

On Trade Policy and Workers' Transition between the Formal and Informal Sectors: An Application to the MENA Region in the Time of Covid-19

Fida Karam and Chahir Zaki

**ON TRADE POLICY AND WORKERS' TRANSITION
BETWEEN THE FORMAL AND INFORMAL SECTORS:
AN APPLICATION TO THE MENA REGION
IN THE TIME OF COVID-19**

Fida Karam¹ and Chahir Zaki²

Working Paper No. 1628

March 2023

Send correspondence to:

Fida Karam

Gulf University for Science and Technology

Karam.f@gust.edu.kw

¹Associate Professor, Department of Economics and Finance, Gulf University for Science and Technology, Kuwait; E-mail: Karam.f@gust.edu.kw

²Associate Professor, Faculty of Economics and Political Science, Cairo university, Egypt; E-mail: chahir.zaki@feps.edu.eg

First published in 2023 by
The Economic Research Forum (ERF)
21 Al-Sad Al-Aaly Street
Dokki, Giza
Egypt
www.erf.org.eg

Copyright © The Economic Research Forum, 2023

All rights reserved. No part of this publication may be reproduced in any form or by any electronic or mechanical means, including information storage and retrieval systems, without permission in writing from the publisher.

The findings, interpretations and conclusions expressed in this publication are entirely those of the author(s) and should not be attributed to the Economic Research Forum, members of its Board of Trustees, or its donors.

Abstract

This paper looks at the transition of workers in the MENA region between formal and informal jobs during the COVID-19 pandemic, and investigates whether trade policy could be used as a measure to enhance the transition of workers from the informal to the formal sector. We use the Combined COVID-19 MENA Monitor Household Survey constructed by the Economic Research Forum for 5 MENA countries and 11 sectors. We obtain the following results. First, fewer trade restrictions are associated with an increased probability for the worker to become formal and this effect is more pronounced post-pandemic relative to before February 2020. Second, fewer trade restrictions are linked to an increase in the probability of becoming formal for blue collar workers only, with an insignificant effect on white collar workers. Third, fewer trade restrictions are associated with an increase in the probability of men to become formal, with an insignificant effect on women. Last but not least, the effect of trade policy on job formality depends on the sectoral occupation of the individual with the effect being more pronounced in agriculture and manufacturing relative to services sectors.

JEL Classifications: F13, F14, F16, J21, J62.

Keywords: COVID19, gender, informal employment, trade policy, MENA.

ملخص

تبحث هذه الورقة في انتقال العمال في منطقة الشرق الأوسط وشمال أفريقيا بين الوظائف الرسمية وغير الرسمية خلال جائحة كوفيد 19، وتحقق فيما إذا كان يمكن استخدام السياسة التجارية كتدبير لتعزيز انتقال العمال من القطاع غير الرسمي إلى القطاع الرسمي. نستخدم مسح كوفيد 19 المشترك لمراقبة الشرق الأوسط وشمال إفريقيا للأسر المعيشية الذي أنشأه منتدى البحوث الاقتصادية لبلدان الشرق الأوسط وشمال إفريقيا لخمسة بلدان وأحد عشر قطاع. نحصل على النتائج التالية. أولاً، يرتبط عدد أقل من القيود التجارية بزيادة احتمالية أن يصبح العامل رسمياً وهذا التأثير أكثر وضوحاً بعد الوباء مقارنة بما قبل فبراير 2020. ثانياً، يرتبط عدد أقل من القيود التجارية بزيادة احتمالية أن تصبح رسمية للعمال ذوي الياقات الزرقاء فقط، مع تأثير ضئيل على العمال ذوي الياقات البيضاء. ثالثاً، هناك عدد أقل من القيود التجارية المرتبطة بزيادة احتمال أن يصبح الرجل رسمياً، مع تأثير ضئيل على المرأة. وأخيراً وليس آخراً، يتوقف تأثير السياسة التجارية على الشكليات الوظيفية على المهنة القطاعية للفرد مع زيادة وضوحها في الزراعة والصناعة التحويلية بالنسبة لقطاعي الخدمات.

1. Introduction

The stringent policy responses adopted by governments during the COVID-19 pandemic (airport closure, the ban of social gatherings, as well as partial or total lockdown measures) resulted in the economic downturn of certain sectors such as hotels and restaurants, entertainment and leisure activities, travel. Therefore, many firms went out of business, and many others dismissed workers. To survive, recently unemployed workers relied on temporary and informal jobs³. There is a wide consensus that the pandemic had a sharper effect on women, who are mainly employed in service occupations that suffered more during the pandemic. In addition, due to the closure of schools and daycare facilities and the impossibility to rely on grandparent-provided childcare for the safety of the elderly, mothers had to watch their children themselves (Alon et al., 2020).

In most economic crises, the informal sector has traditionally functioned as a buffer, absorbing the workers leaving the formal sector. But the other side of the coin is that this crisis has been unlike the previous ones. First, because the strict lockdown measures imposed by governments were devastating for many informal jobs that require close contact with customers. Second, due to the uncertainty about the duration and depth of the public health crisis, some employers opted for a reduction of the hours of activity per job instead of termination of employee services. Third, governments around the world provided support to keep firms afloat during the crisis. Therefore, the effect of the pandemic on the size of both formal and informal sector is difficult to predict.

This paper looks at the transition of workers between formal and informal jobs during the pandemic, and investigates whether trade policy could be used a measure to enhance the transition of workers from the informal to the formal sector. This topic is timely and critical for the Middle East and North Africa (MENA) region for several reasons. First, informal employment is widespread in the region, accounting for 68% of total employment in 2018 (OECD, 2021). The region has witnessed, during COVID-19, a slight gain in employment in the formal sector (4%, authors' calculations from the CCMMHH survey) but the picture is not the same for all countries, with Sudan having witnessed an increase in the size of the informal sector. Second, applied tariffs in many MENA countries are still high. To this is added the fact that many countries in the region have changed their trade policy during the pandemic (CNUCED-UNCTAD 2021): some imposed restrictions on the export of certain essential food products, medical supply products, face masks and medicines, while others took temporary measures to facilitate the trade of medical and food products. Third, women remain a huge, untapped reservoir of human potential for countries in the region. Female labor participation is estimated at barely 20% in 2019 (International Labor Organization, ILOSTAT database), and the disadvantageous impact of the pandemic on female formal work tends to reduce it further.

³ The International Labour Organization (ILO) defines informal employment as “all remunerative work (i.e. both self-employment and wage employment) that is not registered, regulated or protected by existing legal or regulatory frameworks, as well as non-remunerative work undertaken in an income-producing enterprise.”

The theoretical literature, while rather inconclusive, highlights different mechanisms through which trade openness may impact job informality. On the one hand, Goldberg and Pavcnik (2003) argue that trade reforms increase job informality by exposing formal establishments to increased foreign competition. In response, such establishments try to reduce labor costs by cutting worker benefits, replacing permanent workers with part-time labor, or subcontracting with establishments in the informal sector. Alternatively, due to increased competition from abroad following trade liberalization, firms could react by laying off workers who, in turn, could look for employment in the informal sector (Goldberg and Pavcnik, 2003). On the other hand, different studies highlight the negative effect of trade openness on job informality. For instance, trade openness could enhance technology spillovers that are biased toward the formal sector because of the wider availability of investment and skilled labor in the formal sector relatively to the informal sector. This bias increases the demand for formal workers, thus, widening the wage gap between formal and informal workers (Munro, 2011).

Aleman-Castilla (2006) argue in a heterogeneous firm model that trade liberalization may decrease job informality as some firms will find it more profitable to enter the formal sector rather than staying in the informal sector. The least productive informal firms will be forced out of the industry and the most productive formal firms will export to the international markets, thereby inducing aggregate productivity gains through within-industry reallocations. Becker (2014) incorporates informality into a heterogeneous firm trade model and shows that trade liberalization reduces informal employment unambiguously. Lastly, if the informal and formal sectors are disconnected, informal wages may not be affected at all by trade opening in the formal sector (Munro, 2011).

On another note, theory suggests that the effect of trade on job informality can differ in the short and long run. In particular, trade liberalization may lead the informal sector to expand in the short run, but the formal sector can expand (and therefore the informal sector will contract) through long-run adjustments (Munro, 2011).

The empirical literature is also indecisive about the relation between trade liberalization and informal employment. Goldberg and Pavnick (2003) do not find any evidence of a significant relationship between trade liberalization and informality in Brazil. However, their results for Colombia show that job informality increases after trade liberalization, although the authors acknowledge that this finding is directly related to the degree of labor market flexibility: indeed, before the labor market reform, when the cost of firing formal workers was high, an industry-specific tariff reduction was associated with a greater likelihood of becoming informal. After the labor market reform, an industry-specific tariff reduction was associated with a small increase in the likelihood of informality in the industry. In the empirical part of his paper, Aleman-Castilla (2006) assesses the impact of the North American free trade agreement (NAFTA) on informality in Mexico and finds that lower import tariffs are associated with lower informality in tradable industries. Selwaness and Zaki (2015) study the effect of trade reforms on informal jobs in Egypt

and find that trade liberalization reduced job informality in Egypt's manufacturing sector. Ben Salem and Zaki (2019) examine the impact of trade reforms on informal and irregular workers in Egypt and find a positive association between tariffs and both informal and irregular employments. Munro (2011) highlights three conclusions that emerge from the empirical literature: first, trade liberalization could lead to an increase or decrease in informal jobs, depending on country characteristics. Second, there is evidence that the fluctuation of trade flows during business cycles has different effects on informal labor markets, showing both countercyclical and procyclical expansions of the informal economy. Third, evidence suggests that the global downturn in trade has negatively affected informal labor markets in developing countries.

This paper investigates the effect of the trade restrictions on formal jobs in selected MENA countries in the time of COVID-19, taking into consideration workers' occupation and the gender perspective. We use the Combined COVID-19 MENA Monitor Household Survey (CCMMHH) constructed by the Economic Research Forum for 5 countries (Egypt, Morocco, Jordan, Sudan and Tunisia) and 11 sectors and combine it with tariffs data on agriculture and manufacturing, and ad-valorem equivalent tariffs on services. After controlling for the personal characteristics of workers, we examine first, how trade barriers exert a differential effect on men vs. women, on blue-collar vs. white collar workers and second, how these barriers led to transitions between formal and informal sectors.

Our results can be summarized in the following four points. First, fewer trade restrictions are associated with an increased probability for the worker to become formal and this effect is more pronounced post-pandemic relatively to before February 2020. Second, fewer trade restrictions are linked to an increase in the probability of becoming formal for blue collars only, with an insignificant effect on white collars. Third, trade policy matters for men only, with an insignificant effect on women: fewer trade restrictions are associated with an increase in the probability of men to become formal. Last but not least, the effect of trade policy on job formality depends on the sectoral occupation of the individual with this effect being more pronounced in agriculture and manufacturing relatively to services sectors.

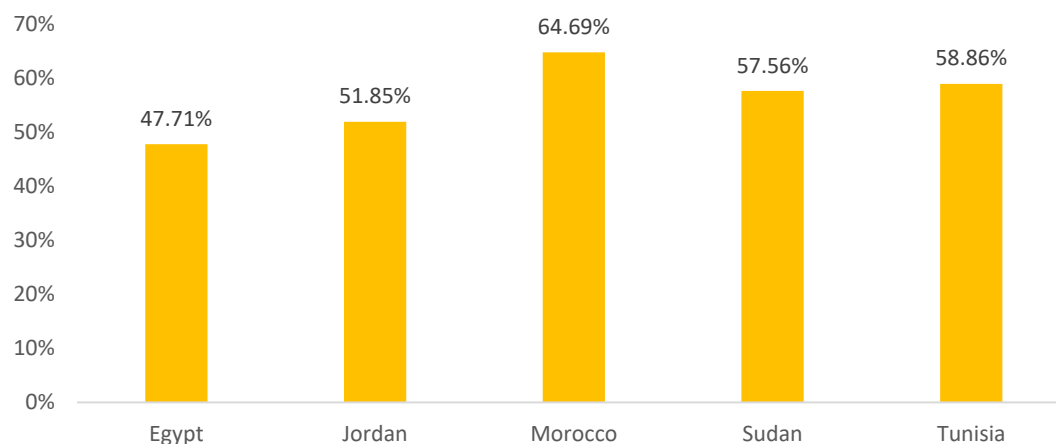
The paper is organized as follows. Section 1 presents the motivation and a literature review that sheds the light on the major contribution of the paper. Section 2 depicts some stylized facts on labor market and trade policy on the MENA region. Section 3 describes the methodology and the data. Section 4 is devoted to the discussion of the results and Section 5 concludes.

2. Stylized Facts

Although the MENA region has made some progress in liberalizing trade in goods, it is considered as one of the most restrictive regions in services trade (OECD, 2018). Figure 1 exhibits the average ad-valorem tariff rates for the 5 selected MENA countries included in our dataset. The ad-valorem

equivalent tariff for services is included in this average. Morocco appears to be the most restrictive country in the sample with an average tariff rate of 65%, followed by Tunisia, Sudan and Jordan.

Figure 1: Average Tariff Rates for selected MENA countries, in 2020



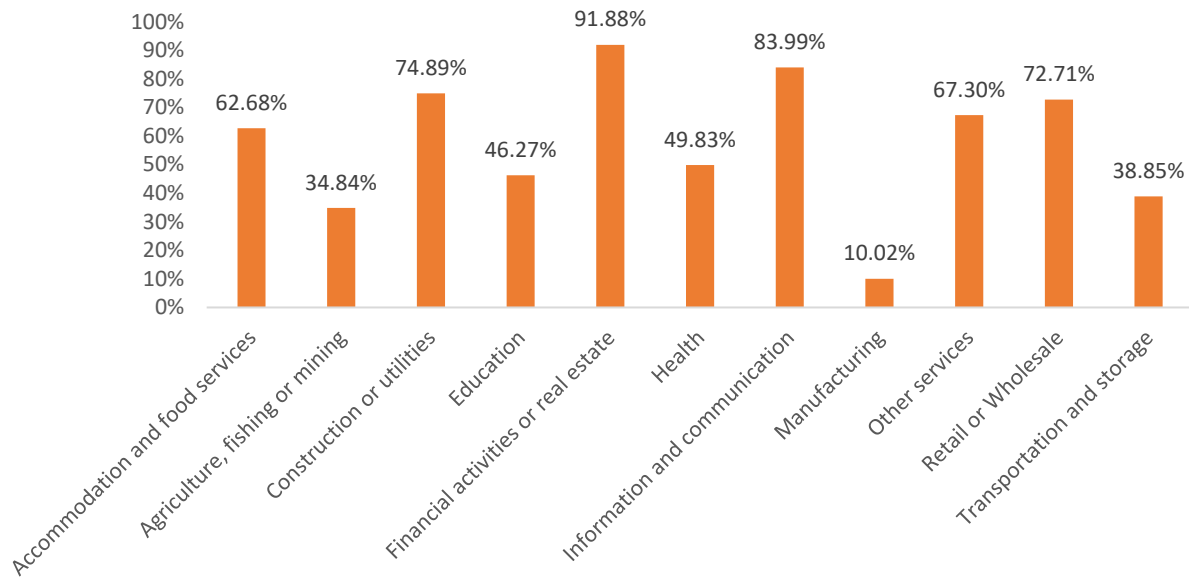
Source: Constructed by the authors. Tariffs data for agriculture and manufacturing sectors come from the World Tariff Profiles (2021). For services, we use the ad valorem equivalents (AVE) of restrictions on cross-border trade in services calculated by Fontagné et al. (2016).

Note: Average tariff rates, simple mean.

Figure 2 shows the average tariff rate by sector. As expected, the lowest tariff is for manufacturing (10.02%), given the intensive efforts of the region to liberalize its trade in manufacturing products. The average tariff by sector masks the fact trade policy in the MENA region varies from a country to another. In agriculture for example, high import tariffs on agricultural commodities are levied in Egypt and Morocco, while the countries of the Gulf Cooperation council (GCC) impose relatively small duties on imports. Figure 2 shows that the average tariff on agricultural products in the region is 35%. As expected, the highest rates are for services. Those are the ad-valorem equivalent tariffs for services are adopted from Fontagné et al. (2016). The most protected sectors are “Financial activities and real estate”, “Information and technology” with an average ad-valorem equivalent tariff of 92% and 84% respectively.

COVID-19 disrupted economic activity across the globe, resulting in a decrease in worldwide trade flows in 2020. Therefore, governments across the globe implemented measures to curb economic activities. We have seen some export restrictions as well as temporary measures that affect trade facilitation. Figure 3 shows that the number of tariff measures imposed by MENA countries during the pandemic is lower than the number non-tariff measures (NTM), with trade facilitating tariff measures exceeding the number of restrictive tariff measures. Trade restrictive NTM are much more numerous than facilitating NTM (30 vs. 2). The facts drawn from Figure 1 are consistent with the facts observed for all countries based on the CNUCED-UNCTAD (2021) database.

Figure 2: Average Tariff Rates by sector for the MENA region, in 2020



Source: Constructed by the authors. Tariffs data for agriculture and manufacturing sectors come from the World Tariff Profiles (2021). For services, we use the ad valorem equivalents (AVE) of restrictions on cross-border trade in services calculated by Fontagné et al. (2016).

Note: Average tariff rates, simple mean.

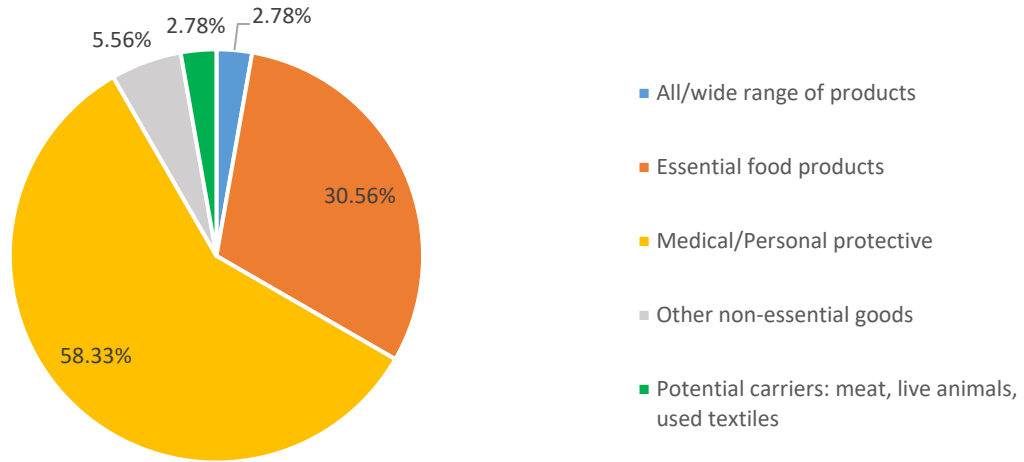
Figure 3: COVID 19 Trade Measures in MENA countries



Source: Constructed by the authors from the CNUCED-UNCTAD (2021) database.

58% of the NTM are imposed on medical supplies and protective products such as face masks, sanitizers, and cleaning products, 31% on essential food products, and 3% on potential carriers like meat, live animals, used textiles (Figure 4).

Figure 4: NTM Product Coverage for MENA countries



Source: Constructed by the authors from the CNUCED-UNCTAD (2021) database.

Figure 5 shows that the most restrictive trade measures were imposed on potential carriers, as essential food products, as well as non-essential products (mainly to shore up supplies of raw materials required for their manufacturing). The large majority of NTM imposed on medical/personal protective is also restrictive as expected. The trade facilitating NTM on “All/wide range of products consists” of the postponement of collection of customs duties on imports for a period of 30 days - or against the submission of a bank guarantee, for three months – in Saudi Arabia.

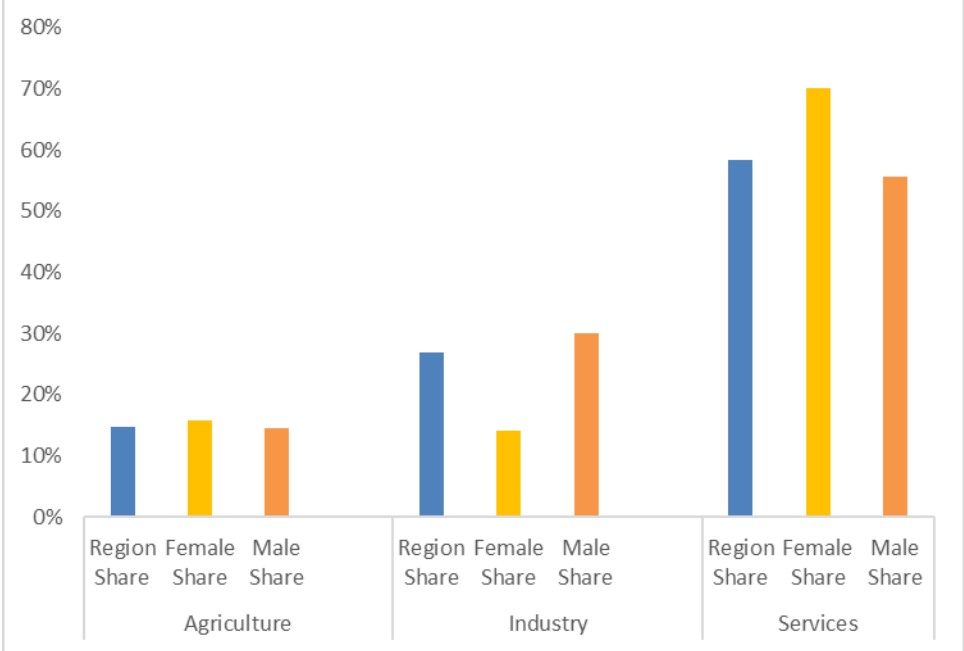
Figure 5: Status of NTMs by Product Type in MENA countries



Source: Constructed by the authors from the CNUCED-UNCTAD (2021) database.

Given that this paper’s objective is to assess the effect of trade policy on job formality, we hereby show some stylized facts related to the labor market in the region. Figure 6 shows the share of employment by aggregated sectors. It is noteworthy the services sector absorbs the highest share of the region’s labor force (60%), followed by industry (less than 30%), while the share of agriculture is the least (15%). Figure 6 also shows that females work mainly in agriculture and services, while males work in industry and services.

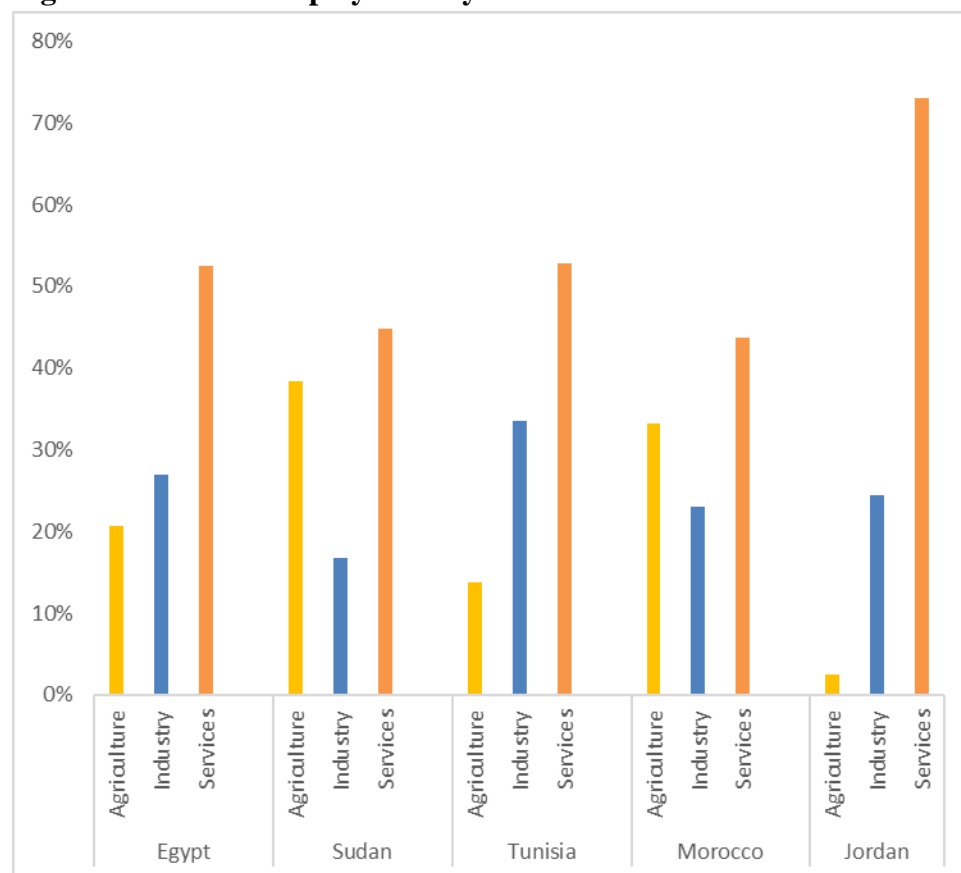
Figure 6: Share of employment by aggregated sectors in the MENA region, in 2019



Source: Constructed by the authors from World Development Indicators database, 2021.
 Note: Share of male/female employment in agriculture, industry and services is the share in total male/female employment.

All the countries included in our sample show a similar pattern to the one observed in figure 6 for the region, that is the highest share of employment is in the services sector, then in the manufacturing sector, except for Sudan and Morocco where the agricultural sector absorbs more workers than manufacturing (Figure 7).

Figure 7: Share of employment by sectors in selected MENA countries, in 2019



Source: Constructed by the authors from World Development Indicators database, 2021.

Table 1 shows the share of informal/formal workers in our sample for the region and by country before and after the pandemic as well as the transition matrix of workers between the formal and informal sectors that occurred after the pandemic. Our sample data show that for the region, the percentage of formal workers increased after the pandemic (66% versus 62%) at the expense of informal workers whose share decreased from 38% to 34%. 27% of workers included in our sample were informal and stayed in the informal sector after the pandemic, while 55% of workers were formal and stayed in the formal sector post COVID-19. 7% of workers moved from the formal sector to the informal sector, while 11% moved from the informal sector to the formal sector.

All countries in our sample, except Sudan, follow the same trend for the region, with an increase in the formal sector at the expense of the informal sector after the pandemic. Sudan had the highest share of informal employment in the sample before the pandemic (55%), and this share increased to 63% after the pandemic. In Sudan, only 22% of workers included in our sample were formal and stayed in the formal sector after the pandemic, while 40% of workers were informal and stayed in the informal sector post COVID-19. 23% of workers moved from the formal sector to the informal sector, while 15% only moved from the informal sector to the formal sector.

Egypt that ranked second in the sample after Sudan in the share of informal workers witnesses a decrease in the percentage of informal workers from 52% before COVID-19 to 47% after COVID-

19. In Egypt, the size of employment in both sectors are comparable, although the formal sector gained ground after the pandemic. 40% of workers were informal and stayed in the informal sector after the pandemic, and 40% of workers were formal and stayed in the formal sector post COVID-19. 7% of workers moved from the formal sector to the informal sector, and 13% moved from the informal sector to the formal sector.

Jordan exhibits the lowest share of informal employment (25% before COVID-19 and 21% after COVID-19).

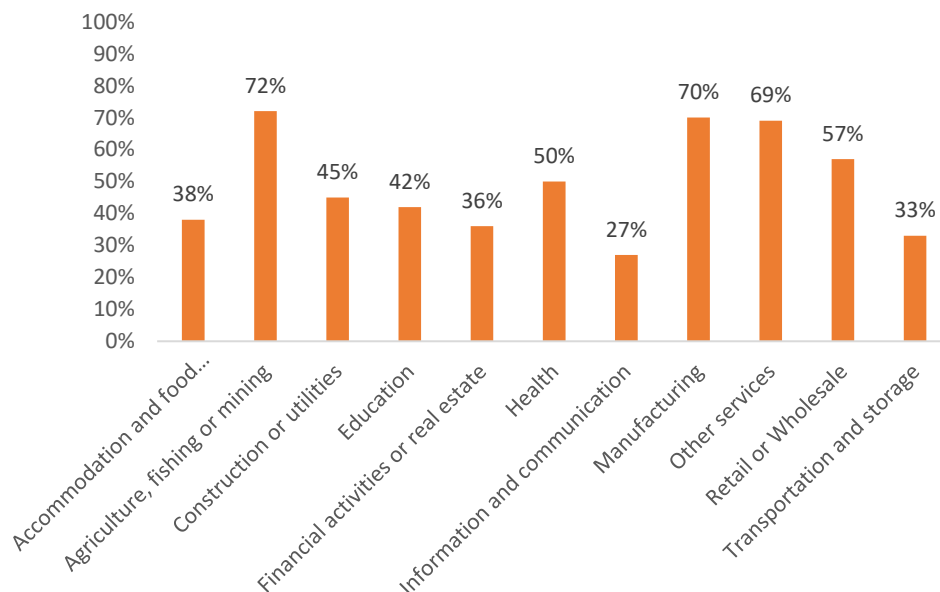
Table 1: Transition Matrix of Informality – by country

Overall					Egypt				
		Before					Before		
		Informal	Formal	Total			Informal	Formal	Total
After	Informal	27%	7%	34%	Informal	40%	7%	47%	
	Formal	11%	55%	66%	Formal	13%	40%	53%	
	Total	38%	62%	100%	Total	52%	48%	100%	
Jordan					Morocco				
		Before					Before		
		Informal	Formal	Total			Informal	Formal	Total
After	Informal	17%	5%	21%	Informal	34%	7%	41%	
	Formal	9%	70%	79%	Formal	8%	51%	59%	
	Total	25%	75%	100%	Total	42%	58%	100%	
Sudan					Tunisia				
		Before					Before		
		Informal	Formal	Total			Informal	Formal	Total
After	Informal	40%	23%	63%	Informal	27%	8%	36%	
	Formal	15%	22%	37%	Formal	13%	51%	64%	
	Total	55%	45%	100%	Total	40%	60%	100%	

Source: Constructed by the authors from the CCMMHH survey.

By sector, the share of informal employment is the highest in agriculture (72%), manufacturing (70%) and other services (69%). The least share of informal workers is in “Information and communication”, “Transportation and storage”, and “Accommodation and food services).

Figure 8: Share of informal workers in total employment, by sector in 2021



Source: Constructed by the authors from the CCMMHH survey.

3. Methodology and Data

To understand the impact of trade effect on labor market informality, we follow an adapted version of Goldberg and Pavnick (2003), Selwaness and Zaki (2015) and Ben Salem and Zaki (2019) by estimating the following model:

$$Formal_{ijst} = a_1 X_{ijst} + a_2 H_{ijst} + a_3 T_{ijst} + a_4 S_s + a_5 D_j + w_t + v_{ijst}$$

The dependent variable is a binary variable that takes the value of 1 if the individual i in country j is employed in sector s at time t is working formally, and 0 otherwise. It is important to note that an informal worker has no contract and/or is not covered by social security. The explanatory variables consist of the individual characteristics X_{ijst} , which include gender (a dummy for female gender), age, educational level (four dummies for illiterate, basic, secondary and higher education) and skill (controlled for through a dummy variable that takes the value of 1 if the individual is a blue collar and zero otherwise). We also control for the geographical location with a dummy variable that takes the value of 1 if the individual is working in an urban region and zero otherwise. Household characteristics H_{ijst} are mainly captured by the household size. T is a vector of trade policy variables that includes applied tariffs for agriculture and manufacturing, ad-valorem equivalents of services and the number of non-tariff measures. Country dummies D_j are added to control for the unobserved country-specific characteristics. Moreover, sectoral S_s and wave w_t are added to control for the unobserved sector and wave-specific characteristics. v_{ijst} is the discrepancy term. Errors are clustered by country and by sector.

This regression is extended in two ways. First, we run some regressions by gender and by skill in order to see how trade barriers affect different categories given that blue collars and women are more likely to be affected. Second, in order to take into consideration the sectoral characteristics, we distinguish between the manufacturing and services sectors as the former is more likely to suffer from restrictions and social distancing measures, while the latter can easily cope with teleworking. Third, to examine how individuals change the sector where they work, we run a multinomial logit where examine the probability of moving from the informal to the formal sector and vice versa.

We use the Combined COVID-19 MENA Monitor Household Survey (CCMMHH) constructed by the Economic Research Forum for 5 countries (Egypt, Morocco, Jordan, Sudan and Tunisia) and 11 sectors (Accommodation and food services; Agriculture, fishing or mining; Construction or utilities; Education; Financial activities or real estate; Health; Information and communication; Manufacturing; Other services; Retail or Wholesale; Transportation and storage). The dataset covers 5 waves of COVID-19: Nov-2020, Feb- 2021, Apr-2021, Jun-2021, Aug 2021, and counts 34,219 observations.

Tariffs data for agriculture and manufacturing sectors come from the World Tariff Profiles (2021) that provide comprehensive information on the tariffs and non-tariff measures imposed by over 170 countries and customs territories. It is a joint publication of the WTO, the International Trade Centre and the United Nations Conference on Trade and Development (UNCTAD). For services, we use the ad valorem equivalents (AVE) of restrictions on cross-border trade in services calculated by Fontagné et al. (2016) for 118 countries and 9 sectors, using the GTAP database of trade in services for 2011. The missing AVE for Sudan is replaced by the MENA region's average.

4. Results

Table 2 shows that the variables have the expected signs: being a blue collar has a negative effect on the probability of having a formal job while age and education appear to have a positive impact on job formality. Although insignificant, the negative coefficient of *Female* could be explained by the fact that the sectors included in the analysis are intensive in male workers. Our variable of interest *Tariff* has an expected negative sign, implying that lower trade restrictions could be associated with an increase in job formality. This result is in line with the results of Aleman-Castilla (2006) for Mexico, Selwaness and Zaki (2015) and Ben Salem and Zaki (2019) for Egypt. Interestingly the absolute value of the coefficient increases post COVID-19, implying that the negative effect of tariff on the probability of formal jobs increases after the pandemic. In addition, the positive effect of education on job formality increases after February 2020. Surprisingly, the coefficient of non-tariff measures $Ln(NTM)$ is not significant. This surprising results could be linked to the way the NTM variable was constructed to deal with data limitations.

Tables 3 and 4 show the effect of trade policy on formal jobs by occupation, for blue collars and white collars respectively. Most of the variables have the same signs as before for both sets of

regressions. The gender variable is not significant, and the effect of the tariff on the probability of having a formal job for white collars is not significant, suggesting that the effect of trade policy on job formality matters expectedly more for blue collars.

Tables 5 and 6 investigate the effect on job formality from a gender perspective, for females and males respectively. Most of the variables have the same signs as in the baseline regressions for both males and females. Interestingly, the coefficient of *Blue Collar* was insignificant for females before February 2020, and becomes negative and significant post-COVID-19. In addition, the absolute value of the coefficient is slightly higher for females than for males post-COVID-19, suggesting that being a blue collar has a higher negative effect on the probability of a female to have a formal job, relatively to her male counterpart. Another noteworthy result is that the variable *Tariff* is only significant for males. Therefore, a decrease in trade barriers is associated with an increase in the probability of formal jobs for males, and not for females. This result could be linked to the fact that the sectors included in the analysis are intensive in male workers.

Table 2: Baseline Regression

	Formal	Before Formal	Formal	Formal	After Formal	Formal
HH size	-0.00675 (0.0141)	-0.00804 (0.0141)	-0.00690 (0.0140)	-0.00103 (0.0204)	-0.00256 (0.0205)	-0.000900 (0.0204)
Blue Collar	-0.270** (0.115)	-0.281** (0.113)	-0.269** (0.114)	-0.554*** (0.137)	-0.573*** (0.133)	-0.550*** (0.137)
Female	-0.137 (0.109)	-0.134 (0.107)	-0.129 (0.109)	-0.177 (0.117)	-0.182 (0.116)	-0.174 (0.117)
Age	0.0278*** (0.00343)	0.0278*** (0.00344)	0.0281*** (0.00339)	0.0263*** (0.00405)	0.0260*** (0.00400)	0.0264*** (0.00404)
Basic educ.	0.282*** (0.0929)	0.280*** (0.0957)	0.285*** (0.0914)	0.355** (0.141)	0.346** (0.144)	0.358** (0.140)
Secun. Educ.	0.448*** (0.0960)	0.440*** (0.0973)	0.444*** (0.0958)	0.670*** (0.130)	0.656*** (0.133)	0.669*** (0.130)
Higher Educ.	0.713*** (0.113)	0.701*** (0.114)	0.706*** (0.113)	0.956*** (0.144)	0.952*** (0.146)	0.955*** (0.144)
Urban	0.00404 (0.0781)	0.00933 (0.0780)	0.00447 (0.0781)	0.0270 (0.0876)	0.0376 (0.0878)	0.0265 (0.0875)
Tariff	-0.00339 (0.00229)		-0.00361* (0.00213)	-0.00387* (0.00218)		-0.00396* (0.00207)
Ln(NTM)		0.233 (0.177)	0.260 (0.181)		0.0860 (0.235)	0.116 (0.240)
Constant	-1.328*** (0.330)	-1.569*** (0.298)	-1.510*** (0.310)	-0.615* (0.360)	-0.726* (0.374)	-0.668* (0.371)
Wave dum.	YES	YES	YES	YES	YES	YES
Country dum.	YES	YES	YES	YES	YES	YES
Sec. dum.	YES	YES	YES	YES	YES	YES
Observations	11,577	11,577	11,577	3,191	3,191	3,191

Notes: (i) Standard errors in parentheses

(ii) *** p<0.01, ** p<0.05, * p<0.1

(iii) Weights are used in all regressions.

(iv) Errors are clustered by country and sectors.

Table 3: Effect of Trade Policy on Formality – By Occupation – Blue Collars

	Before			After		
	Formal	Formal	Formal	Formal	Formal	Formal
HH size	-0.000325 (0.0274)	-0.00721 (0.0267)	-0.000672 (0.0267)	0.00125 (0.0525)	-0.0160 (0.0539)	0.00162 (0.0525)
Female	-0.0950 (0.217)	-0.0841 (0.211)	-0.0549 (0.210)	-0.154 (0.253)	-0.160 (0.255)	-0.145 (0.252)
Age	0.0260*** (0.00580)	0.0248*** (0.00544)	0.0269*** (0.00587)	0.0361*** (0.00675)	0.0330*** (0.00680)	0.0363*** (0.00677)
Basic educ.	0.269** (0.132)	0.249* (0.133)	0.288** (0.127)	0.578*** (0.195)	0.520** (0.206)	0.587*** (0.192)
Secun. Educ.	0.0711 (0.136)	0.0648 (0.134)	0.0726 (0.136)	0.757*** (0.286)	0.701** (0.288)	0.762*** (0.285)
Higher Educ.	0.667*** (0.203)	0.671*** (0.191)	0.659*** (0.205)	1.479*** (0.365)	1.497*** (0.332)	1.464*** (0.365)
Urban	0.0488 (0.145)	0.0451 (0.142)	0.0384 (0.145)	0.0222 (0.116)	0.0370 (0.117)	0.0200 (0.116)
Ln(NTM)		0.462* (0.276)	0.574** (0.242)		0.194 (0.246)	0.341 (0.257)
Tariff	-0.0107*** (0.00362)		-0.0116*** (0.00260)	-0.0135*** (0.00390)		-0.0139*** (0.00339)
Constant	-1.725*** (0.572)	-2.163*** (0.493)	-2.025*** (0.538)	-1.901*** (0.688)	-2.191*** (0.778)	-2.014*** (0.670)
Wave dum.	YES	YES	YES	YES	YES	YES
Country dum.	YES	YES	YES	YES	YES	YES
Sec. dum.	YES	YES	YES	YES	YES	YES
Observations	3,040	3,040	3,040	900	900	900

Notes: (i) Standard errors in parentheses. (ii) *** p<0.01, ** p<0.05, * p<0.1. (iii) Weights are used in all regressions. (iv) Errors are clustered by country and sectors.

Table 4: Effect of Trade Policy on Formality – By Occupation – White Collars

	Before			After		
	Formal	Formal	Formal	Formal	Formal	Formal
HH size	-0.0120 (0.0170)	-0.0119 (0.0170)	-0.0119 (0.0170)	-0.00171 (0.0237)	-0.00211 (0.0238)	-0.00216 (0.0238)
Female	-0.160 (0.118)	-0.160 (0.118)	-0.160 (0.118)	-0.189 (0.126)	-0.191 (0.126)	-0.191 (0.127)
Age	0.0303*** (0.00403)	0.0303*** (0.00401)	0.0303*** (0.00401)	0.0261*** (0.00569)	0.0261*** (0.00569)	0.0261*** (0.00568)
Basic educ.	0.341*** (0.120)	0.341*** (0.120)	0.341*** (0.120)	0.301* (0.156)	0.292* (0.156)	0.290* (0.157)
Secun. Educ.	0.610*** (0.117)	0.610*** (0.118)	0.610*** (0.117)	0.618*** (0.145)	0.618*** (0.146)	0.616*** (0.147)
Higher Educ.	0.764*** (0.144)	0.763*** (0.144)	0.763*** (0.144)	0.814*** (0.191)	0.814*** (0.191)	0.814*** (0.191)
Urban	0.00664 (0.0775)	0.00564 (0.0804)	0.00638 (0.0773)	0.0906 (0.127)	0.0869 (0.127)	0.0905 (0.126)
Ln(NTM)		0.0630 (0.352)	0.0635 (0.353)		-0.461 (0.459)	-0.459 (0.459)
Tariff	0.000215 (0.00257)		0.000226 (0.00256)	0.000733 (0.00209)		0.000649 (0.00214)
Constant	-1.492*** (0.389)	-1.549** (0.630)	-1.557** (0.635)	-0.787 (0.528)	-0.311 (0.693)	-0.337 (0.704)
Wave dum.	YES	YES	YES	YES	YES	YES
Country dum.	YES	YES	YES	YES	YES	YES
Sec. dum.	YES	YES	YES	YES	YES	YES
Observations	8,537	8,537	8,537	2,289	2,289	2,289

Notes: (i) Standard errors in parentheses. (ii) *** p<0.01, ** p<0.05, * p<0.1. (iii) Weights are used in all regressions. (iv) Errors are clustered by country and sectors.

Table 5: Effect of Trade Policy on Formality – By Gender – Females

	Before			After		
	Formal	Formal	Formal	Formal	Formal	Formal
HH size	0.0171 (0.0291)	0.0176 (0.0294)	0.0174 (0.0293)	-0.0124 (0.0480)	-0.0140 (0.0478)	-0.0137 (0.0480)
Blue Collar	-0.106 (0.217)	-0.0505 (0.206)	-0.0645 (0.205)	-0.694** (0.344)	-0.589* (0.353)	-0.600* (0.352)
Age	0.0374*** (0.00676)	0.0380*** (0.00673)	0.0375*** (0.00681)	0.0272*** (0.00966)	0.0271*** (0.00984)	0.0260*** (0.00984)
Basic educ.	0.217 (0.232)	0.220 (0.232)	0.221 (0.232)	0.625** (0.277)	0.607** (0.287)	0.615** (0.285)
Secon. Educ.	0.552** (0.232)	0.537** (0.228)	0.539** (0.228)	1.484*** (0.369)	1.469*** (0.362)	1.466*** (0.367)
Higher Educ.	0.997*** (0.245)	0.974*** (0.246)	0.977*** (0.245)	1.966*** (0.448)	1.938*** (0.447)	1.947*** (0.449)
Urban	0.102 (0.140)	0.0930 (0.134)	0.105 (0.136)	0.154 (0.247)	0.0891 (0.260)	0.115 (0.259)
Ln(NTM)		0.504 (0.455)	0.458 (0.415)		1.709*** (0.306)	1.592*** (0.406)
Tariff	0.00399 (0.00443)		0.00325 (0.00382)	0.00801 (0.00538)		0.00503 (0.00570)
Constant	-2.261*** (0.644)	-2.391*** (0.607)	-2.504*** (0.604)	-2.362*** (0.910)	-2.873*** (0.822)	-3.050*** (0.873)
Wave dum.	YES	YES	YES	YES	YES	YES
Country dum.	YES	YES	YES	YES	YES	YES
Sec. dum.	YES	YES	YES	YES	YES	YES
Observations	2,576	2,576	2,576	661	661	661

Notes: (i) Standard errors in parentheses. (ii) *** p<0.01, ** p<0.05, * p<0.1. (iii) Weights are used in all regressions. (iv) Errors are clustered by country and sectors.

Table 6: Effect of Trade Policy on Formality – By Gender – Males

	Before			After		
	Formal	Formal	Formal	Formal	Formal	Formal
HH size	-0.0108 (0.0182)	-0.0134 (0.0183)	-0.0113 (0.0180)	-0.00322 (0.0239)	-0.00762 (0.0242)	-0.00321 (0.0239)
Blue Collar	-0.316** (0.129)	-0.334*** (0.126)	-0.320** (0.128)	-0.566*** (0.169)	-0.597*** (0.164)	-0.566*** (0.169)
Age	0.0259*** (0.00342)	0.0260*** (0.00339)	0.0263*** (0.00333)	0.0274*** (0.00458)	0.0272*** (0.00455)	0.0275*** (0.00455)
Basic educ.	0.308*** (0.0918)	0.301*** (0.0971)	0.311*** (0.0903)	0.299** (0.131)	0.279** (0.133)	0.300** (0.130)
Secon. Educ.	0.430*** (0.0961)	0.418*** (0.0987)	0.426*** (0.0960)	0.564*** (0.125)	0.544*** (0.127)	0.563*** (0.125)
Higher Educ.	0.681*** (0.115)	0.668*** (0.115)	0.676*** (0.114)	0.844*** (0.138)	0.836*** (0.139)	0.843*** (0.138)
Urban	-0.0252 (0.0880)	-0.0187 (0.0879)	-0.0244 (0.0884)	0.00774 (0.0928)	0.0195 (0.0944)	0.00807 (0.0933)
Ln(NTM)		0.251 (0.168)	0.285* (0.155)			
Tariff	-0.00507** (0.00215)		-0.00529** (0.00209)	-0.00531** (0.00217)		-0.00533** (0.00214)
Constant	-1.233*** (0.329)	-1.507*** (0.298)	-1.432*** (0.305)	-0.557 (0.370)	-0.643* (0.390)	-0.580 (0.384)
Wave dum.	YES	YES	YES	YES	YES	YES
Country dum.	YES	YES	YES	YES	YES	YES
Sec. dum.	YES	YES	YES	YES	YES	YES
Observations	9,001	9,001	9,001	2,530	2,530	2,530

Notes: (i) Standard errors in parentheses. (ii) *** p<0.01, ** p<0.05, * p<0.1. (iii) Weights are used in all regressions. (iv) Errors are clustered by country and sectors.

Table 7 accounts for the transition between formal and informal jobs with a gender perspective. The reference category is for those who were informal and remained in the informal sector. The second column investigates the probability of a formal worker to stay in the formal sector. Age and education have a positive and significant effect on the probability of the formal worker to stay formal, while being a blue collar and *Tariff* have a significant negative effect on the probability of staying in formal jobs. This result is consistent with our previous findings that fewer trade restrictions are associated with an increase in the probability of having a formal job.

The third column shows the results for the probability of the informal worker to move to a formal job. The variables with a significant sign are those linked to secondary and higher education, *Urban*, *Ln(NTM)* and *Tariff*. Indeed, education beyond the basic level is positively associated to the probability of becoming formal while being located in urban areas is associated with a lower probability of the informal worker to become formal. Our variables of interest, tariff and non-tariff measures, have a negative and significant effect on the probability of the worker to move to a formal job. The fourth column displays the results for the probability of a worker to move from a formal to an informal job. Two counter-intuitive results emerge: first, education is positively associated with the probability of the worker to move from the formal to the informal job. Second, tariffs have a negative and significant effect on the probability of moving from formal to informal.

Table 7: Effect of Trade Policy on Transition

Before After	Formal Formal	Informal Formal	Formal Informal
Female	-0.233 (0.257)	-0.0932 (0.383)	0.422 (0.395)
Age	0.0656*** (0.0104)	0.00332 (0.0112)	0.0247 (0.0194)
HH size	-0.0129 (0.0404)	0.0310 (0.0568)	-0.0160 (0.0670)
Blue Collar	-0.928*** (0.289)	-0.638 (0.489)	0.155 (0.248)
Basic educ.	0.924*** (0.270)	0.425 (0.320)	0.994** (0.436)
Secon. Educ.	1.397*** (0.255)	1.230*** (0.278)	1.033* (0.566)
Higher Educ.	2.266*** (0.302)	1.554*** (0.378)	1.617*** (0.425)
Urban	0.105 (0.198)	-0.639*** (0.240)	-0.435 (0.381)
Ln(NTM)	0.606 (0.505)	-1.400*** (0.509)	-0.621 (1.009)
Tariff	-0.0156*** (0.00469)	-0.00914** (0.00416)	-0.0309*** (0.00540)
Constant	-2.233*** (0.815)	-0.924 (0.739)	-3.153** (1.287)
Wave dum.	YES	YES	YES
Country dum.	YES	YES	YES
Sec. dum.	YES	YES	YES
Observations	3,191	3,191	3,191

Notes: (i) Standard errors in parentheses. (ii) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. (iii) Weights are used in all regressions. (iv) Reference category are those who were informal and remained in the informal sector. (v) Errors are clustered by country and sectors.

Table 8 shows the results on job formality taking into consideration the sector where the individual is employed. Indeed, government restrictions imposed during the pandemic were not homogeneous among sectors. In addition, workers in some services sectors were allowed to pursue their work remotely, while this option was not possible in agriculture and industry during the lockdown. Furthermore, the majority of workers in manufacturing and agriculture are expected to be blue collars, therefore having a different effect on the probability of being formal than white collars who in general are employed in services.

A dummy variable *AgrManuf* is added to the regression, taking the value of 1 if the individual works in agriculture or manufacturing, and 0 zero otherwise. The coefficient of the dummy variable is negative and significant, suggesting that working in manufacturing or agriculture decreases the probability of the individual to become formal, relatively to services. Indeed, the number government restrictions imposed on manufacturing and agriculture during the pandemic exceeds those imposed on services (Figure 9a) which gives a possible explanation to our finding. Indeed, more restrictions can lead to layoffs and, thus, increase the likelihood of working in the informal sector. Another explanation of this finding could be that the percentage of employees working for home is higher in services than in manufacturing and agriculture (Figure 9b). It is also noteworthy that this result is in line with our previous finding that being a blue collar decreases the probability of the individual to become formal. When the dummy *AgrManuf* is interacted with the tariff variable, the coefficient of the interaction variable is positive and significant. Therefore, the negative effect of tariffs on job formality is higher in agriculture and manufacturing, relatively to services sectors. Therefore, the effect of trade policy on job informality differs between sectors, and this should be taken into consideration in elaborating policy directions.

Our results are summarized in the following four points: first, fewer trade restrictions are associated with an increased probability for the worker to become formal and this effect is more pronounced post-pandemic relatively to before February 2020. Second, fewer trade restrictions are linked to an increase in the probability of becoming formal for blue collars only, with an insignificant effect on white collars. Third, trade policy matters for men only, with an insignificant effect on women: fewer trade restrictions are associated with an increase in the probability of men to become formal. Last but not least, the effect of trade policy on job formality depends on the sectoral occupation of the individual with this effect being more pronounced in agriculture and manufacturing relatively to services sectors.

Table 8: Effect of Trade Policy on Formality – Sectoral Analysis

	Formal	Formal	Formal
Female	-0.214* (0.115)	-0.182 (0.116)	-0.213* (0.117)
Age	0.0270*** (0.00413)	0.0260*** (0.00400)	0.0270*** (0.00413)
HH size	0.00168 (0.0206)	-0.00256 (0.0205)	0.00168 (0.0206)
Blue Collar	-0.577*** (0.137)	-0.573*** (0.133)	-0.576*** (0.138)
Basic educ.	0.361** (0.142)	0.346** (0.144)	0.362** (0.143)
Secun. Educ.	0.676*** (0.130)	0.656*** (0.133)	0.676*** (0.131)
Higher Educ.	0.965*** (0.144)	0.952*** (0.146)	0.964*** (0.144)
Urban	0.0335 (0.0861)	0.0376 (0.0878)	0.0333 (0.0856)
Ln(NTM)		0.0860 (0.235)	0.0240 (0.234)
Tariff	-0.00573** (0.00223)		-0.00573*** (0.00222)
AgrManuf	-0.737** (0.336)	-0.150 (0.205)	-0.745** (0.301)
AgrManuf*Tariff	0.0199*** (0.00651)		0.0197** (0.00769)
Constant	-0.359 (0.440)	-0.576 (0.419)	-0.358 (0.438)
Wave dum.	YES	YES	YES
Country dum.	YES	YES	YES
Sec. dum.	YES	YES	YES
Observations	3,191	3,191	3,191

Notes: (i) Standard errors in parentheses. (ii) *** p<0.01, ** p<0.05, * p<0.1. (iii) Weights are used in all regressions. (iv) Errors are clustered by country and sectors.

Figure 9: Potential Explanations



Source: Constructed by the authors from the CCMMHH survey.

4. Conclusion and Policy Implications

This paper looks at the transition of workers between formal and informal jobs during the pandemic, and investigates whether trade policy could be used a measure to enhance the transition of workers from the informal to the formal sector. This topic is timely and critical for the Middle East and North Africa (MENA) region for different reasons: first, informal employment is widespread in the region, and the pandemic has exacerbated the existing problem. Second, applied tariffs in the many MENA countries are still high. To this, is added the fact that many countries in the region have changed their trade policy during the pandemic. Third, female labor participation in the MENA region is low, and the disadvantageous impact of the pandemic on female formal work tends to bring it further down.

We use the Combined COVID-19 MENA Monitor Household Survey (CCMMHH) constructed by the Economic Research Forum for 5 countries (Egypt, Morocco, Jordan, Sudan and Tunisia) and 11 sectors and combine it with tariffs data on agriculture and manufacturing, and ad-valorem equivalent tariffs on services. Our results are summarized in the following four points: first, fewer trade restrictions are associated with an increased probability for the worker to become formal and this effect is more pronounced post-pandemic relatively to before February 2020. Second, fewer trade restrictions are linked to an increase in the probability of becoming formal for blue collars only, with an insignificant effect on white collars. Third, trade policy matters for men only, with an insignificant effect on women: fewer trade restrictions are associated with an increase in the probability of men to become formal. Last but not least, the effect of trade policy on job formality depends on the sectoral occupation of the individual with this effect being more pronounced in agriculture and manufacturing relatively to services sectors. We would also like to acknowledge that our results could be further improved by refining the construction of the non-tariff measure variable, that will be the subject of further research.

The policy implications of our results are important. As trade liberalization is associated to a reduction in informal employment, it is recommended to consider incorporating the informal sector in trade policy decisions, especially that all MENA countries strive to rise from the devastating effects of COVID-19 on the economy. A sound macroeconomic framework based on trade liberalization with incentives that boost firms' productivity, such as tax exemptions, better investment climate, and simplified procedures, is needed in the region. As firms expand, the demand for formal and skilled workers increases after trade liberalization.

References

- Aleman-Castilla B (2006), “The effect of Trade liberalization on informality and wages: Evidence from Mexico”, *CEP Discussion Papers dp 0763*, Centre for Economic Performance. LSE.
- Alon, T., Doepke, M., Olmstead-Rumsey, J and Tertilt, M. (2020) , “The impact of COVID-19 on gender equality”, NBER Working Paper 26947.
- Ben Salem, M. and Zaki, C. (2019), “Revisiting the Impact of Trade Openness on Informal and Irregular Employment in Egypt”, *Journal of Economic Integration*, 34(3), 465-497.
- Becker, D. (2014), “Heterogeneous Firms and Informality: The Effects of Trade Liberalization on Labor Markets”, *No 180124, Working Papers*, Cornell University.
- Fontagné, L., Mitaritonna, C. and Signoret, J.E. (2016), “Estimated Tariff Equivalents of Services NTMs”, *CEPII Working Paper, N°2016-20*, Paris.
- Goldberg P., and Pavcnik N. (2003). “The response of the informal sector to trade liberalization.” *Journal of Development Economics* 72, 463-96.
- Combined COVID-19 MENA Monitor Household Survey, CCMMHH- Nov-2020, Feb- 2021, Apr-2021, Jun-2021, Aug 2021.
- Munro, L. (2011), “A Literature Review on Trade and Informal Labour Markets in Developing Countries”, *OECD Trade Policy Working Papers*, No. 132, OECD Publishing.
- OAMDI, 2021. COVID-19 MENA Monitor Household Survey (CCMMHH), <http://www.erfdataportal.com/index.php/catalog>. Version 5.0 of the licensed data files; CCMMHH_Nov-2020-Aug-2021. Egypt: Economic Research Forum (ERF).
- OECD (2018), Background Note: Trends in trade and investment policies in the MENA region, MENA-OECD Working Group on Investment and Trade.
- OECD (2021), MENA-OECD Government Business Summit, 30-31 March.
- Selwaness. I., and Zaki. C. (2015) .“Assessing the Impact of Trade Reforms on informal employment in Egypt.” *The Journal of North African Studies* 20, no. 3, 391-414.
- CNUCED-UNCTAD (2021), COVID-19 non-tariff measures database, coded based on international classification for non-tariff measures.
- World Tariff Profiles (2021), World Trade Organization (WTO).