 7 demonstrates an increase in the percentage of Syrian forced immigrants working in the informal sector from 80.3% among refugees before 2011, to over 90% among refugees since 2011 or later. It did so at a greater rate for non-Syrian forced immigrants.

Figure 7: Informal employment and monthly wage of refugees



Source: Authors based on JLMPS 2016

4. Statistical Methods

In this section, data sources and the mathematical model are discussed.

4.1. Data

Jordan's Department of Statistics (DoS) and Economic Research Forum (ERF) collaborated to conduct the Jordan Labor Market Panel Survey (JLMPS), a national survey, with the goal of learning more about the state of the labor market and formulating suggestions for improving the welfare of both employees and employers. A sample of 5,102 families consisting of 5,953 people were questioned in 2010, and 7,229 families consisting of 33,450 persons, in total were surveyed in 2016. In the latter survey, 3000 households were included in an enlarged sample that was meant to represent non-Jordanian residents, including Syrian refugees. It allows tracking adjustments to Jordan's labor market and evaluate potential impacts of the refugee crisis.

4.2. Probit Model

A probit model for binary outcomes is used to evaluate the effects of socioeconomic characteristics (independent variables) on the likelihood that a person works in the informal sector. The level of all independent variables determines the marginal impact of a change in one independent variable on the likelihood of working informally. Our dependent binary variable, informal employment, is designated as 1 if a person is employed without social insurance, contract, or both, and 0 if they are employed in the formal sector. The model is expressed as follows:

$$P(Y = 1|X) = \Phi(X^T\beta) \dots \dots \dots (1)$$

Where P stands for probability, Φ is the Cumulative Distribution Function (CDF) of the standard normal distribution, X is a vector of the regressors, and each parameter β is used to interpret the impact of changing the value of a regressor on the conditional probability of the outcome variable ($Y = 1|X$), while maintaining some constant values for all other regressors. Equation (1) can be modified as follows to determine the marginal effect that reflects the change in probability of $Y = 1$ given a 1 unit change in a regressor, k:

$$\frac{\partial P}{\partial X_k} = \beta_k \Phi(X^T\beta) \dots \dots \dots (2)$$

While marginal effects for continuous independent variables reflect the impact of a one unit change in the independent variable on the probability of the outcome variable, marginal effects for dummy variables reflect the difference in probability of a positive outcome compared to the base category ($x = 0$).

5. Results

The marginal effects of micro-social and economic factors on the likelihood of informal employment are shown in Tables 2.a and 2.b. The results of the pooled data are displayed in column 1, while the marginal effects utilizing the data from 2010 and 2016 are displayed in columns 2 and 3, respectively. Women had a 6.9% lower likelihood of working informally than males did. In contrast to 2010, when there was no discernible difference between men and women, women had a 10.7% lower likelihood of finding informal employment in 2016. Rural dwellers had a 6.8% lower likelihood of working in the informal sector. Residents of rural areas and their urban counterparts had comparable variances in 2010 and 2016.

Compared to adolescents between the ages of 15 and 19, adults in the 20 to 39 years of age range from 6 to 6.5 percent less likely to be informal employees. Adults older than 30 years were more likely to work in the informal sector in 2010, but in 2016 age variations in the likelihood of informal employment became statistically insignificant. People who

were widowed had a 21 percent increased chance of working in the informal sector. However, in 2016, separated people (who had been divorced or widowed) were more likely to hold informal jobs. According to nationality-based data, Egyptians had a negligible chance of working informally, whereas Syrians, other Arabs, and others had probabilities that were 28.4, 20.6, and 28.7 percentage points higher to work without a contract or social security, respectively.

Table 2.a results show that Syrians, other Arabs (other than Jordanians, Syrians, and Egyptians), and other nationalities, in addition to separated persons were more likely to work in the informal sector, while women, rural inhabitants, and adults were less likely to do so.

Table 2.a: Gender, place of residence, age, and marital status effects on the probability of employment in the informal sector

| | | <u>col. (1)</u> | <u>col. (2)</u> | <u>col. (3)</u> |
|----------------------------|--------------------|-----------------|-----------------|-----------------|
| Variable | | pooled | 2010 | 2016 |
| Gender | Female | -0.069*** | -0.020 | -0.107*** |
| | | (0.000) | (0.274) | (0.000) |
| Residence | Rural | -0.068*** | -0.066*** | -0.063** |
| | | (0.000) | (0.000) | (0.011) |
| Age group [15_19] | 20_29 | -0.065*** | -0.067** | -0.048 |
| | | (0.005) | (0.013) | (0.189) |
| | 30_39 | -0.061** | -0.098*** | -0.026 |
| | | (0.018) | (0.001) | (0.512) |
| | 40_49 | -0.037 | -0.068** | -0.002 |
| | (0.182) | (0.033) | (0.959) | |
| | 50_59 | -0.012 | -0.078** | 0.041 |
| | | (0.689) | (0.031) | (0.388) |
| | 60_64 | 0.037 | 0.022 | 0.051 |
| | | (0.458) | (0.656) | (0.512) |
| Marital status [single] | Married | 0.011 | 0.029* | 0.002 |
| | | (0.484) | (0.097) | (0.942) |
| | Divorced/separated | 0.075 | 0.003 | 0.140** |
| | | (0.108) | (0.964) | (0.034) |
| | Widow(er) | 0.209*** | 0.204*** | 0.189* |
| | | (0.000) | (0.000) | (0.087) |
| Nationality [Jordanian] | Syrian | 0.269*** | 0.130* | 0.284*** |
| | | (0.000) | (0.064) | (0.000) |
| | Egyptian | 0.050 | -0.016 | 0.062 |
| | | (0.139) | (0.639) | (0.222) |
| | Other Arab | 0.169*** | 0.101** | 0.206*** |
| | | (0.000) | (0.001) | (0.000) |

| | | | |
|-------|--------------------|---|---------------------|
| Other | 0.262** (0.011) | – | 0.287*** (0.005) |
|-------|--------------------|---|---------------------|

*** = significant at 1%

** = significant at 5%

* = significant at 10%

Table 2.b compares the likelihood of informal employment by sector and education. The likelihood of finding informal job after completing secondary school is inversely correlated with educational attainment. No significant variations in the likelihood of finding informal jobs were seen when education levels were secondary or lower. However, the likelihood that a person was an informal employee reduced when education level was post-secondary (by 15.6%), university (by 22.2%), or post-graduate (by 23.4%). Similar variations were seen between 2010 and 2016, highlighting the critical role that education plays in lowering the possibility of working without a contract or social security.

Sectoral differences in the informal hiring of employees were obvious. Construction, services, and manufacturing industries had the highest likelihood of informal employees. On the other side, the likelihood of informal employment was reduced in the public administration and defense, education, water and energy, and health sectors, at order. These results demonstrate the impact of education on the likelihood of working informally after a certain level (post-secondary), and they also emphasize the stark differences in how workers are treated and recruited in different industries.

The final section of Table 2.b displays the regression diagnostics. As the prob > chi2 equals zero for all three models, the null hypothesis of an insignificant model (all coefficients equaling zero concurrently) is rejected. Pseudo R₂ has realistic values, and "correctly specified" indicates that each model can accurately describe the employment status of a sizable fraction of the sample (81.1%, 82.7%, and 79.9%), demonstrating the strength of the described factors in explaining and predicting the likelihood of informal work.

Table 2.b: Education, and sector effects on the probability of employment in the informal sector

| variable | pooled | 2010 | 2016 |
|---------------------------|--------------------------|--------------------------|--------------------------|
| | 0.043 (0.300) | 0.033 (0.414) | 0.052 (0.332) |
| | – 0.002 (0.958) | – 0.015 (0.704) | – 0.001 (0.987) |
| Education [illiterate] | – 0.030 (0.490) | – 0.077* (0.060) | 0.001 (0.986) |
| | – 0.156*** (0.001) | – 0.181*** (0.000) | – 0.138** (0.029) |
| | – 0.222*** (0.000) | – 0.252*** (0.000) | – 0.203*** (0.001) |
| | – 0.234*** (0.000) | – 0.221*** (0.000) | – 0.244** (0.004) |

| | | | | |
|-------------------------|------------------------------------|----------------------|---------------------|---------------------|
| | Manufacturing | 0.427*** (0.000) | 0.466*** (0.000) | 0.392*** (0.000) |
| | Water & Energy | 0.602*** (0.000) | 0.693*** (0.000) | 0.478*** (0.000) |
| Sector [Agriculture] | constructions | - 0.107** (0.023) | 0.148*** (0.000) | - 0.069 (0.301) |
| | Services | 0.238*** (0.000) | 0.253*** (0.000) | 0.219*** (0.001) |
| | Public Administration & Defense | 0.742*** (0.000) | 0.830*** (0.000) | 0.650*** (0.000) |
| | Education | 0.637*** (0.000) | 0.759*** (0.000) | 0.517*** (0.000) |
| | Health | 0.547*** (0.000) | 0.602*** (0.000) | 0.500*** (0.000) |
| LR chi2 | | 1444.77 | 1258.63 | 1756.72 |
| Prob > chi2 | | 0.0000 | 0.0000 | 0.0000 |
| Pseudo R2 | | 0.358 | 0.449 | 0.316 |
| N | | 11800 | 5743 | 6055 |
| Correctly classified | | 81.1% | 82.7% | 79.9% |

The main micro-determinants of refugees' informal work are listed in Table 3. Although important, there were insufficient data on sectors, hence they were not included in the analysis. Compared to men and urban residents, women and rural residents had a lower likelihood of being informal workers. Age differences were not found, however separated people had a 33.5% higher likelihood of having a job informally. An adverse association between education level and the likelihood that refugees work informally was found. The chance of informal employment was roughly 26% greater for Syrian refugees and around 14% higher in case of other Arab refugees. According to diagnostics, our model is significant and successfully identifies the informal employment status in around 75% of the cases.

Table 3: Refugee demographic factors effects on the probability of informal employment, 2016.

| | Variable | coef | p>z |
|-----------|----------|------------|-------|
| Gender | Female | - 0.243*** | 0.004 |
| Residence | Rural | - 0.150*** | 0.009 |

| | | | |
|----------------------|--------------------|------------|-------|
| | 20_29 | – 0.119 | 0.121 |
| | 30_39 | – 0.153 | 0.112 |
| Age group | 40_49 | 0.0002 | 0.998 |
| [15_19] | 50_59 | – 0.140 | 0.214 |
| | 60_64 | 0.014 | 0.907 |
| Marital status | Married | 0.032 | 0.642 |
| [single] | Divorced/separated | 0.335*** | 0.000 |
| | Read & Write | – 0.120* | 0.068 |
| Education | Basic Education | – 0.250*** | 0.001 |
| [illiterate] | Secondary Educ | – 0.249*** | 0.002 |
| | Post-Secondary | – 0.364*** | 0.002 |
| | University | – 0.359*** | 0.000 |
| Nationality | Syrian | 0.259*** | 0.001 |
| | Other Arab | 0.139* | 0.074 |
| LR chi2 | | 167.34 | |
| Prob > chi2 | | 0.0000 | |
| Pseudo R2 | | 0.266 | |
| N | | 506 | |
| Correctly classified | | 74.9% | |

coef. = $\partial P/\partial x_k$ = The marginal effects on the probability of informal employment, of a change in a regressor.

6. Conclusion

Since Jordan experienced a large influx of refugees as a result of the turmoil events in the region, the study sought to empirically analyze the main microeconomic factors influencing informal employment in Jordan's labor market. The study used a probit model and microdata from Jordanian labor market panel surveys conducted in 2010 and 2016.

Although there had been a minor drop in female informal employment between 2010 and 2016, data analysis and empirical findings showed that informal employment had generally expanded during that time. One of the key factors contributing to the rise in informal employment and the decline in the informal sector's average wage rate was the massive influx of Syrian refugees into Jordan and the labor market there. The participation of young people (15–19) and their higher exposure to informal employment compared to older groups was another factor that contributed to the informal employment.

Non-Jordanians; in specific, Syrians and other Arabs than Egyptians, had a relatively high likelihood of working informally, demonstrating that nationality was one of the key factors contributing to informality in Jordan. People who were separated (divorced or widowed) were more likely to work in the informal sector.

Results also showed a negative correlation between educational level and employment in the informal sector, where those with only a secondary education or less were more likely

to work informally, suggesting that the educational attainment is one of the primary drivers of informality.

The likelihood of informal employment is highest in the industries of agriculture, construction, services, and manufacturing, while it is lowest in the industries of health, water and energy, education, public administration and defense, at order.

Finally, Syrian refugees had a roughly 26 percentage points higher likelihood of working informally, although this likelihood was decreased with higher levels of education

Based on the results of this study, it can be recommended that the government step up efforts to reduce informality, streamline processes, and enforce laws to increase formality in the economy. This can be achieved by guaranteeing equal opportunities in all sectors, regardless of age group, nationality, or gender. It is also important to recognize and credit both employers' and employees' adherence to laws and regulations.

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