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DISCUSSION PAPER SERIES

IZA DP No. 16546

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ABSTRACT

Exports to Improve Women's Economic Opportunities in Morocco[1]

Morocco's trade liberalization policies coincided with macroeconomic growth over the past two decades. The relationship between trade liberalization and individual-level labor-market outcomes, however, are not well understood. By combining three complementary approaches and modeling techniques, this paper estimates: (i) the relationship between trade agreements and trade flows, (ii) the relationship between trade exposure and various local labor market outcomes, and (iii) the relationship between firm employment and exports. Our results show that tariffs have fallen and trade, as a share of GDP has increased. Morocco's trade agreements, however, are not always associated with higher trade flows. Furthermore, trade has led to mixed results for workers. Increased trade has decreased informality but may have adversely affected female labor force participation (FLFP). Trade liberalization seems to have induced a shift from female labor-intensive industries, such as apparel, to capital-intensive sectors that are predominantly male-intensive. Our firm level analysis confirms these results by showing that increasing in employment from exports has occurred mainly in male, capital-intensive sectors. Labor-abundant countries might want to provide incentives to labor-intensive industries rather than only supporting capital-intensive ones—especially in industries where women typically perform the labor-intensive jobs. It is important to note that we focus mainly on the labor demand side. Policies related to the supply side should also be weighed to create incentives for females to join the labor force, such as policies addressing social norms, regulation, and barriers to job mobility.

JEL Classification: F13, F14, F15, F16, J23, J31, O15, O19

Keywords: gender, trade policy, trade flows, labor market outcomes, firm dynamics

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1. Introduction

The positive relationship between trade openness and higher Gross Domestic Product (GDP) per capita is well-established in academic literature (Frankel and Romer 1999 and Norgier and Siscart 2005). Trade is also associated with falling poverty, especially in developing countries (Harrison 2007). On the micro side, these positive relationships are at least partially explained by the increase in labor demand that comes with exports (Robertson et al. 2009 and Lopez-Acevedo et al. 2016). Almost like a mirror of developed countries (where important studies show an adverse effect of imports on local labor markets), recent studies show that developing-country local labor markets benefit from rising exports. In several developing countries, exports are associated with improving labor market outcomes, such as increased wages, lower informality rates, and greater female labor force participation (FLFP) (Artuc et al. 2019, Robertson et al. 2020, and Robertson et al. 2021).

If exports increase labor demand, as has been observed in other developing countries, then finding ways to encourage exports seems like a good policy for developing countries. Motivated perhaps in part by the encouraging experiences of other countries, Morocco pursued trade agreements in an attempt to increase exports.

As perhaps expected by many economists, Morocco's trade liberalization has been followed by macroeconomic growth over the last two decades. Between 2000 and 2019 living standards have considerably improved: per capita income almost doubled, and the overall poverty rate fell to almost one-third of its 2000 level. Literacy rates, health outcomes, and access to basic utilities have all improved (World Bank, 2023). The working-age population is expanding, representing a potential "demographic window" to support a jobs-led growth policy for the next two decades (Lopez-Acevedo et al. 2021a).

Economic growth, however, has not coincided with enough jobs to offset the rising population and the gains of growth have not been equally shared. Two key problems persist. First, the Moroccan informality rate, despite decreasing, is still among the highest in the Middle East and North Africa (MENA) region. Between 2001-2018, the informality rate decreased only by 7.8 percentage points, from 85.1 percent to 77.2 percent (Lopez-Acevedo et al., 2023). Second, FLFP is now lower than two decades ago and considerably lower than OECD countries and middle-income economies (Lopez-Acevedo et al., 2023; Lopez-Acevedo et al. 2021b). A gap in LFP of nearly 50 percent persists between men and women. Despite advances in the country's legal system that guarantees equal rights for men and women, the latter still face great inequality and discrimination that limits access to economic opportunities (Chauffour, 2018; Islam et al., 2022). The lack of progress in these labor-market outcomes following the implementation of trade agreements raises several questions.

- First, have trade agreements successfully boosted trade flows in Morocco? For this, we present gravity model estimates that show that most of Morocco's trade

agreements are associated with a larger change in trade than the "average" agreements, but these estimates are generally not statistically different from either the average agreement or zero..

- Nevertheless, since exports have been increasing, we ask whether or not exports are associated with improved local labor market outcomes. To answer this question, we use a "shift-share" analysis (following Bartik, 1991) to assess the distributional effects of trade at the district level on informality and FLFP. Our mixed results show that increasing exports has helped reduce informality but deterred FLFP.
- Finally, could firms' behavior in Morocco's local labor markets help explain the unexpected outcome that higher exports reduce informality but worsen FLFP? Our results show that while employment is positively correlated with a firm's export sales, employment gains remain concentrated in male labor-intensive (rather than female labor-intensive) firms.

This paper is organized as follows. Section 2 provides a snapshot of Morocco's trade patterns and labor-market outcomes to highlight its main challenges. Section 3 presents the gravity model employed to assess how trade policies affected trade flows. In section 4, we estimate how increasing exports affected local labor markets through our Bartik (1991) estimates. Section 5 builds from section 4 and present a heterogeneous firm model analysis to explain the role that firm dynamics play in our mixed results from the shift-share analysis. Finally, section 7 concludes and provides some policy implications from our findings.

2. Trade Agreements, Trade Patterns, and Labor-Market Outcomes in Morocco

The main goal of this section is to provide the background and context necessary to interpret the empirical results presented in the bulk of the paper. The first part examines trade and then we describe labor market outcomes.

Trade Agreements and Trade Patterns

Morocco has signed nine trade agreements between 1988 and 2023 (Table 2.1). The most important agreement, with the European Union, was signed in 1996 and entered into force in 2000 and covers nearly 70 percent of Morocco's total exports.

Table 2.1: Several trade agreements have been signed in recent decades.

Agreement Name	Coverage	Signature	Entry into force	Partners
Global System of Trade Preferences among Developing Countries (GSTP)	Goods	13/04/1988	19/04/1989	41 countries, mainly emerging[2]

[2] See the full list in http://rtais.wto.org/UI/PublicShowRTAIDCard.aspx?rtaid=146&lang=1&redi&redirect=1

Pan-Arab Free Trade Area (PAFTA)	Goods	19/02/1997	01/01/1998	MENA
EFTA Agreement	Goods	19/06/1997	01/12/1999	Iceland, Liechtenstein, Norway, Switzerland, Morocco
EU-Morocco	Goods	26/02/1996	01/03/2000	EU, Morocco
Morocco - United Arab Emirates	Goods	25/05/2001	09/07/2003	Morocco, United Arab Emirates
Turkey-Morocco	Goods	07/04/2004	01/01/2006	Morocco, Turkey
Unites States - Morocco	Goods	15/06/2004	01/01/2006	Morocco, United States of America
Agadir Agreement	Goods	25/02/2004	27/03/2007	Egypt, Jordan, Morocco, Tunisia
United Kingdom - Morocco	Goods	26/10/2019	01/01/2021	Morocco, United Kingdom

Source: World Trade Organization (https://www.wto.org/english/thewto_e/countries_e/morocco_e.htm)

Average tariff rates fell considerably and trade openness (measured as the sum of imports and exports as a percentage of GDP) increased significantly after these trade agreements went into effect. The mean tariff rate[3] in Morocco decreased from 45.4 percent in 1993 to 3.61 in 2020 (Figure 2.1). At the same time, trade openness increased from 52.10 percent in 1993 to 87.14 percent in 2019, followed a constant increasing trend except for the period after the 2008 crisis (Figure 2). After entry into force of the EU agreement in particular, trade as a percentage of Moroccan GDP increased from 59.1 percent (26.8 percent from exports and 32.3 from imports) in 2000 to 87.1 percent (39.1 percent from exports and 48 percent from imports) (WITS, 2022).

Figure 2.1. Tariff rates considerably declined

Moroccan tariff rate of all products in percentage

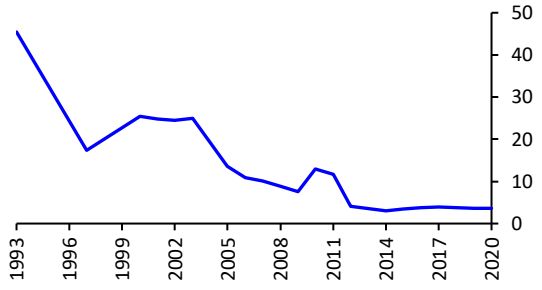
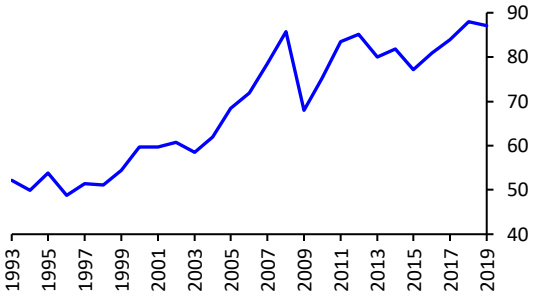


Figure 2.2. Trade openness almost doubled

Total trade as percentage of GDP



[3] Weighted mean applied tariff is the average of effectively applied rates weighted by the product import shares corresponding to each partner country.

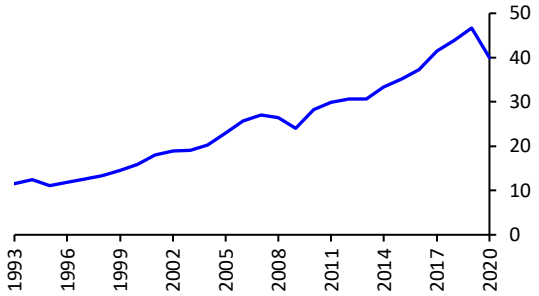
Source: Authors' elaboration using data from Our World in Data (https://ourworldindata.org/)

Source: Authors' elaboration using data from Our World in Data (https://ourworldindata.org/)

The Moroccan export sector grew after trade liberalization. Total exports increased 307 percent from 1993, with a decrease in 2020 due to the COVID-19 pandemic shocks (Figure 2.3). At the same time, the country's trade balance (exports minus imports) has remained negative and decreasing (Figure 4), in part reflecting high dependence on fossil fuel imports.

Figure 2.3. Exports benefited from openness

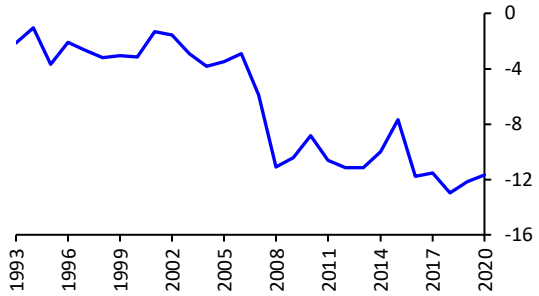
Exports of goods and services, billions 2015 US$



Source: Authors' elaboration using data from the World Development Indicators.

Figure 2.4. Trade balance remained negative

Trade balance, billions 2015 US$



Source: Authors' elaboration using data from the World Development Indicators.

One reason why the EU agreement was so important is that Morocco's trade, in terms of partners, concentrates on Europe. In 2018, nearly 70 percent of Moroccan exports went to high-income countries. Its two main partners are France and Spain, accounting for 22 and 24 percent of total exports respectively.

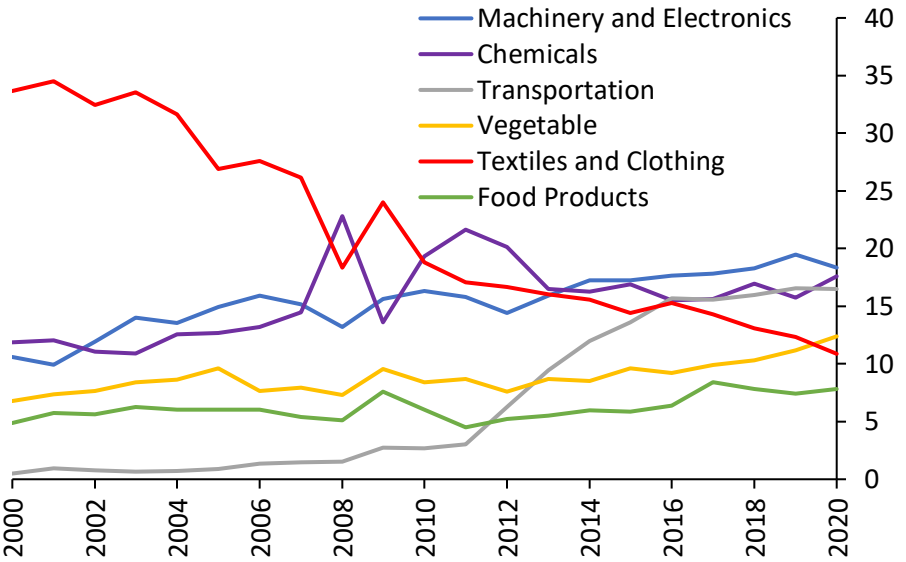
Morocco also exports a limited, but increasing, range of products. Between 2001 and 2019, Morocco increased the number of products it exported from 2,704 to 3,129 (WITS, 2022), which is both higher than neighbors Egypt and Tunisia and about 2/3 the level of the United States. Most importantly for this study, however, is that, at the same time, trade patterns shifted from female labor-intensive (e.g., apparel manufacturing) to male capital-intensive industries (e.g., machinery and transportation). In 2000, apparel exports represented nearly 40 percent of Moroccan total exports, by 2020, however, apparel's share fell to 10.8 percent. In the same period, exports of machinery and electronics almost doubled from 10.6 percent to 18.3 percent, chemicals increased from 11.8 percent to 17.5 percent. Further, transportation equipment, including automotive products and parts, experienced an impressive increase from 0.5 percent to 16.5 percent of total exports.

Evidence from developing countries suggests that shifting trade patterns can affect some workers disproportionally depending on a sector's labor intensity. Apparel, for instance, is typically characterized by a workforce that is more than 50% female. As described above,

machinery and electronics, transportation, and chemicals have surpassed apparel in terms of share of total exports (Figure 2.5). This shift means typically labor-intensive and female-dominated industries lost share relative to other sectors that are mainly capital-intensive and employ male workers. In 2018, for example, female share of total jobs in top exporting industries such as motor vehicles, manufacture of chemicals, and machinery were 33.4 percent, 21.6 percent, and 11.8 percent, respectively. Conversely, female workers' participation in sectors with falling exports – textiles, apparel, and agriculture – were considerably higher with 59 percent, 49 percent, and 30 percent, respectively.

Figure 2.5: Share in total exports shifted from labor-intensive to capital-intensive industries

Percentage of total exports



Source: Authors' elaboration using data from the World Integrated Trade Solutions (WITS).
Note: Product groups appear as reported by WITS.

Trade agreements, domestic industrial and economic policies, and China's positioning as an export competitor to other developing economies have combined to change Morocco's composition of exports. First, the EU-Morocco trade agreement committed Morocco to reduce tariffs on imports of EU-manufactured goods to zero, harming national production by creating incentives to import light manufactures. Second, internal Moroccan policies incentivized foreign direct investment in specific capital-intensive sectors, such as transportation, machinery, and electronics, which are predominantly male-intensive (Chauffour, 2018). In 2004, the country introduced the Industry Upgrade Plan and the Emergence Plan that provided support to sectors in which the country envisioned an emerging comparative advantage (e.g., automobile industry, aeronautics, and electronics)[4]. Additional measures included the 2014 "Industrial Acceleration Plan" that created a fund

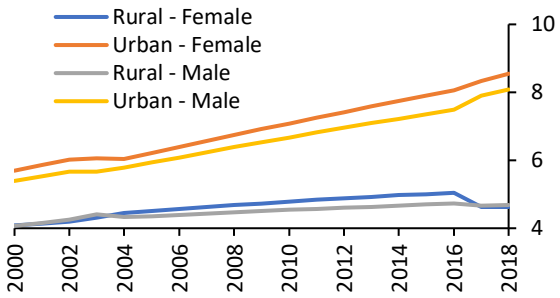
[4] Morocco's structural transformation since the early 2000s has been rather weak. Specific sectors including automotive, aeronautics, and renewable energies, however, reported an impressive performance. The automotive industry has been a leading export sector since 2014 (Chauffour, 2018).

to provide subsidies to industries. Third, the emergence of China as an export power, followed by the end of the multi-fiber agreement (MFA), meant greater competition in the European market overall and especially in textiles and apparel (Lopez-Acevedo & Robertson, 2012).

Labor Market Outcomes

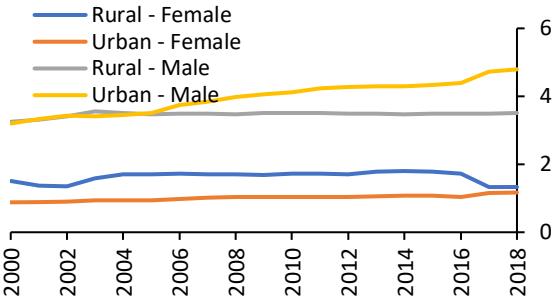
Growth in Morocco's working age population[5] has outpaced job creation. The rural working-age population increased 14.2 percent from 2000 to 2018. The urban working age population, however, increased 49.9 percent. The same trend emerged for both genders (Figure 2.6). Rural employment increased 1.9 percent and urban employment grew 45.8 percent, mainly driven by jobs for men (Figure 2.7). More drastically, while the working-age women population increased 3.4 million, just 117,800 new jobs were created. The gap between male and female employment grew dramatically.

Figure 2.6: Working age population has increased, especially in urban areas.
Millions of persons



Source: Estimates based on the *Enquête Nationale sur l'Emploi* (ENE; Labor Force Survey)

Figure 2.7: Employment growth has not kept the same growth pace
Millions of workers



Source: Estimates based on the *Enquête Nationale sur l'Emploi* (ENE; Labor Force Survey)

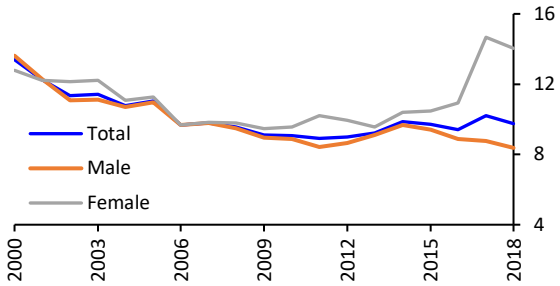
At the same time, the labor market has failed to create new opportunities for the large number of women and youth entering the workforce. Women constitute the majority of the inactive population. Female unemployment is high, which hints that inactivity might be due to women being discouraged from working. In 2018, female unemployment reached 14 percent, while male unemployment was 8.37 percent. For the youth aged 15-24, both inactivity and unemployment are high in comparison with other age groups. The "not in education, employment or training" (NEET) rate has remained among the highest in MENA, and those who were NEET in 2010 were still NEET even after 10 years (Alfani et al. 2020).

Unemployment slightly decreased, especially among men, before the COVID-19 pandemic.[6] Reaching an all-time low in 2011 of 8.91 percent, the unemployment rate declined from

[5] Defined as the population aged 15-99 years old.
[6] Data from the Labor Force Survey are available from 2000 to 2018.

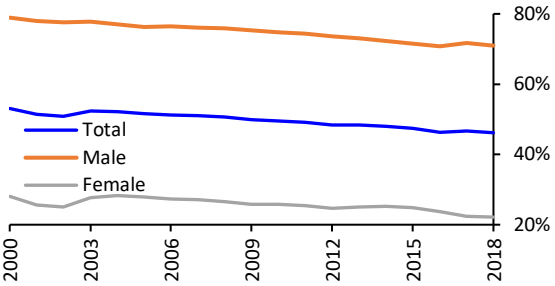
13.4 percent in 2000 to 9.75 percent in 2018 (Figure 2.8). This decrease was driven mainly because of male unemployment rate. The female unemployment has increased since 2009.. Labor force participation rate is special concern among the female population. Decreasing from 28 percent in 2000 to 22 percent in 2018, FLFP reflects the absence of urban job creation for women, and probably discourages many women from FLFP altogether (Figure 9).

Figure 2.8: Unemployment rate has decreased for men, not for women
Percentage of the active population



Source: Estimates based on the *Enquête Nationale sur l'Emploi* (ENE; Labor Force Survey)

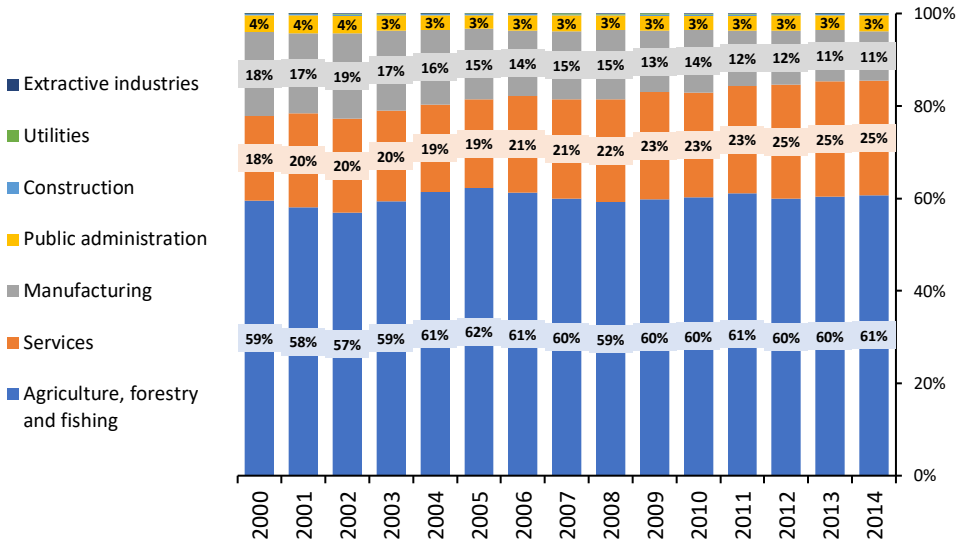
Figure 2.9: Labor force participation rates
Percentage of the working age population



Source: Estimates based on the *Enquête Nationale sur l'Emploi* (ENE; Labor Force Survey)

The sectorial distribution of female employment may help explain the declining FLFP rate. In 2000, the manufacturing sector represented 18 percent of total female employment. In 2014 it accounted for just 11 percent (Figure 2.10) as women lost jobs in apparel. This is different from the experience of many developing countries (Artuc et al., 2019). Female employment in agriculture, however, remained about the same. The share of women in the service sector overtook manufacturing. The main point is that urban job creation has not been enough to offset rural migration and the increasing working-age population. Women encountered fewer working opportunities while opportunities for menin a few capital-intensive sectors expanded.

Figure 2.10: Share of manufacturing in female employment considerably decreased, while agriculture remained steady and services expanded
Percentage of female employment



Source: Authors' élaboration based on the Enquête Nationale sur l'Emploi (ENE; Labor Force Survey)

Labor market outcomes in Morocco reflect a unique circumstance in which trade shocks came along with a decrease in FLFP[7] and a reduction in informality.[8] For the past 15 years, both female and male labor force participation in Morocco decreased, in contrast to trends elsewhere following trade growth. At the same time, informality rates for both men and women decreased. These trends might be associated in part with policies promoting formalization but deterring female participation in specific sectors. Informality rates in top exporting sectors (Figure 2.11) are relatively low compared to the overall informality rate of 74 percent in 2018. At the same time, the female share of employment is higher in industries losing the most jobs (Figure 2.12) compared to the 23 percent female share of employment in 2018.

Figure 2.11: Top exporting sectors have relatively lower informality rates
Percentage of workers

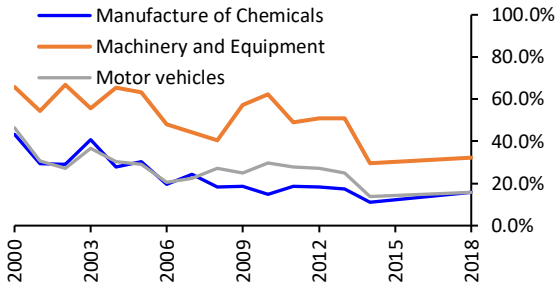
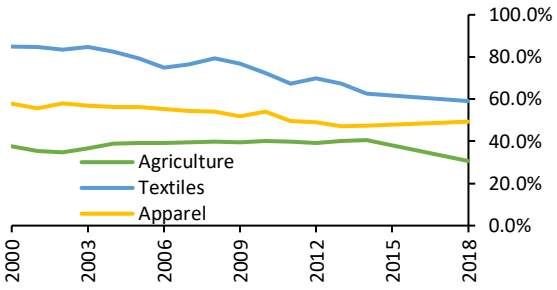


Figure 2.12: Female share of employment in top job-losing industries is relatively higher
Percentage of workers



[7] Defined as the active population (employed and unemployed women) divided by the working age female population.
[8] Defined as the percentage of workers with access to social security.

Source: Estimates based on the *Enquête Nationale sur l'Emploi* (ENE; Labor Force Survey)

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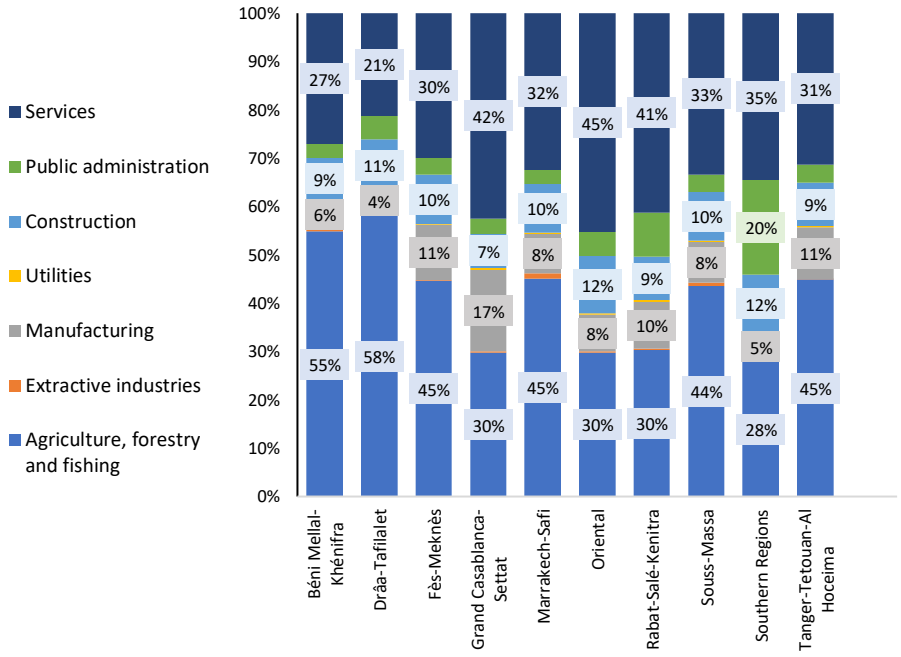
Labor market variables differ depending on geography. Employment distribution varies across regions. For example, 58 percent of employment in Drâa-Tafilalet was in agricultural jobs in 2014, while in the Oriental region this share was just 30 percent while 45 percent was in services (Figure 2.13a).

Figure 2.13a Employment distribution varies across regions (2014).

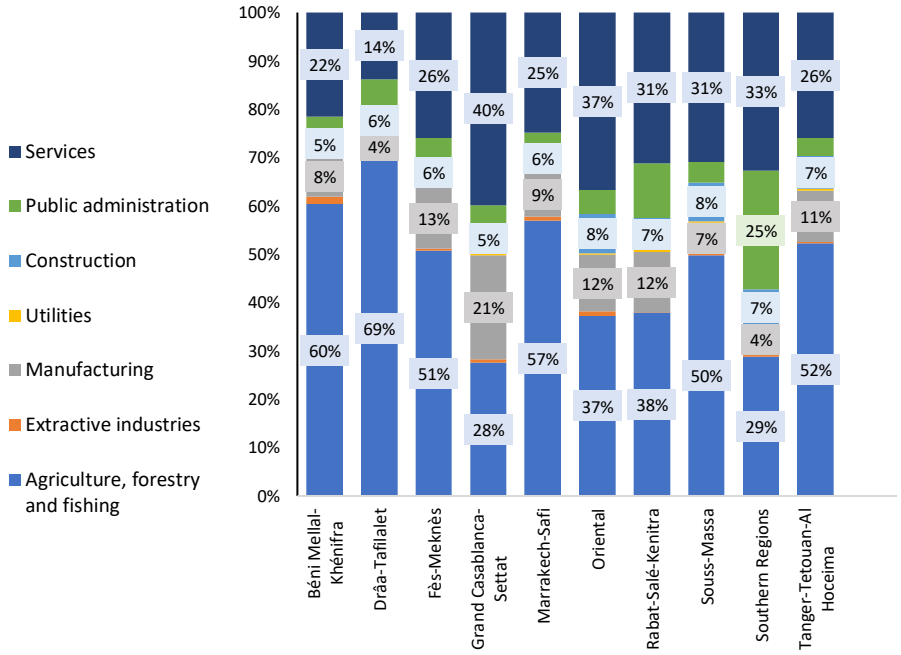
Percentage of total employment



At the same time, those regions with the highest shares in agricultural jobs (Béni Mellal-Khénifra, Drâa-Tafilalet, and Marrakech-Safi) have the lowest unemployment rates. These shares are stable over time, compared to the distribution of 2000 (Figure 2.13b).

Figure 2.13b Employment distribution varies across regions (2000).

Percentage of total employment



Source: Estimates based on the Enquête Nationale sur l'Emploi (ENE; Labor Force Survey)

The regions with the lowest female labor participation rates are also those with the highest unemployment (Oriental and Southern regions). The informality rate also varies across regions, with the southern regions having the lowest driven by high employment share in public administration. It is not surprising that the informality rate in Drâa-Tafilalet is highest since most jobs there are in agriculture.

3. Gravity Analysis

The gravity model of international trade is the tool economists use to estimate the contribution of various factors to bilateral international trade flows. Tinbergen (1962) proposed this model to illustrate the asymmetry of global trade flows. Trade flows between two countries are modeled as functions of each country's size (GDP or GDP per capita), the distance between them, and trade costs. Trade costs might include a wide range of variables, including bilateral, multilateral, and regional trade agreements. Comparing change in trade after a particular trade agreement goes into effect is one way to estimate either the effectiveness of trade agreements or the relative importance of policies and trade costs not included in an agreement (Chaney, 2018).

The most common method in gravity model estimation for many years applied Ordinary Least Squares (OLS) to a log-linearized form of the gravity model. More recently, academic advances focus on possible biases in OLS parameters, the presence of heteroskedasticity, and the fact that many country pairs do not trade at all, have raised concerns around this method. Newer gravity models have integrated the Poisson Pseudo Maximum Likelihood

(PPML) estimator to address heteroskedasticity when there are numerous zero values in the dependent variable. Comparing the Poisson Pseudo Maximum Likelihood (PPML) and Gamma Pseudo Maximum Likelihood (GPML) methods reveals that the PPML estimator is generally reliable even in scenarios where the dependent variable contains a significant number of zeros (Silva and Tenreyro 2011). Generally, however, gravity models are much like a difference-in-difference approach that compare the level of trade between trade-agreement-member countries and non-member countries before and after the trade agreement goes into effect.

Overview of the Approach

The question we analyze in this section is whether Morocco's change in trade after signing a trade agreement is larger or smaller than the change in trade that other countries experience after signing a trade agreement. This question is quite relevant because several studies find a wide variation in the effects of trade agreements on trade (Abreha and Robertson 2023). To estimate the effects of individual trade agreements, we take a pseudo-jackknife approach to agreements. This approach estimates a separate gravity equation for each individual agreement while including a variable for all other agreements. Iterating over all agreements generates a set of trade agreement coefficient estimates that allows us to demonstrate how much Morocco's trade changes relative to all other agreements (and, of course, the "average" agreement estimate measured as the estimated effect of all other agreements). We estimate each gravity equation using the Poisson Pseudo Maximum Likelihood with High-Dimensional Fixed Effects (PPML HDFE) methodology proposed by Correa, Guimarães, and Zylkin (2020) that produces results that are robust to statistical separation and convergence issues and are corrected for potential biases arising from country-specific time trends and other parameters included in the model.

To be more precise, we estimate the following equation for each individual agreement k:

$$y_{i,j,t} = \beta_{RTA}^{k} RTA_{i,j,k,t} + \beta_{RTA}^{l} RTA_{i,j,l,\,t} + \mu_{i,j} + \tau_{i,t} + \delta_{j,t} + \epsilon_{i,j,t} \qquad (1)$$

In equation (1):

$y_{i,j,t}$ = Pairwise trade between country i and county j in time t

$\beta_{RTA}^{k} RTA_{i,j,k,t}$ = The estimated change in total trade following an agreement *k*

$\beta_{RTA}^{l} RTA_{i,j,l,\,t}$ = Average effect of all other trade agreements, excluding the specific agreement *k*

The rest of the variables are country-specific time trends and country-pair fixed effects.

Data

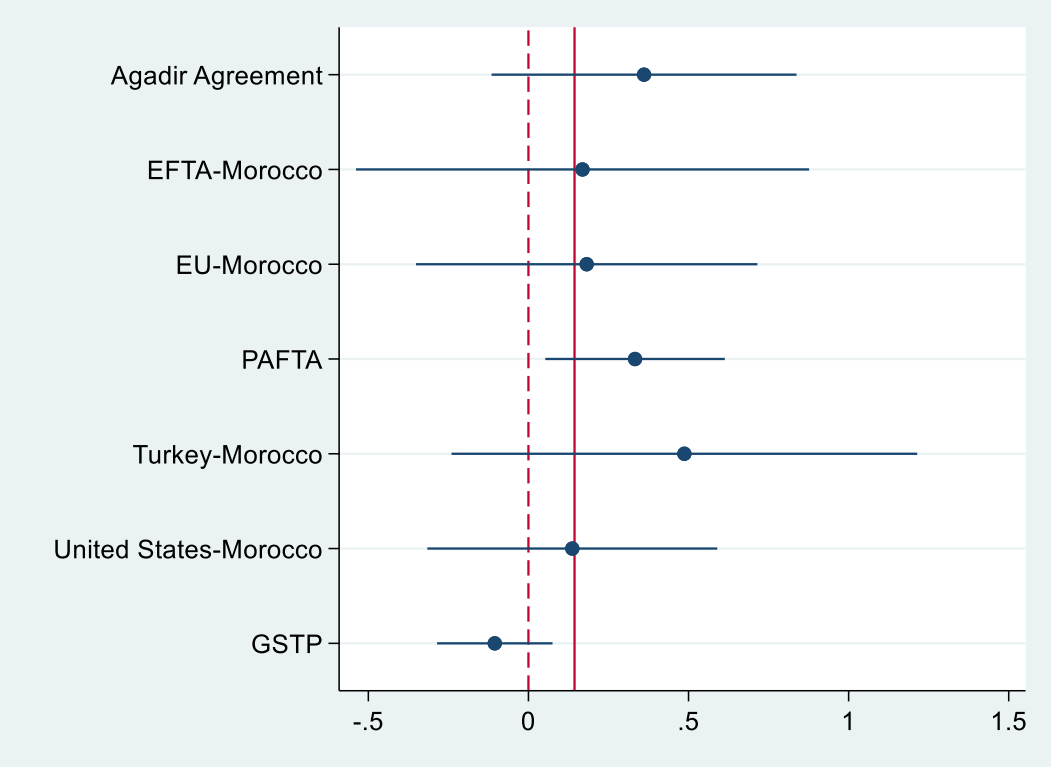
Since the country-pair fixed effects and both importer and exporter time trends absorb the variation of the "usual" gravity variables (distance, gross domestic product, and other country-pair characteristics like common language, common border, and so on), our data consist of bilateral trade flows and trade agreement indicators from the CEPII database (Abreha and Robertson 2023). The dataset includes over one million observations that cover 232 exporters, 179 importers, 262 Regional Trade Agreements, and the 1990-2016 period.

For this specific paper, the results reported are for only the seven RTAs in which Morocco is a partner and the data described are available.

Results

Table 3.1 below contains the baseline gravity model results. Each row represents a single trade agreement. The β^k coefficients represent the effect on trade flows of each listed agreement. The β^l coefficients represent the average effect of all other RTAS in total trade flows excluding the agreement named in the given row.

Table 3.1 PPML HDFE Gravity estimates of Morocco's Trade Agreements and Total Trade



Source: Estimates calculated using data from UN Comtrade database, the World Integrated Trade Solutions (WITS), and the World trade Organization (WTO). Plotted estimates are incidental-bias-corrected coefficients and standard errors following Correia et al. (2019). The solid vertical line indicates the estimated value of the "average" agreement as described in equation 1. The

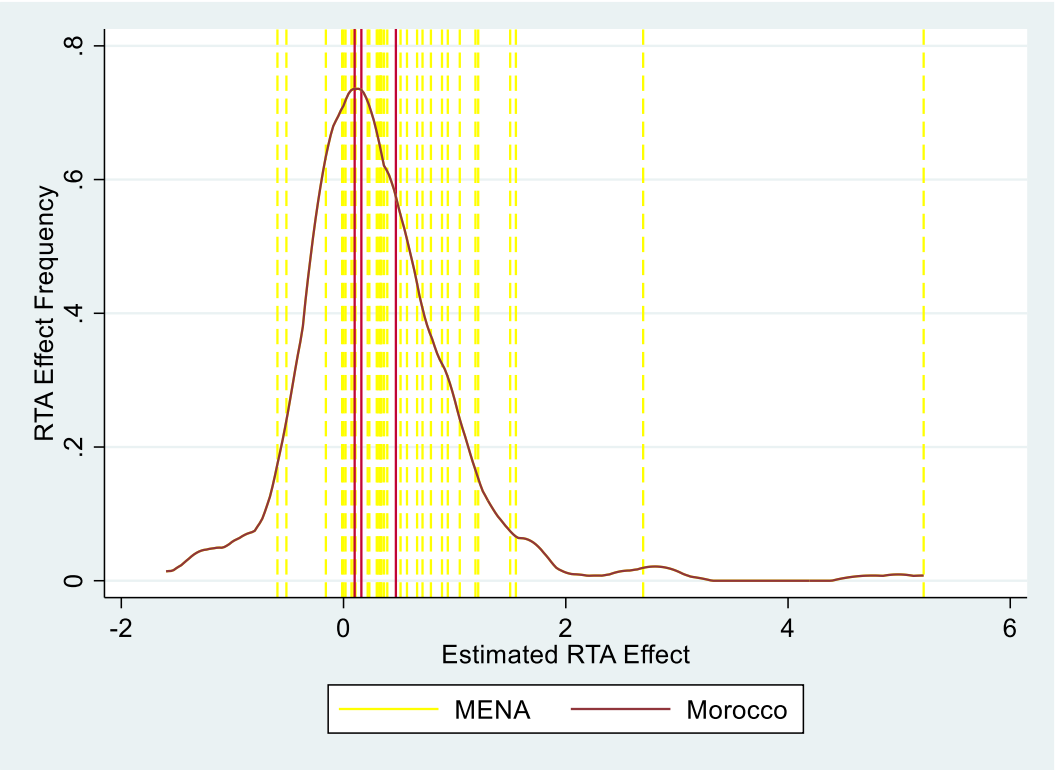
estimates of the “average” agreement are basically identical across most agreements because Morocco’s individual agreements have little influence on the average estimate of the other 262 agreements (Morocco is not one of the largest trading countries).

Two main findings emerge from Figure 3.1. The first is that individual trade agreements are associated with a wide range of estimated changes in trade flows. This heterogeneity has been noted in several earlier studies, but few studies focus on the variation individual countries experience across agreements. Second, the change in trade Morocco experienced after its trade agreements are slightly larger than, but not statistically different from, the change in trade following the “average” agreement. Thissuggests that Moroccan trade agreements are having positive effects, but are not necessarily more productive than the average agreement in terms of increasing trade flows.

Notably, the results for the Global System of Trade Preferences among Developing Countries (GSTP) are negative, meaning a decrease of around 9 percent in trade flows after entry into force relative to other agreements. The trade agreement between the European Union, which accounts for most of Moroccan exports share, is positive and has a positive effect of around 18 percent in trade flows, slightly larger than, but not statistically different from, the average effect of around 14 percent for all other agreements. It is also important that trade between trade agreement signatory countries geographically closest to Morocco have double (Agadir Agreement and PAFTA) and even triple (Turkey – Morocco) the trade-increasing estimate of the “average” trade agreement.

Figure 3.2 provides a graphical benchmarking these results by illustrating the estimated effects of 35 other agreements including MENA countries.

Figure 3.2 PPML HDFE Gravity estimates of All Trade Agreements and Total Trade

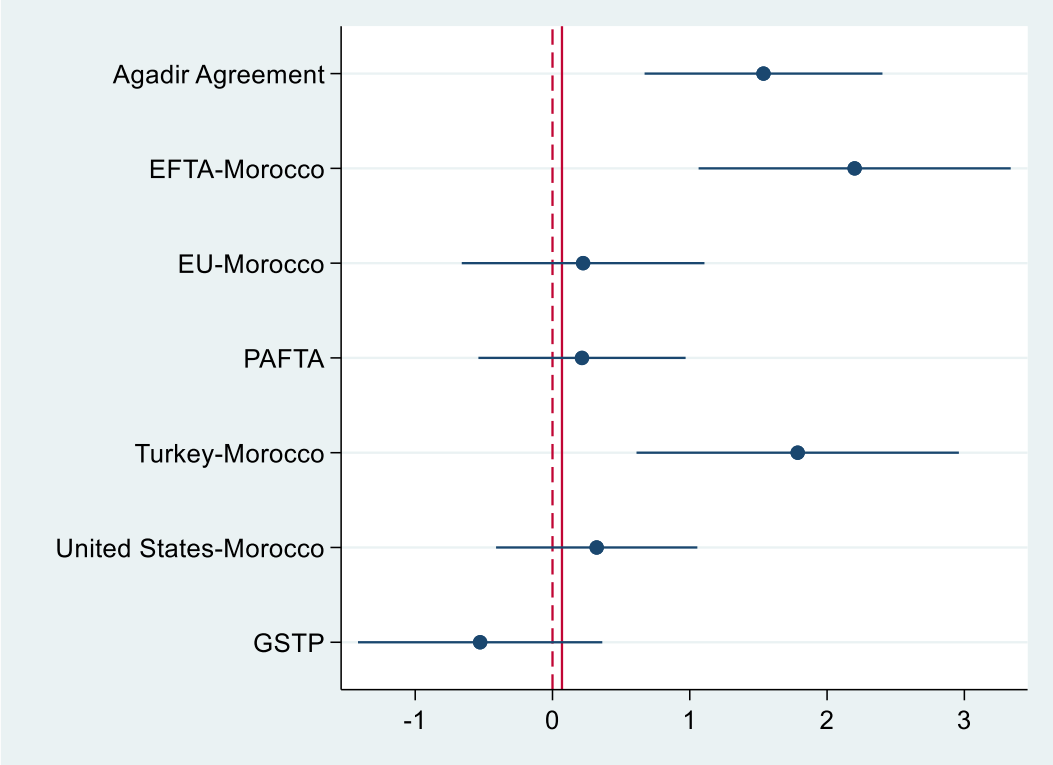


Notes: The kernel density graph shows the distribution of RTA-trade relationships from separate PPMLHDFE-estimated equations for each RTA registered with the World Trade Organization. The solid vertical lines represent Morocco's three agreements: EFTA – Morocco, Turkey – Morocco, and United States – Morocco. The dashed vertical lines represent 35 agreements that include MENA members Algeria, Israel, Jordan, Lebanon, Oman, the Palestinian Authority Turkey, Tunisia, and Syria. Estimates calculated using data from UN Comtrade database, the World Integrated Trade Solutions (WITS), and the World trade Organization (WTO).

As a labor-abundant country, the effects of trade agreements may be larger for labor-intensive goods. To explore this hypothesis, we consider two labor-intensive industries: apparel and furniture. We replace total trade in equation one with bilateral apparel or furniture trade and then repeat the same procedure to estimate the agreement-specific changes in trade and compare them to the overall agreement average.

Figure 3.3 shows the baseline gravity model results for trade in apparel. Again, three main results emerge from Table 3.3. First, the results are similar in direction, with the GSTP the only RTA with a negative coefficient. That is, Morocco's agreements are associated with more apparel trade. The second main result is that the individual agreements have larger estimated changes in trade than the "average" agreements. The "average" estimates for the effect of trade agreements on apparel trade are much smaller than those for total trade and have a higher standard deviation because trade agreements often have restrictive rules of origin for apparel that vary widely across agreements (Abreha and Robertson 2023). The third result is that the individual agreement estimates are larger, and in some cases much larger, than the estimates for total trade. The EFTA, the Agadir Agreement, and with Turkey, each imply increases of more than 1,000 percent after entry into force.

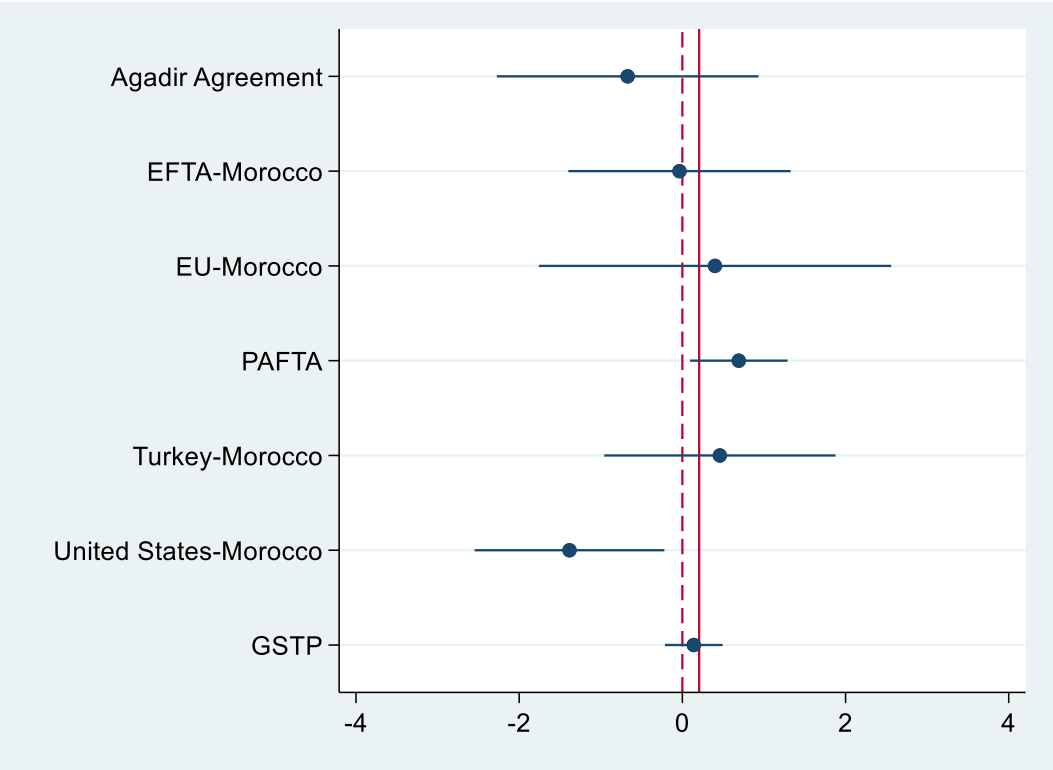
Figure 3.4 PPMLHDFE Gravity estimates of Morocco's Trade Agreements and Apparel Trade



Source: Estimates calculated using data from UN Comtrade database, the World Integrated Trade Solutions (WITS), and the World trade Organization (WTO). Plotted estimates are incidental-bias-corrected coefficients and standard errors following Correia et al. (2019). The solid vertical line indicates the estimated value of the "average" agreement as described in equation 1 when the dependent variable is bilateral apparel trade (HS61 and HS62). The estimates of the "average" agreement are basically identical across most agreements because Morocco's individual agreements have little influence on the average estimate of the other 262 agreements (Morocco is not one of the largest trading countries).

We also compare furniture, which is a labor-intensive yet less politically-sensitive sector. Figure 3.5 shows the coefficients for the model considering trade in the furniture sector. The differences between Figure 3.5 and previous figures shows that results vary significantly by sector, which helps explain the variation in the effects of trade agreements generally. The coefficients of this model show mixed results: only the trade agreements with the European Union and the Pan-Arab Free Trade Area show consistently greater than average effects on trade flows. Others, such as the agreement with the U.S. and the Agadir Agreement, have decreased trade in the furniture sector.

Figure 3.5: PPML HDFE Gravity estimates of Morocco's Trade Agreements and Furniture Trade



Source: Estimates calculated using data from UN Comtrade database, the World Integrated Trade Solutions (WITS), and the World trade Organization (WTO). Plotted estimates are incidental-bias-corrected coefficients and standard errors following Correia et al. (2019). The solid vertical line indicates the estimated value of the "average" agreement as described in equation 1 when the dependent variable is bilateral apparel trade (HS61 and HS62). The estimates of the "average" agreement are basically identical across most agreements because Morocco's individual agreements have little influence on the average estimate of the other 262 agreements (Morocco is not one of the largest trading countries).

The main takeaway of these results is that trade agreements in Morocco have made modest contributions towards the goal of boosting trade flows. Exports have increased both in absolute terms and as a share of GDP, but there is not strong evidence that trade agreements were driving these changes. It is still possible that the changes in exports have affected local labor market outcomes. The next section builds on these results by exploring how the increase in trade flows affected local labor market outcomes.

4. Shift-Share (Bartik) Analysis

Our main question in this section is how exports have affected local labor market outcomes in Morocco. Since exports have increased, the next step is to estimate how trade flows affect local labor market outcomes. One of the most prevalent current approaches is known as the shift-share (Bartik 1991) approach. Following the current literature, we employ this approach for the first time to Morocco's labor market outcomes.

Overview of the Approach

In this paper, we use a shift-share model that assesses the effect of trade on Morocco's local labor market outcomes. Following Bartik (1991) approach, we estimate how increases in exports per worker (as measure of exposure to trade) affects informality and female labor participation rates at the province level. As noted above, labor-market outcomes vary significantly across provinces. Following many in this literature, we assume that the provinces represent relatively independent local labor markets. The identification strategy under this assumption is that labor-market outcomes will vary in response to differential exposure to exports. The differential exposure to exports is calculated using *a priori* province-level employment in different exporting sectors.

We estimate the following equation:

$$y_{t+n}^{d} - y_{t}^{d} = \beta_0 + \beta_1 x_{t,t+n}^{d} + X_c{}'\beta_c + \epsilon_d, \quad (2)$$

In equation (2):

$y_{t+n}^{d} - y_{t}^{d}$ is the change in the dependent variable (informality and FLFP rates)
$x_{t,t+n}^{d}$ is the change in the export exposure index (change in exports from Morocco to the OECD weighted by sectoral employment)
X_c: control variables (y_t^d to control for trends)

We instrument the trade exposure index following Artuc (2019), who assumes that local market conditions in a district of Morocco do not affect total OECD imports from other countries (excluding Morocco). Thus, if exports of a given district in Morocco show a correlation to total OECD imports, we attribute it to a shock originating from OECD countries—which account for more than 75 percent of Moroccan exports—rather than a shock from the given district.

Given this, the trade exposure index is instrumented as follows:

$$x_{t,t+n}^{d} = \pi_0 + \pi_1 z_{t,t+n}^{d} + X_c{}'\pi_c + e_d, \quad (3)$$

In equation (3):

$z_{t,t+n}^{d}$ are predicted values from time-series regressions of Morocco's exports to the OECD on the OECD GDP by industry, as a proxy for Moroccan exports to the OECD purely solely explained by external aggregate demand.

Several recent papers suggest refinements to the Shift-share model (e.g. Borusyak et al. 2022) and provide a new framework for shift-share instrumental variable regressions following a quasi-random assignment of shocks allowing exposure shares to be endogenous. Their analysis claims that identification and consistency may arise from the

exogeneity of shocks while providing a new guidance for shift share instrumental variable (SSIV) estimations. Further versions of this study might include these new methodologies.

Data

The shift-share Bartik analysis draws on labor market indicators from the *Enquête Nationale sur l'Emploi* (Labor Force Survey, LFS) and on trade flows from the United Nations (UN) COMTRADE database. The LFS, a nationally representative survey conducted by the *Haut Commisariat au Plan*, includes detailed information on the active population's main demographic and professional characteristics, enabling the study of Moroccan labor market trends. It provides employment, formality, and participation data from 2000 to 2018.

The lack of homogeneous regional variables over time limits our LFS analysis. Only 10 regions can be homogenized across the entire 2000-2018 period, a low number of observations for econometric analysis. LFS's "province" variable for the period between 2000 and 2009 contains 60 consistent observations, and so our analysis relies on these (excluding 2009 because of post-crisis shocks). The LFS also lacks industry codes for 2015-2017 and has a different classification system in 2018.

Annual bilateral trade flow data from 2000 to 2018 come from the UN Comtrade database. This analysis focuses on Moroccan exports, or its analog (world imports of the rest of the world from Morocco). We merge these trade data with labor market indicators using the concordance between ISIC rev 3.1 (from the LFS) and HS0 – 1988/92 trade classification (used by UN COMTRADE).

Results

<u>Informality</u>

An increase in exports per worker in Morocco is associated with falling informality**.** To the extent that our instrument controls for endogeneity, our results are consistent with the hypothesis that increasing exports reduced informality rates from 2000 to 2004. The correlation dissipates somewhat from 2000 to 2008. An increase of US$100 in exports per worker led to a decrease of 0.9 percentage points in informality in the first period and 0.6 percentage points in the second period in provinces with higher exposure to trade. These results are statistically significant and apply for all kind of workers (Table 5).

Table 4.1: Estimated effect on informality rate from a US$ 100 increase in exports per worker in Morocco

Type of worker		Exports	
		2000-2004	2000-2008
All	Coefficient	-0.009**	-0.006**
	Z-statistic	(-2.16)	(-2.31)
	N	60	60

Males	Coefficient	-0.007**	-0.005***
	Z-statistic	(-2.05)	(-2.90)
	N	60	60
Females	Coefficient	-0.016**	-0.007
	Z-statistic	(-2.14)	(-1.46)
	N	59	58
Low Skill	Coefficient	-0.010***	-0.005***
	Z-statistic	(-2.59)	(-2602)
	N	60	60
High Skill	Coefficient	-0.010	-0.007***
	Z-statistic	(-1.60)	(-3.49)
	N	45	45
Young	Coefficient	-0.014***	-0.006***
	Z-statistic	(-2.86)	(-2.62)
	N	60	59
Old	Coefficient	-0.006	-0.005**
	Z-statistic	(-1.44)	(-2.07)
	N	60	60
Rural	Coefficient	-0.005	-0.003**
	Z-statistic	(-1.48)	(-2.39)
	N	53	53
Urban	Coefficient	-0.010***	-0.007***
	Z-statistic	(-3.48)	(-2.90)
	N	58	58

***p < 0.01 **p < 0.05 *p < 0.10

Female Labor Force Participation (FLFP)

An increase in exports per worker decreases the FLFP rate. An increase in US$100 exports per worker decreased FLFP by 0.32 percentage points from 2000 to 2004 and 0.27 percent in 2000-2008 in provinces more exposed to trade. Although unexpected given the standard belief that trade promotes FLFP, these findings are consistent with trade and labor market patterns of decreasing participation due to specialization of capital and male-intensive industries in Morocco presented on previous sections (Table 4.2).

Table 4.2: Estimated effect on the FLFP rate of a US$ 100 increase in exports per worker in Morocco

Type of worker		Exports	
		2000-2004	2000-2008
All	Coefficient	-0.0032*	-0.0027***
	Z-statistic	(-1.91)	(-2.90)
	N	60	60

Low Skill	Coefficient	-0.0032*	-0.0027***
	Z-statistic	(-1.88)	(-2.88)
	N	60	60
High Skill	Coefficient	-0.0031**	-0.0017**
	Z-statistic	(-2.11)	(-2.66)
	N	57	56
Young	Coefficient	-0.0033*	-0.0027***
	Z-statistic	(-1.87)	(-2.83)
	N	60	60
Old	Coefficient	-0.0031**	-0.0027***
	Z-statistic	(-1.97)	(-3.01)
	N	60	60
Rural	Coefficient	-0.0038	-0.0020
	Z-statistic	(-0.74)	(-1.42)
	N	53	53
Urban	Coefficient	-0.0025	-0.0019***
	Z-statistic	(-1.63)	(-2.75)
	N	58	58

***p < 0.01 **p < 0.05 *p < 0.10

This is consistent with the findings in Tunisia explained by Góes et al. (2023), which shows that with a high degree of gender segmentation in labor markets, foreign-demand shocks mainly in male-intensive sectors induce a decrease in female participation due to a substitution of female for male labor supply within households.

In sum, the increase in trade due to trade policies over the last decade has led to various results terms of local labor market outcomes. On one hand, while increasing exports per worker increased formalization, as expected, this did not increase the FLFP rate. This is due to a combination of local and external conditions. These findings seem to reflect the trade and labor market trends presented at the beginning part of this paper. In the next section, we explore whether the behavior of the local level is masked by the decisions of firms by exploring the link between the exporting sector and local-labor market outcomes.

5. Heterogenous Firm Model

Overview of the Approach

The estimated relationship between exports and employment at the local level is the result of decisions of individual firms. Firms might react to an exogenous increase in export demand in three different ways. Existing non-exporters could become exporters (the extensive margin), existing exporters might increase labor demand (the intensive margin), or existing exporters might increase exports by exporting products previously designated

for the domestic market (having no net effect on labor-market outcomes). Additionally, exports might affect FLFP in similar ways. Female-intensive firms could either enter or exit the export market or increase production at different rates than male-intensive firms. Two-sector trade models with heterogeneous firms and differences in factor intensity across sectors (Bernard et al. 2011) predict that rising export demand in one sector will increase demand for the workers intensively employed in that sector throughout the economy. While most manufacturing exports tend to be male-intensive, rising (falling) exports from female-intensive sectors could increase (reduce) demand for women and expand (reduce) female employment.

Simple models that incorporate firm heterogeneity and exports suggest that changes in employment concentrate along the extensive margin as new firms enter export markets. In this section we illustrate this result and then draw upon the rich firm-level data to complement our analysis. To illustrate these firm dynamics, we draw upon the simplified general equilibrium by Melitz (2003) used in Berg et al. (2022). This two-sector model starts with a "reserve" sector *a*, in which firms are homogeneous and produce using only labor with decreasing returns-to-scale technology:

$$l_a = f(\kappa, \lambda, w) \tag{4}$$

The parameters κ and λ characterize the labor demand function, and firms are assumed to be small and take the market wage was given.

The other sector is an "exporting" sector. In the exporting sector, firms are heterogeneous and differentiated by a firm-specific productivity parameter φ. They decide whether to shut down, produce for the domestic market, or produce for the export market.

After entry into the market, the firm-specific productivity parameter φ is first revealed (i.e., it is unknown prior to entry). The ex-ante productivity parameter distribution is described by $g(\bar{\varphi}, \sigma_{\varphi}^2)$. In practice, we assume that the productivity parameter is drawn from an exponential distribution.[9] For simplicity, assume that production is a function of labor l_j and can be represented as $Q = \gamma l_j^{\alpha}$, in which $j \in (a, b)$ indicates the subsector, γ represents total factor productivity (TFP), and α (restricted to be a positive value less than 1) ensures decreasing marginal productivity of labor.

Assuming firms are small, as we assume for the first sector, they can affect neither the wage paid to labor *w* nor the domestic market price P_d. Any production (for either the domestic

[9] Note that the exponential distribution is closely related to the Pareto distribution. For example, if *x* follows a Pareto distribution with a minimum of *a*, then *y* = log(*x*/*a*) (Halliday, Lederman, and Robertson 2018).

or export market) requires a fixed cost F_d.[10] By allowing the productivity parameter to enter the cost function, we can represent ex ante profits with the simple profit function:

$$\pi = P_d Q - \frac{wl}{\varphi} - F_d \tag{5}$$

Note that the profit-maximizing level of *l* is uniquely defined by P_d, φ, w, $\boldsymbol{\gamma}$, and α. the output price, TFP, and the individual-specific productivity parameter are positively correlated with firm-level labor demand. Using the asterisk to represent the optimal solution to the profit-maximization problem implied in equation (5), optimal labor demand is represented as:

$$l_j^* = \left(\frac{w}{P_d \alpha \gamma \varphi}\right)^{\frac{1}{\alpha - 1}} \tag{6}$$

Note that equation (6) shows that more-productive firms (higher values of φ) will be larger in the sense of having higher employment, production, and profits.

Equation (5) also shows that profits must be at least as large as F_d for the firm to produce a positive amount of output. Otherwise, the firm will shut down and produce nothing. Since profits are higher for higher values of φ, the model generates a cutoff value for φ that separates firms that produce from those that do not. When firms leave the market, average productivity levels increase because the lowest-productivity firms chose to exit the market.

In addition to producing, firms in the heterogeneous sector also have the opportunity to export. Exporting, however, requires an additional fixed cost, F_x. That is, to consider exporting, firms must first be viable domestic producers because international transportation is costly. A common assumption is that $Q\tau$ (τ>1) goods must be exported for the quantity Q to arrive. Under these conditions, exporting firms sell their goods for a higher price abroad than they would receive in the domestic market. In practice, the export price (P_x) is represented as a fixed markup over the domestic price. Specifically, $P_x = \tau P_d$.

The markup is related to foreign tariffs as well (τ = premium/tariff). Foreign tariffs are negatively related to the price exporters receive, and, as tariffs increase, exports fall. Trade agreements decrease foreign tariffs and therefore increase the price exporters receive. As a result, we model the effects of trade agreements by raising the export price in the model. Under these conditions, firms will choose to export if:

[10] In other models, Bernard, Jensen, and Schott (2009) for example, the fixed cost becomes part of labor demand. Our model simplifies this by assuming fixed costs to be a pure loss. This implies that the economy's equilibrium is characterized by a small but constant trade surplus that covers its fixed costs. The conclusions of the model would not be affected if the fixed costs were instead distributed among all the workers (Halliday, Lederman, and Robertson 2007).

$$P_x Q - \frac{wl}{\varphi} - F_d - F_x > P_d Q - \frac{wl}{\varphi} - F_d > 0 \quad (7)$$

A key result of the model is that exporters will be more productive, larger, and have higher profits than firms in the heterogeneous sector that produce for the domestic market.

In this model, general equilibrium means that wages, which are exogenous to individual firms, are determined by labor demand in the two sectors. Without social insurance, the economy is assumed to be characterized by full employment, meaning that all workers have to find work somewhere—that is, in either of our two sectors—or they will have no income. Assuming no labor-market adjustment costs, workers move freely between sectors to earn the highest wages. Free mobility between sectors implies that, in equilibrium, (base) wages will equalize between sectors. As in the Melitz (2003) model, total labor supply (*L*) is perfectly inelastic. Because our focus is mainly on trade agreements, and because the first sector is the reserve sector, we represent employment in the reserve sector to be total employment minus employment in the heterogeneous export sector:

$$l_a = L - l_b \quad (8)$$

Total employment in each sector is equal to the sum of each firm's employment. Because each firm in the export sector is unique (owing to a unique productivity parameter), each firm has a different level of employment. In the reserve sector, all firms are identical and total employment is simply the sum across all firms.

Formally:

$$l_j = \Sigma_i l_{ij} \quad (9)$$

in which $j \in (a,b)$ and individual firms are indexed with *i.* Because firms are homogeneous in the reserve sector, aggregate labor demand can be represented by a single labor demand function and all workers receive the same labor income. Given small heterogeneous firms in the export sector; small, homogenous firms in the second sector; and perfect mobility between plants and sectors, aggregate labor market determines wages, which equalize across sectors.

This model presents two groups of predictions. The first group is "static" in the sense that it predicts that exporting firms are larger and have more productivity. The second group is "dynamic" in the sense that the model can be used to decompose the expected change in employment from an increase in the foreign price (i.e. following a trade agreement) into that due to changes in the extensive and internal margins. The model predicts that most of the employment gains from a trade agreement come along the extensive margin. Existing

firms increase employment, but less than new firms entering the export market. In addition, we would expect employment to be higher among firms that have always exported, while lower for firms that are new exporters. We can compare these predictions with firm-level data described below.

Data

We use the World Bank Enterprise Surveys (ES) to evaluate the link between exports and employment at the firm level. The ES are representative samples of an economy's private-sector firms based on interviews with business owners and top managers about several topics, including trade and employment. In Morocco, ESs conducted in 2007, 2013, and 2019[11] cover businesses from manufacturing, construction, motor vehicle sales and repair, wholesale, retail, hotels and restaurants, storage, transportation, communications, and IT sectors. They only consider firms with more than five workers, and a minimum of 1 percent of private ownership.[12]

The ES reveal significant firm-level heterogeneity in Morocco. From the 1,096 interviewed firms in 2019, 28 percent were large (307 firms), 35 percent medium (384 firms), and 37 percent small (405 firms). By sector, 11 percent operate in the food sector, 16 percent in garments, 16 percent in other manufacturing, 17 percent in retail, and 41 percent in other services. In fact, 63 percent of firms have been in operation less than 20 years. Regarding international trade, only 20 percent of firms export more than 10 percent of their sales directly, compared with the MENA average of only 17 percent. While the proportion of firms that use foreign inputs for production is 42 percent, it is considerably lower than the average 64 percent for the MENA region.

Static analysis

This section presents evidence at the firm level to increase the understanding of the characteristics of exporting firms and their linkage with employment in Morocco. Results (Appendix A) show significant variation across firms – both exporters and those that sell only to the domestic market in terms of sales and employees. We also present an estimate of firm´s probability of being an exporter conditional on several variables. We also evaluate the relationship of employment with being an exporter and export sales.

Variables[13] include:

[11] For the evolution of the same firms (panel) we analyze the trends from 2013 to 2019.

[12] They exclude firms from agriculture, fishing, mining, public utilities, financial intermediation, public administration, education, health, and social work. They do not consider either business with less than five workers, informal firms, and 100% state-owned firms.

[13] Capital intensive and capital to labor ratio variables were not included due to the high number of missing observations.

Variable	Description	Observations	Mean	Std. dev.	Min	Max
Exporter:	A dummy variable that takes the value of 1 if the firm has exported and zero otherwise.	254	0.307	0.462	0.0	1.0
Employment:	Natural logarithm of total full-time workers.	254	3.761	1.427	0.9	8.7
Export Sales:	Natural logarithm of the value of firms' export sales.	254	4.761	7.283	0.0	21.2
New products:	A dummy variable that takes the value of 1 if the firm launched new products or services in the last three years and zero otherwise.	254	0.193	0.395	0.0	1.0
Value of machinery:	Natural logarithm of the value of firms' machinery assets.	254	4.597	6.731	0.0	22.1
Cost per worker:	Natural logarithm of firms' total cost per worker in the last fiscal year, including wages, salaries, and bonuses.	254	10.023	1.487	5.3	15.0
Firms' age:	Number of years since firms' establishment.	254	3.198	0.546	1.1	4.6
Foreign ownership:	A dummy variable that takes the value of 1 if the firm has foreign participation ownership and zero otherwise.	254	0.185	0.389	0.0	1.0
Registered at the beginning:	A dummy variable that takes the value of 1 if the firm was formally registered since its establishment and zero otherwise.	254	0.917	0.276	0.0	1.0
Foreign technology:	A dummy variable that takes the value of 1 if the firm uses foreign technology and zero otherwise.	254	0.169	0.376	0.0	1.0
Imported inputs:	A dummy variable that takes the value of 1 if the firm uses imported inputs and zero otherwise.	254	0.350	0.478	0.0	1.0
Female labor intensity:	A dummy variable that takes the value of 1 if the firms' females share is higher than the median and zero otherwise. This variable was not included directly because it was not statistically significant.	254	0.220	0.415	0.0	1.0

Static (cross-section) relationships

The model suggests that firm-level productivity differences explain these results. Many factors correlate with firm-level productivity. To understand differences across firms, we first estimate the firm´s probability of being an exporter conditional on several variables: the value of assets, technology, global integration, female intensity, innovation, age, and formality. We then estimate the conditional relationship (holding these factors constant) between exporter status, export sales, and employment.

The probability of being an exporter is positively correlated with firms' age, innovation, formality status (being in the formal or informal sector), and global integration (foreign participation, foreign technology usage, and using imported inputs). We apply a probit model to determine factors associated with a higher probability of being an exporter. The probit model has a binary dependent variable that takes the value "1" when the firm is an exporter and zero otherwise. For independent variables, we constructed proxies for several factors commonly mentioned in the literature using the ES information.

Column 1 of Table 5.1 presents a model for the **probability of being an exporter**, considering only the dummies for female intensity, region, and years. We focus specifically on female intensity to establish a benchmark for later analysis. As illustrated, the association between female-intensive firms and exports tends to be negative, although not statistically significant. The results from column 2 show that the probability of exporting is higher among firms with foreign participation in assets and using imported inputs—factors associated with firm-level productivity. A firm is also more likely to export if it started in the formal sector. Results also show that the probability of exporting is higher for older firms, possibly due to market and production experience. Once controlling for other factors related to global integration, value of assets, foreign technology, and others, being female labor-intensive becomes positive and statistically significant at a 99 percent confidence

level. This might mean that female-labor-intensive firms would be more eager to export if they have similar experience, capital, and foreign participation.

Table 5.1: Probit: Marginal Effect of Extensive Margin

Dependent Variable: Exporter (yes =1)		
	1	2
VARIABLES		
New products (yes=1)		-0.042
		(-0.14)
Value of machinery[1/]		-0.015
		(-0.67)
Cost per worker[1/]		0.083
		-0.96
Firms' age[1/]		0.493**
		-2.24
Foreign ownership (yes=1)		0.866***
		-2.96
Registered at the beginning (yes=1)		1.749***
		-2.67
Foreign technology (yes=1)		0.088
		-0.25
Imported inputs (yes=1)		1.572***
		-5.5
Female labor intensity (yes=1)	-0.185	0.777***
	(-0.86)	-2.88
Year dummies	Yes	Yes
Sector dummies	No	Yes
Region dummies	Yes	Yes
Constant	-0.308	-4.408***
	(-1.36)	(-3.01)
Observations	240	236

Robust z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

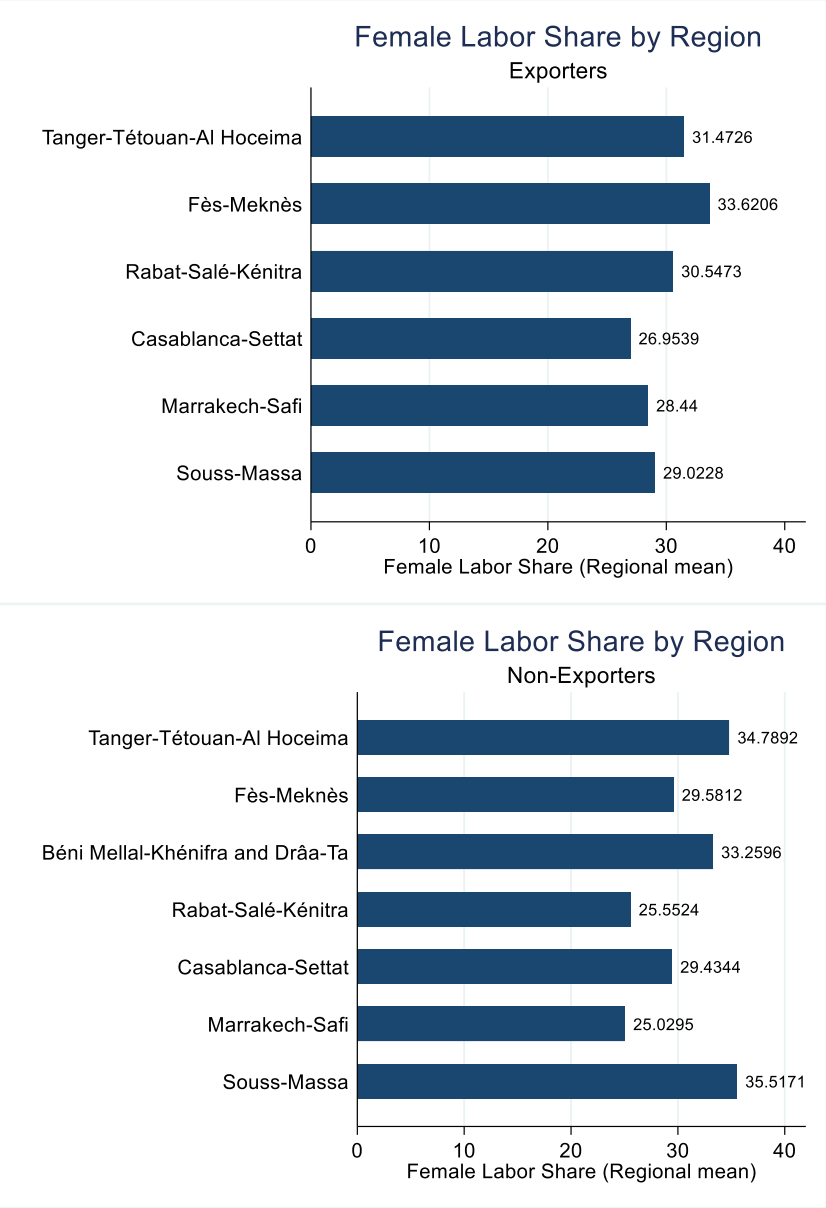
[1/]Measured in logarithms.

Note: Column 1 includes only dummies for female-intensity, year, and region.

Figure 5.1 shows the regional heterogeneity of the average female labor participation rate between exporters and non-exporters. In some regions, such as Casablanca-Settat, Souss-Massa and Tanger-Tétouan-Al Hoceima, female labor participation is higher among non-exporters than in the case of exporters. In others, such as Fès-Meknès, Rabat-Salé-Kenitra,

and Marrakech-Safi, in which female participation is higher among exporters than in non-exporters.

Figure 5.1 Regional heterogeneity in FLFP between exporters and non exporters



Dynamic (panel) results

We apply two models using the panel dataset to contrast the relationship between exporting and employment. The dependent variable in both models is **total employment**, while the independent variables are the same as above. Table 5.2 presents two models: the "Between model", which controls for cross-sectional variations over time, and the "Fixed Effects model", which controls for time-variant characteristics across firms.

Column 1 (“Between”) shows that exporters, older firms, and firms that use foreign technology tend to be larger in the cross-section. Female-intensive firms tend to the smaller, holding all else constant. In column 2, we focus on the “fixed effects” firm results, which show the firm characteristics associated with employment growth over time. Column 2 shows that exporters tend to grow slightly more in terms of employment than non-exporters. More capital and lower costs are also associated with employment growth, which is not surprising. None of the other explanatory variables seem to be significantly related with employment growth.

Table 5.2: Estimated Results of Employment and Export Status

Dependent Variable: Total Employment [1/]

VARIABLES	1 Between	2 Within
Exporter (yes=1)	1.026**	0.222*
	-2.3	-1.66
Value of machinery [1/]	0.045	0.040***
	-1.43	-3.16
Cost per worker [1/]	-0.029	-0.084**
	(-0.25)	(-2.14)
Firms' age [1/]	0.567**	-0.135
	-2.28	(-1.36)
Foreign ownership (yes=1)	0.232	0.192
	-0.52	-1.13
Registered at the beginning (yes=1)	-0.061	-0.086
	(-0.10)	(-0.44)
Foreign technology (yes=1)	0.998**	0.025
	-2.37	-0.13
Imported inputs (yes=1)	-0.108	-0.21
	(-0.25)	(-1.27)
Female intensity (yes=1)	-1.067***	0.037
	(-2.68)	-0.36
Constant	1.127	4.886***
	-0.72	-8.34
Year Dummies	No	Yes
Region Dummies	Yes	No
Sector Dummies	Yes	No
Observations	252	252
R-squared	0.48	0.148
Number of panelid	126	126

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Within refers to Fixed Effects.

[1/]Measured in logarithms.

We apply two other models to measure the relationship between the amount of **export sales and employment**. The models in Table 5.3 are similar to Table 5.2, but include real export sales instead of the exporter dummy. As expected, results show a positive correlation between export sales and employment, given that firms that export most are generally the largest.

Column 2 shows that exporters have a limited employment response to increases in exports, which is also consistent with the model presented in Appendix Figure A.2. As in Table 5.2, the other explanatory variables associated with firm-level technology correlate with exports in the cross-section, but not in the time-series. This is because technology determines export status more than exporters adjust employment in response to rising exports.

Table 5.3: Estimated Results of Employment and Export Sales

Dependent Variable: Total Employment [1/]

	1	2
VARIABLES	Between	Within
Export sales[1/]	0.083***	0.017*
	-3.15	-1.87
Value of machinery[1/]	0.043	0.040***
	-1.4	-3.18
Cost per worker[1/]	-0.036	-0.088**
	(-0.32)	(-2.19)
Firms' age[1/]	0.502**	-0.133
	-2.04	(-1.36)
Foreign ownership (yes=1)	0.129	0.181
	-0.29	-1.07
Registered at the beginning (yes=1)	-0.021	-0.096
	(-0.04)	(-0.50)
Foreign technology (yes=1)	0.896**	0.023
	-2.16	-0.12
Imported inputs (yes=1)	-0.19	-0.214
	(-0.46)	(-1.30)
Female intensity (yes=1)	-1.057***	0.034
	(-2.74)	-0.33
Constant		-0.015
		(-0.16)
Year Dummies	No	Yes
Region Dummies	Yes	No
Sector Dummies	Yes	No
Observations	252	252
R-squared	0.503	0.153
Number of panelid	126	126

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Within refers to Fixed Effects.

[1/]Measured in logarithms.

Analysis of Firm Dynamics

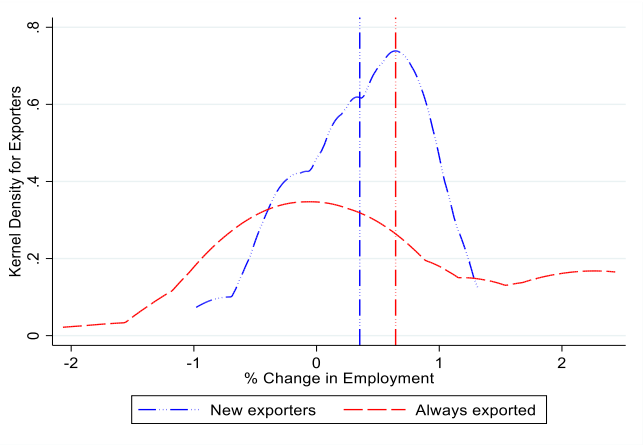
Results presented until now might hide changes in the structure of firms over time. For instance, a constant number of exporters from 2013 to 2019 might conceal that some firms started exporting while others might have stopped exporting. This is more relevant in the described context, in which external and internal shocks are associated with the rise in capital-intensive goods' prices, intense Chinese competition in apparel industries, the end of the MFA, and public policies focused on promoting capital-intensive industries. These shocks might have driven important changes in the structure of the market at the firm level. This section analyzes the impact on these firms' dynamics on exports and employment.

To evaluate this more in-depth, in this section we analyze the dynamics of exporting market structure in Morocco. With this aim, we define the following variables:

- *New:* New exporting firms, meaning that the firm exported in 2019 but not in 2013.
- *Always*: Firms that always exported, meaning that the firm exported in 2013 and 2019,
- *Never*: Firms that never exported, meaning that the firm did not export either in 2013 or 2019.
- *Stopped*: Firms that stopped exporting, meaning that the firm exported in 2013 but not in 2019.

In Morocco, most firms have never exported but a high proportion are new exporters. Almost 60 percent of firms never exported either directly or indirectly. Most exporters are new in the exporting market. This has important implications in terms of exporting sales and employment since the average volume of exports and the average number of employees are considerably higher for firms that have always exported than for "new exporters". Figure 5.2 shows that the distribution of constant exporters and new exporters is significantly different, but also that average employment is higher in the former than in the latter.

Figure 5.2 Employment Kernel Density Functions by New Exporters and Constant Exporters



Note: Vertical lines indicate the means.
Source: World Bank Enterprise Survey.

Table 5.4 estimates the probability of becoming an exporter (Column 1) and becoming a non-exporter (Column 2). The probability of a firm becoming an exporter is higher when the firm uses imported inputs and if the value of machinery assets is low. While this last result might be puzzling, it could reflect a change in the type of goods these new exporters are trading. New exporters may use less advanced technologies. In contrast, the probability that a firm stopped exporting is higher for firms with high value of machinery assets and low usage of foreign technologies. This might reflect a reduced ability to compete with international firms. An interesting fact is that the probability of stop exporting is higher among firms that were highly intensive in female labor. This might reflect the fact that female-intensive sectors, such as the apparel and textiles, were severely affected by international competition and were left behind by public support.

Table 5.4. Probability of Becoming Exporter or Non-Exporter

Dependent Variable:	New exporter (yes =1)	Stopped exporting (yes =1)
	1	2
VARIABLES		
New products (yes=1)	-0.586	0.508
	(-1.57)	(1.19)
Value of machinery[1/]	-0.084***	0.065**
	(-3.29)	(1.97)
Cost per worker[1/]	0.074	-0.124
	(0.84)	(-1.25)
Firms' age[1/]	-0.140	0.025
	(-0.69)	(0.12)
Foreign ownership (yes=1)	-0.089	0.084
	(-0.30)	(0.22)

Registered at the beginning (yes=1)	0.382	0.700
	(0.72)	(1.52)
Foreign technology (yes=1)	0.566	-1.202**
	(1.54)	(-2.50)
Imported inputs (yes=1)	1.593***	-0.373
	(5.30)	(-1.17)
Female labor intensity (yes=1)	0.152	0.971***
	(0.56)	(2.58)
Year dummies	Yes	Yes
Sector dummies	Yes	Yes
Region dummies	Yes	Yes
Constant	-0.766	-1.058
	(-0.55)	(-0.69)
Observations	184	150

Robust z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[1/]Measured in logarithms.

Table 5.5 considers **total employment** as the dependent variable and estimates the correlation between it and firms' characteristics and other independent variables. Results show that employment is higher among firms that have always exported, while it is lower for those firms that are new exporters. In addition, total employment was high among firms that stopped exporting. Other factors previously mentioned that also play a role in the level of firms' employment are age and the incorporation of foreign technology. As in previous models, female intensity is associated with a lower level of employment, meaning larger firms are male-intensive, while smaller firms are female-intensive.

Table 5.5. Employment and Exporting Status

	Dependent Variable: Total Employment [1/]			
	1	2	3	4
VARIABLES	New Exporters	Stopped exporting	Always exported	Never exported
New exporters (yes=1)	-0.613*			
	(-1.91)			
Stopped exporting (yes=1)		0.697*		
		(1.95)		
Always exported (yes=1)			0.770**	
			(2.03)	
New exported (yes=1)				-0.421
				(-1.41)

Value of machinery[1/]	0.022	0.029	0.039	0.045
	(0.64)	(0.88)	(1.21)	(1.40)
Cost per worker[1/]	-0.033	0.003	-0.049	-0.019
	(-0.28)	(0.02)	(-0.42)	(-0.16)
Firms' age[1/]	0.660***	0.678***	0.584**	0.641**
	(2.68)	(2.76)	(2.34)	(2.57)
Foreign ownership (yes=1)	0.578	0.533	0.338	0.402
	(1.35)	(1.24)	(0.77)	(0.90)
Registered at the beginning (yes=1)	0.025	-0.071	0.015	-0.035
	(0.04)	(-0.12)	(0.03)	(-0.06)
Foreign technology (yes=1)	1.176***	1.244***	0.987**	1.059**
	(2.76)	(2.88)	(2.33)	(2.48)
Imported inputs (yes=1)	0.690	0.397	0.190	0.045
	(1.60)	(1.02)	(0.48)	(0.10)
Female labor intensity (yes=1)	-0.828**	-1.038**	-0.908**	-1.049**
	(-2.08)	(-2.59)	(-2.30)	(-2.56)
Year dummies	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes
Constant	1.357	0.789	1.449	1.334
	(0.86)	(0.50)	(0.92)	(0.84)
Observations	252	252	252	252
R-squared	0.472	0.473	0.474	0.463
Number of panelid	126	126	126	126

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[1/]Measured in logarithms.

Table 5.6 considers the **change in total employment** as the dependent variable and estimates the correlation between it and firms' characteristics and other independent variables. Results show that employment decreased among firms that stopped exporting. For the other type of firms, results were not statistically significant. A change in employment is positively associated with equipment investment (measured by the change in the value of machinery assets), while it is negatively associated with an increase in costs.

Table 5.6 Estimated Relationship Between Change in Employment and Exporting Status				
Dependent Variable: Change in Total Employment [1/]				
	1	2	3	4

VARIABLES	New Exporters	Stopped exporting	Always exported	Never exported
New exporters (yes=1)	0.230			
	(1.04)			
Stopped exporting (yes=1)		-0.364**		
		(-2.17)		
Always exported (yes=1)			-0.111	
			(-0.41)	
New exported (yes=1)				0.159
				(0.92)
Change in value of machinery[1/]	0.033***	0.034***	0.033***	0.033***
	(3.02)	(3.13)	(3.00)	(3.07)
Change in cost per worker[1/]	-0.072*	-0.089**	-0.075*	-0.083**
	(-1.91)	(-2.35)	(-1.95)	(-2.14)
Foreign technology (yes=1)	-0.013	-0.035	-0.004	-0.010
	(-0.09)	(-0.22)	(-0.03)	(-0.06)
Imported inputs (yes=1)	-0.145	-0.084	-0.012	0.054
	(-0.67)	(-0.52)	(-0.08)	(0.31)
Constant	0.048	0.120	0.058	-0.067
	(0.41)	(0.94)	(0.50)	(-0.43)
Observations	127	127	127	127
R-squared	0.112	0.122	0.106	0.109

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: Models do not include dummies for year, sector, and region.

[1/]Measured in logarithms.

6. Conclusions

Global literature over the past two decades associates trade openness with reduced poverty and inequality and increased economic growth across developing countries. In the case of Morocco, economic progress—in part fueled by trade liberalization and resulting increase in trade— has been significant in the last two decades. Despite this outcome, economic growth has not created enough jobs to offset the increase in population, nor to improve some important labor market outcomes.

We expand on the literature about distributional repercussions of trade by studying a country for which scarce research has been conducted. Despite some of the data limitations, the study uses high-quality datasets. We analyzed Morocco's case from three complementary perspectives to answer the following questions:

- Has trade liberalization policy boosted trade flows in Morocco?
- Does an increase in exports produce better local labor market outcomes?
- Could differences in Morocco's firms help explain an unexpected outcome—that higher exports reduce informality but decrease the FLFP rate?

Our results show that Morocco's trade have led to mixed results in the local labor market: informality rates decrease as exports increase, but FLFP decreases. Our firm analysis confirms these results by showing that employment correlates with firm's exports sales, but increasing employment from exports concentrates in male labor-intensive rather than female labor-intensive firms. The dynamic firms' analysis suggests that smaller firms became exporters, while larger firms stopped exporting. These results might explain the impact of trade liberalization on employment.

Morocco is an example of an economy where both internal factors, such as industrial policies, and external factors, such as trade agreements and export competition, have boosted trade flows. But Morocco is a case where light manufacturing, such as the apparel and textiles sectors, have been left in behind, unlike the well-documented cases of countries where trade promoted apparel, and hence, female labor participation. This provides important lessons for policy makers to consider when promoting capital-intensive sectors in developing countries without also supporting female-intensive industries.

Labor-abundant countries might want to provide incentives to labor-intensive industries rather than only supporting capital-intensive ones—especially in industries where women typically perform the labor-intensive jobs. It is important to note that we focus mainly on the labor demand side. Policies related to the supply side should also be weighed to create incentives for females to join the labor force, such as policies addressing social norms, regulation, and barriers to job mobility.

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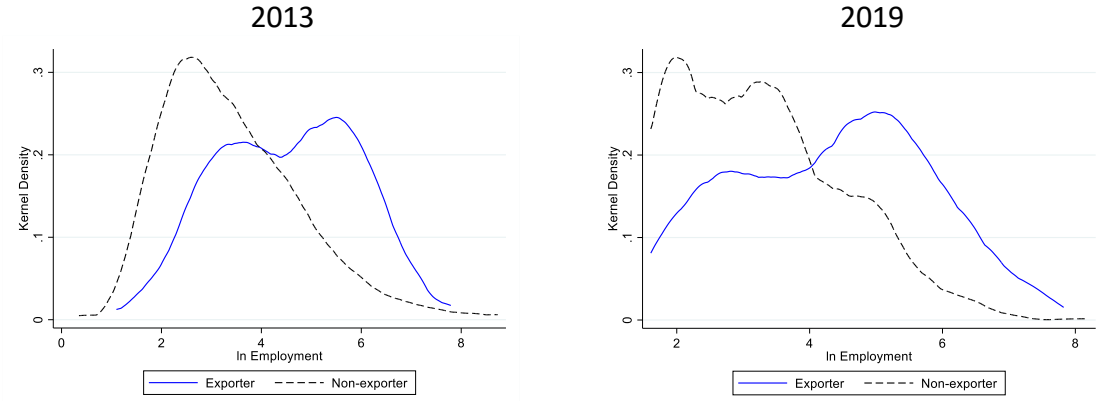
Appendix A.

Exporters are, in general, the largest firms. The model in section 5 of this paper suggests that more productivity firms will be larger and more likely to export. This result is not novel: in many countries, exporting firms tend to be larger, more productive, more skill and capital-intensive than those that only sell in the domestic market (Bernard et al. 2009). Morocco is no exception. Larger firms in Morocco are more likely to export than medium and smaller firms (Figure A.1). The fact that the ES show a similar pattern in Morocco suggests that they are reliable.

Figure A.1: Exporting firms are larger in terms of employment.

Kernel density functions

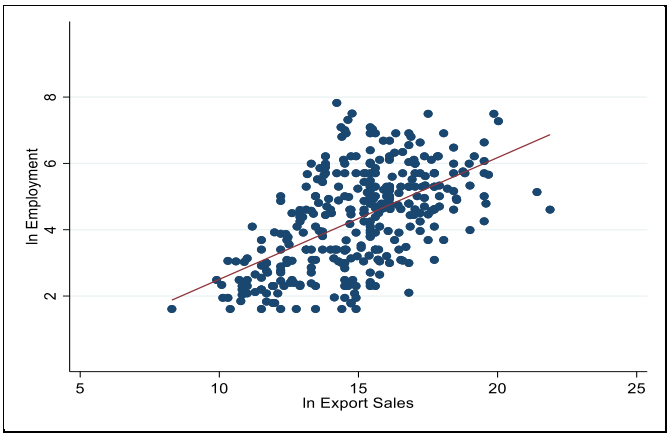


Source: Staff elaboration using Enterprise Survey data.

All else being equal *(ceteris paribus),* export sales are higher amongst larger firms. Everything else help constant, we observe a positive correlation between total employment and the amount of export sales (Figure A.2). Larger firms could export more due to productivity differences, economies of scale, or other factors affecting employment.

A.2: Larger firms export more

2019

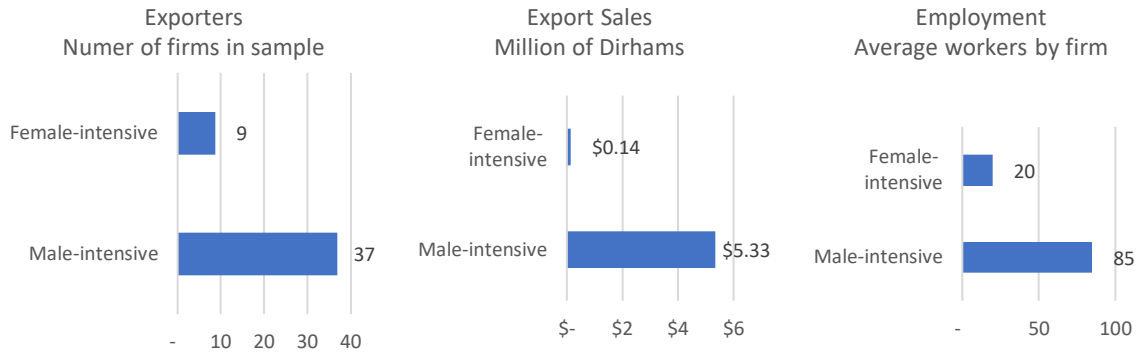


Source: Staff elaboration using Enterprise Survey data.

Note: Considers firms that export directly or indirectly at least 10% of sales.

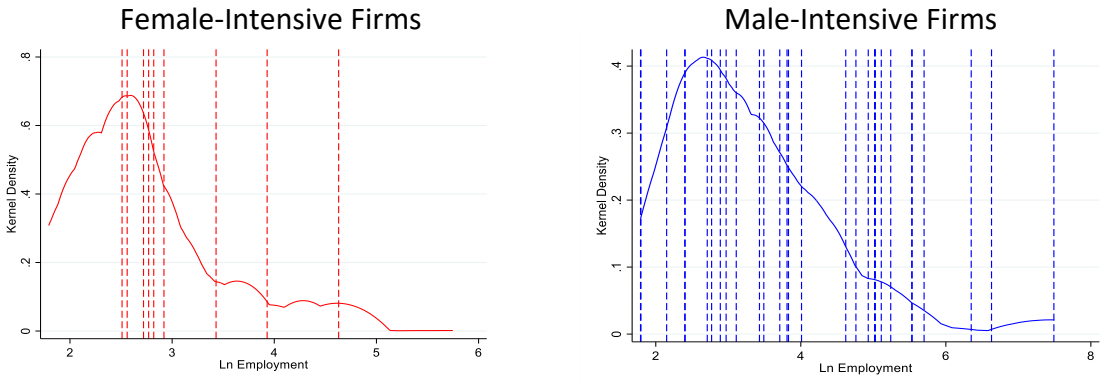
Exporting firms tend to be male-intensive. We define female-intensive firms as those with a higher share of female workers than the average. The number of exporting firms is lower among female-intensive firms than between male-intensive firms (Figure A.3). Moreover, the average export sales amount is considerably higher for male-intensive than for female-intensive firms. Male-intensive firms, on average, also employ more workers than female-intensive firms. This is also evident with the distribution of firms. As figure A.4 shows, exporters (dash lines) are in general in the left side of the distribution of female labor-intensive firms, showing that these firms employ a lower number of workers. Meanwhile, exporters have a more homogeneous distribution amongst male labor-intensive firms.

A.3 Employment and Exports Indicators in Female -Intensive and Male-Intensive Firms.
(2019)



Source: Staff elaboration using Enterprise Survey data.
Note: Considers firms that export directly or indirectly at least 10% of sales.

Figure A.4 Employment Kernel Density Functions by Female and Male Labor Intensity (2019)



Source: Staff elaboration using Enterprise Survey data.
Note: The dash lines represent exporters.