

Impact of economic crises on employment allocation by gender and across sectors

Evidence for eleven Latin American countries

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Abstract

Latin America is a region that has been particularly hit by most recent crises, exhibiting mild economic performance in the last few years. Having export-oriented economic growth has made it especially vulnerable to foreign economic downturns, which have had important effects on its labour markets. Employment is highly segregated in Latin America, and women have been gradually incorporating into the labour market in the last two decades but holding mainly vulnerable jobs. This thesis aims to study how foreign crises impact labour allocation by gender and across sectors, through the demand (export) transmission channel, in a sample of eleven Latin American countries. This will be also studied in each of the sectors separately (agriculture, industry and services) and for foreign and sectoral crises. To analyse how external downturns may affect the gendered distribution of employment, I estimated an econometric model with country and time fixed effects, for the period between 1990 and 2020, where the main independent variable was a dummy constructed for foreign crises, followed by exports growth by sector. The main findings are that external economic downturns impact negatively the relative percentage share of employment of women to men. However, when analysing sectors separately, the impact is positive in the industrial sector, which encompasses the construction and manufacturing activities, that are highly procyclical and male-dominated. The main takeaway of this thesis is that female workers are not particularly benefited during crises, and at least for Latin America, female employment should be especially cared for during hard economic times since, according to previous literature, it is typically more vulnerable and likely to turn into informal employment.

Keywords: Foreign crises, employment by gender, international trade, sectors.

Contents

1	Introduction	1
2	Data	8
3	Main empirical strategy	14
4	Results and robustness check	19
4.1	Main results	19
4.2	Results on specific sectors	22
4.3	Foreign and sectoral crises	27
4.4	Robustness check: alternative definition of crises	30
5	Conclusion	33
	Appendix	36
	References	44

List of Tables

Table 1:	Descriptive statistics	9
Table 2:	Female to male employment by sector and foreign crises	20
Table 3:	Female to male employment and foreign crises, agricultural sector	23
Table 4:	Female to male employment and foreign crises, industrial sector	24
Table 5:	Female to male employment and foreign crises, service sector	25
Table 6:	Female to male employment and foreign crises by sector	28
Table A.1:	Foreign crises	36
Table A.2:	Ratio of mean schooling years (female to male)	36
Table A.3:	Female to male employment and foreign sectoral crises, agricultural sector	37
Table A.4:	Female to male employment and foreign sectoral crises, industrial sector	37
Table A.5:	Female to male employment and foreign sectoral crises, service sector	38
Table A.6:	Female to male employment by sector and foreign crises, alternative definition of crises	39
Table A.7:	Female to male employment and foreign crises, agricultural sector (alternative definition of crises)	40

Table A.8: Female to male employment and foreign crises, industrial sector (alternative definition of crises)	41
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Table A.9: Female to male employment and foreign crises, service sector (alternative definition of crises)	42
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List of Figures

Figure 1: Share of female to male employment by sector	10
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Figure 2: Transmission channel, from economic performance to international trade	13
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Figure 3: Transmission channel, from international trade to employment allocation	13
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Figure A.1: Measures and actions at the national level regarding gender (COVID-19)	43
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1 Introduction

Latin America has been severely hit by most recent economic crises, experiencing hard impacts on its labour markets, leading to increases in inequality, poverty rates and negative economic growth. Over the past few years, the region has exhibited mild economic performance, being in constant exposure to foreign and domestic economic shocks. Why is this the case? One of the reasons is that after a series of decades of political and economic instability, in the 1980s, Latin American countries began to conduct important economic structural reforms to address their main issues. Agarwal and Sengupta (1999) state that an important reduction of barriers to international trade was observed due to these reforms. Some examples are reducing tariffs and eliminating quantity restrictions, in order to achieve an increase in the exports' supply in the medium term. As a result, some countries experienced a rise in their share of exports to GDP, leading economic growth in Latin America to be export-oriented. Naturally, they started participating in world trade as small open economies, being subjected to shifts in foreign markets.

The Latin region has been importantly affected by severe economic downturns and their population has experienced different impacts of crises, depending on their socio-demographic characteristics. This thesis will focus mainly on the gender impact of foreign economic crises, specifically on how economic downturns may alter employment allocation by gender, across economic sectors. Thus, the research question of this document is how foreign crises impact labour allocation by gender and across economic sectors, through the demand (export) transmission channel, in a sample of eleven Latin American countries. It is known and has been widely studied, that there is an important level of labour segregation by gender, being even more pronounced in developing countries. For instance, the report published by the Economic Commission for Latin America and the Caribbean (ECLAC) in 2019 states that in Latin America, women are overrepresented in the service sector. The fact that female labour supply, and demand, is dominant in services, has been confirmed by several authors for different countries (Carlsson, 2011; Altonji & Blank, 1999; Hanson & Pratt, 1988; Peetz & Murray, 2017; among others).

In Latin America, it is still possible to observe important degrees of labour segregation and gender pay gap, which can be partly explained by discrimination in the labour market. One of the factors that have put downward pressure on gender discrimination is opening to trade. This has been widely studied and most recent empirical and theoretical papers

have outlined a somewhat positive impact of trade liberalization on female employment, but highly dependent on gender norms. For instance, Aguayo-Tellez et al. (2010) found that signing the NAFTA was positively associated with women's wages in Mexico since tariff reductions focused on female-dominated sectors. The report by the ECLAC (2019) states that trade liberalization increased employment opportunities for women, as well as improved their participation in the labour force. Bussolo and De Hoyos (2009) state that a higher degree of openness can benefit women as long as different types of labour (skilled and unskilled) are imperfect substitutes, while gendered types of labour are perfect substitutes and women have lower skills than men, which is feasible in developing countries and can be studied using the Heckscher-Ohlin model. Moreover, Fontana (2009) establishes that whenever women can reallocate their labour supply, they can perceive benefits from trade, and that ability is partly defined by gender norms, finding some evidence that in Latin America trade contributed to the increase of women's participation in the manufacturing and service sectors. Shepherd and Stone (2017) as well as the report by the World Bank (2020), conclude that firms involved in international trade provide more formal and gender-equal jobs, and employ more women. Other facts in which the report states that women can benefit from trade are the rise of services, the spread of global value chains (GVC) and the expansion of the digital economy. Moreover, they highlight the fact that informal employment is higher for women in Latin America and the Caribbean, having more opportunities to improve their working status by opening to trade. Nevertheless, some literature has found no empirical evidence about women perceiving more benefits than men from international trade. Some examples of this are Bussmann (2009) and Gaddis and Pieters (2017); the latter, studies the experience of Brazil and the gendered impact of trade liberalization, finding that an increase in the degree of trade openness did not have the desired impact on labour reallocation across sectors, since the segregation is persistent.

While women can benefit from trade, reallocating to jobs in the exports sector may also be a "double-edged sword", since international trade is one of the main transmission channels of economic crises, especially in developing and small open economies. The case of Latin American countries was studied in Ocampo (2009) in the context of the Global Financial Crisis of 2008. Besides mentioning both main crises transmission channels (commodity prices and trade), the paper states that Latin America's export-led growth

made it particularly vulnerable to shifts in international trade, which worldwide impacted mostly the manufacturing and service sector. Lane and Milesi-Ferreti (2011) also outlined the importance of the trade transmission channel of crises, describing how it can lead to contagion to other countries, especially those more open to trade. In addition, and regarding the Global Financial Crisis, Bems et al. (2010) found that of the total drop in demand of the U.S. and Europe, around 20% to 30% was perceived by foreign countries. That paper also finds that the demand channel of transmission accounts for around 70% of the trade downturn. All things considered, Latin America is a region that has been particularly affected by foreign crises through the trade transmission channel.

As mentioned in the previous paragraph, crises can be transmitted through trade; additionally, their impact on employment can differ by gender. There are a series of studies claiming that it is possible to observe “the added worker effect”, first proposed in Lundberg (1985). This effect consists of women supplying more labour in cases of severe economic downturns, in order to have additional earnings that serve as a type of insurance, since sectors that are typically male-dominated, are more affected. However, some recent papers have shown that this phenomenon is not broadly observed in developing countries. Fukuda-Parr et al. (2013) argue that the added-worker effect is only observed in the short run and more developed countries, while women are more prone to suffer an increase in vulnerable employment and involuntary underemployment. This theory is supported by Pearson and Sweetman (2011), who add that in the South Hemisphere, women are more represented in the export sector, so would be more affected during times of crises, which is also documented in Seguino (2010). Gathering this information into a framework for developing countries, Elson (2010) states that the implications of the drop of trade during a crisis would have a larger impact on whichever gender is more represented in the exports sector. But, if both men and women do similar kinds of jobs, the author expects that women are more likely to be laid off, since employers’ gender norms in developing countries lead them to think that men have more rights to a job than women, while women if laid off, are more expected to leave formal employment. Additionally, a couple of articles studying how crises can have different gender impacts are Walby (2009) and Nandal (2011). Both mention that a severe economic downturn can push workers away from formal employment and provoke a rise in the proportion of vulnerable employment. This phenomenon is more likely to be experienced by women, since their jobs are usually low-paid, and have more

chances to be automated, and turn into informal workers, who represent between 60% to 90% of the total workforce in developing countries and are mostly women. Other articles study the relationship between crises and labour segregation. Berik (2011) states that in the manufacturing (export) sector, women employment is concentrated in low-value and low-skill occupations, while gender-differentiated employment in export sectors increases the vulnerability when facing crises. Moreover, Curuk and Vannoorenberghe (2017) conclude that the ability of employees and industries to reallocate labour in the short run depends on how similar the tasks are and on geographic proximity.

After reviewing the literature and as was stated before, the research question I would like to answer is how foreign crises impact labour allocation by gender and across sectors, through the demand (export) transmission channel, in a sample of eleven Latin American countries. Previous studies allow me to highlight some factors that make this question interesting and significant. As aforementioned, Latin America has been severely hit by the most recent economic crises. Since 2014, the region has not been able to display an annual economic growth rate above 1.5%. Moreover, during the first year of the COVID-19 crisis (2020), Latin America's real Gross Domestic Product (GDP) fell by more than 7% compared to 2019. This is a steeper drop than what was experienced by the Euro Area, the G7 and ASEAN-5 (Indonesia, Malaysia, Singapore, Thailand and Vietnam)¹.

As explained before, I would like to study the demand channel of transmission of foreign crises. Previous worldwide economic downturns have shown some evidence about this channel being the broadest for Latin American countries. Moreover, studying this transmission mechanism allows me to perform a separate sectoral analysis, testing if those sectors that are more exposed to trade are more impacted by foreign crises, or if the drop in foreign demand affects its domestic counterpart to such an extent that hit less exposed activities more severely. Additionally, this channel enables the analysis to be gendered, since there is preceding literature showing that in general, trade liberalization has led to women reallocating their employment to export sectors. Moreover, the gendered impact of crises has been a crucial subject of study most recently. "The added worker effect" has been refuted for developing countries, suggesting that women are far from benefited during crises periods. Women are also known to bear most of the household burden, and Latin America is not an exception. In at least seven of the largest economies of the

¹IMF World Economic Outlook, April 2021.

region (Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru) the latest Time Use Survey available shows that women's proportion of time (out of 24 hours) spent on unpaid domestic and care work is more than double of what men spend, being even higher than three times in Colombia. Consequently, the gendered effect of crises is interesting to study, especially motivated by the most recent economic downturn, triggered by the COVID-19 pandemic, that was particularly detrimental to female employment.

Finding that women's employment is especially vulnerable to foreign crises, may also have some policy implications. The most common measures contained in fiscal stimulus packages of previous crises have not had a particular gender focus. In specific, Latin America's response to the Global Financial Crises consisted of temporary tax reductions and an increase in public spending². The latter was in the form of direct transfers or capital expenditure. Regarding employment, several policies for enhancing the labour market were put in place, such as unemployment insurance and hiring subsidies. Nevertheless, and in general, these measures had no specific gender target, or focused on younger workers. Nowadays, Latin America has less fiscal space than it did in 2008, and it has been proved when comparing the monetary value of their measures to more developed countries, to fight the COVID-19 crisis. Until April 2021, Latin American governments have spent around 5.4% of their GDPs on average, in measures to face the crisis, while developed countries' stimulus packages consist of 19% of their GDPs on average³. If the main results of this document would show that female employment is relatively impacted by foreign crises, the policy implication would be to rethink crises responses in Latin America, focusing on targeting women, so the progress already made towards gender equality is not reversed when facing external downturns.

Therefore, the main hypothesis of this thesis is that foreign crises have a negative impact on female employment allocation, relative to male's, across all sectors, in eleven Latin American countries. Moreover, in sectors that are more exposed to international trade, the effect will be clearer and more significant, as opposed to economic activities that participate less actively in the world economy. For instance, the service sector is particularly female-dominated, so a foreign crisis should negatively impact the relative

²ECLAC, N. (2010). *A preliminary assessment of the policies implemented by the governments of Latin America and the Caribbean in response to the crisis*. May 2010 Meeting.

³International Monetary Fund (2021), Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic. Retrieved from <https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19>

share of female employment, to male's. This activity is the least exposed to trade and seems to be less procyclical than the others, so men leaving their jobs in other areas of the economy would lead them to increase their relative participation in service. Regarding the agricultural sector, the hypothesis is that the impact of foreign crises on the relative share of female to male employment should be negative. Agriculture is a male-dominated activity in the sample of Latin American countries used, and women employed in that sector hold usually temporary and more informal jobs, so should be more affected when facing economic downturns, since they are less costly to be dismissed because of the conditions which typically characterise their jobs. With respect to the industrial sector, it is also male-dominated, and more exposed to international trade compared to the other two. The hypothesis for the industrial sector would be that since it is highly procyclical and male-dominated, more men will be laid off than women, having a positive impact on the relative share of women to men working in this activity.

The main findings of this thesis are that, when performing the analysis for the whole sample, including the three economic sectors, foreign economic crises have a negative impact on the proportion of employed women, relative to men. When splitting the sample into the different sectors, I found that results do change. Regarding the service sector, severe external economic downturns have a negative impact on the relative employment allocation of women to men, but the results are somewhat unstable. Considering that this area is the least exposed to international trade, this could explain the lack of clarity of the results. Since service is the only female-dominated sector in the sample, this could also be explained by men representing a higher proportion of total male employment during crises in this activity. Among the agricultural sector, the impact of foreign crises is unclear, and the relative employment allocation of women and men seems to be driven mainly by country-level factors (additional controls). Finally, the impact of external severe economic downturns on the relative employment share of women and men in the industrial sector is positive. This could be signalling the existence of "the added worker effect", which can possibly be explained by crises periods being characterized by high levels of male unemployment, mainly observed in the construction and manufacturing activities, which are both included in the definition being used for the industrial sector.

When analysing foreign and sectoral crises, their impact on the relative share of female to male employment remains negative and becomes more significant. When performing

the analysis splitting the sample into the three sectors analysed, for the gendered distribution of employment in agriculture and services, the effect of foreign crises is negative, but somewhat unstable across different specifications. Nevertheless, when studying the industrial sector, the coefficient for external industrial crises displays the opposite sign compared to the main specification, negatively impacting the share of women, to men, working in this economic area.

As aforementioned, the economic performance of Latin American countries partly relies on international trade. Hence, when their main trade partners face severe drops or mild growth of their GDPs, Latin nations will also be affected. When developed partners undergo crises, it is likely to be accompanied by sharp decreases in both internal and external demand, being the latter driving part of the contagion to other less developed countries. A lower demand for goods and services produced in Latin America, leads to firms in the region having to reduce production costs in an unexpected and rapid way. While capital investments and lease contracts are more likely to be fixed costs, labour is more flexible and an easier way for employers to reduce expenses. Throughout these mechanisms, it is expected that when facing foreign crises, domestic firms will lay off employees. The decision regarding which workers are being dismissed depends on a series of factors. For instance, the economic sector to which the firm belongs will be determinant in the composition of workers. First, it depends on the degree to which each sector is exposed to international trade; those with higher exposure are more likely to be more affected when facing foreign crises. Moreover, it also depends on the gendered composition of employees by sector. Namely, the service sector is typically female-dominated, so it is likely that during crises, men represent a higher proportion of employees than what they do in “normal” times and women, because of their overrepresentation, have higher probabilities of being laid off. Another factor driving gender employment allocation across sectors are gender norms. Beliefs of men being more entitled to a paid job than women can also drive how employers decide about which employees to keep, together with whose employment is more prone to be automated. Furthermore, how employees allocate themselves and supply their labour according to their preferences, also plays an important role in the distribution of employment by gender and across sectors.

Previous literature consistently finds that female employment is typically vulnerable and recommends that laws and policy measures target women and improve their economic

capacity and political and financial participation⁴, to achieve economic development. The main policy implication of this thesis is that, when building economic stimulus packages during complex economic times, administrations should especially care about women’s employment. Besides being more vulnerable, female employment is particularly hit during foreign economic crises, women are usually overrepresented in the exports sectors and gender norms make them more susceptible to suffer employment losses.

The remainder of this thesis is organized as follows: Section 2 describes the data, its sources and the main descriptive statistics, motivating the regression analysis. Section 3 explains the main empirical strategy and section 4 shows the main findings and robustness check, while section 5 concludes.

2 Data

As aforementioned, the research question that this document will try to disentangle is which is the effect of foreign crises on labour allocation by gender and across sectors in eleven Latin American countries. The nations included in this study are Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Panama, Paraguay, Peru and Uruguay. These countries were selected based on levels of GDP per capita and relative political stability. This thesis will aim to study the impact of an external economic downturn on employment allocation by gender and across economic sectors, through the external demand channel (exports). The analysis will be performed using data between the years 1990 and 2020, while it will be restricted in some specifications by data availability.

For the purpose of trying to answer the research question, the dependent variable will be the ratio between the percentage share of female to male employment, across three sectors: agriculture, industry and services. It can be defined as follows:

$$Female\ to\ male_{i,t,j} = \frac{Employment_{i,t,j,f}}{Employment_{i,t,j,m}} \quad (1)$$

where the numerator is equivalent to the number of women employed in country i , year t and sector j , relative to the total female employment, while the denominator is analogous but for men. The data used to construct this variable was taken from the World Development Indicators (WDI) database, of the World Bank, and their main descriptive statistics

⁴See Nandal (2011) and Walby (2009).

can be found in Table 1. From the table, it is possible to conclude that women exceed male employees in the service sector, proportionally, while the standard deviation for all the areas is rather low, suggesting that across countries and through time, there is no significant variation in the relative employment allocation. This means that, in this sample of countries, labour segregation by gender is an important determinant of employment.

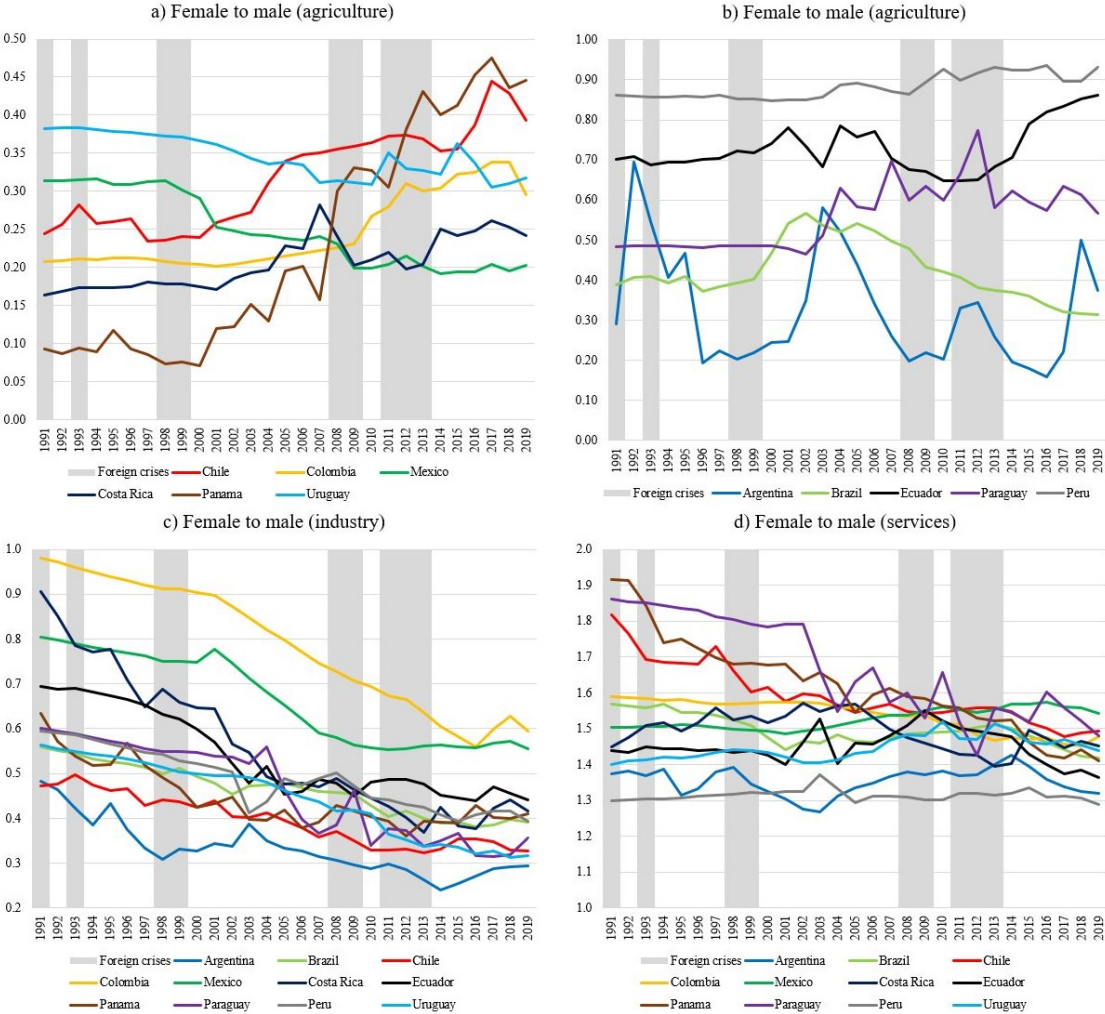
Table 1: Descriptive statistics

Variable	Mean	Number of observations	Standard deviation
Female to male, agriculture	0.41	319	0.23
Female to male, industry	0.51	319	0.15
Female to male, services	1.50	319	0.12
Vulnerable employment, women	34.79	319	14.73
Exports, agriculture (growth)	6.78	278	16.14
Exports, industry (growth)	6.81	278	17.12
Exports, services (growth)	6.66	160	14.64
Female informal employment, agriculture	80.52	128	22.58
Female informal employment, industry	54.22	128	16.06
Female informal employment, services	54.22	128	16.06
GVC agriculture (ln)	6.23	308	0.60
GVC industry (ln)	6.84	308	0.73
GVC services (ln)	6.44	308	0.60
Mean applied tariff, primary	9.10	279	3.66
Mean applied tariff, manufacture	9.99	279	4.51
Mean applied tariff, all products	9.91	279	4.33
GDP per capita (ln)	4.13	341	0.16
Democracy index	8.07	319	1.92

The dependent variable described above can change due to several reasons. First, a change in female or male labour force participation rate can alter the relative share of women and men working in different economic activities. For instance, female labour force participation rate has been consistently increasing in the last couple of decades for Latin American countries, while male participation has been decreasing. The latter could help to explain the downward slope of the variable described in equation (1) for our sample of countries in the industrial sector, which can be observed in Figure 1, panel (c), where the grey shaded areas correspond to foreign crises years. Fewer men participating in the labour market could lead to higher concentration in the industrial sector, leading the proportional representation of women to decrease. Moreover, the persistent rise of female participation does not seem to consistently explain the dependent variable in the agricultural sector, except for Chile and Paraguay, where women’s relative share rises

throughout the years analysed (Figure 1, panels a and b). Furthermore, the relative allocation of female to male employment in the service sector decreases in most of the countries in the sample, between 1991 and 2019, which could be partly explained by a lower degree of labour segmentation, motivated by higher female participation (Figure 1, panel d).

Figure 1: Share of female to male employment by sector



Source: WDI database.

The second factor that impacts the dependent variable is the allocation of employees across sectors, and by gender. This will be the main focus of this thesis, since the aim is to study how foreign crises impact the relative employment allocation, through the demand channel. This can alter the variable defined in equation (1) due to labour supply decisions by gender, employers' hiring decisions led by macroeconomic or microeconomic factors, among others. One clear example, that would match the data, could be related

to the relatively high percentage of women working in the service sector, compared to men, and contrasted with the other economic activities. Jobs in this area are typically less physical than the others, have shorter working hours and are more compatible with unpaid household work, which is mostly carried out by women. Consequently, women without tertiary or specific education may allocate themselves to jobs in the service sector, concentrating their applications and thus, increasing their probability of being hired there. Additionally, gender norms have played an important role in how employment is allocated by gender, but as explained before, discrimination in hiring has been decreasing in the past decades, which could partly explain the downward slope of the dependent variable in the service sector (Figure 1, panel d).

The three economic sectors that will be used in the analysis follow the International Labour Organization (ILO) division and correspond to Agriculture, Industry and Services. The definitions of these activities are the following:

- Agriculture: Activities related to planting and harvesting vegetables and fruits, fishing and cattle raising.
- Industry: Activities related to manufacturing, mining, construction and electricity, gas and water.
- Services: Activities related to wholesale and retail trade, hospitality, transport, information and communication, financial and real estate services, personal services, education and public administration.

Regarding the main independent variable, it is a measure for foreign economic crises, constructed using real GDP growth data from the IMF World Economic Outlook (WEO) database available in April 2021. It corresponds to a dummy variable, built using a methodology that consisted of first, finding the main trade partners of the eleven Latin American countries chosen for the study, which are China, the Euro Area⁵, Japan and the United States. Then, crises years were defined as those periods when at least one of these four partners had a real economic growth below two standard deviations of a five-year moving average or displayed a negative rate of economic growth, following Forbes and Warnock (2012). Hence, the definition of foreign crises used in this thesis describes years during which economic activity was significantly lower than periods that could be defined

⁵Belgium, France, Germany, Italy, Netherlands and Spain.

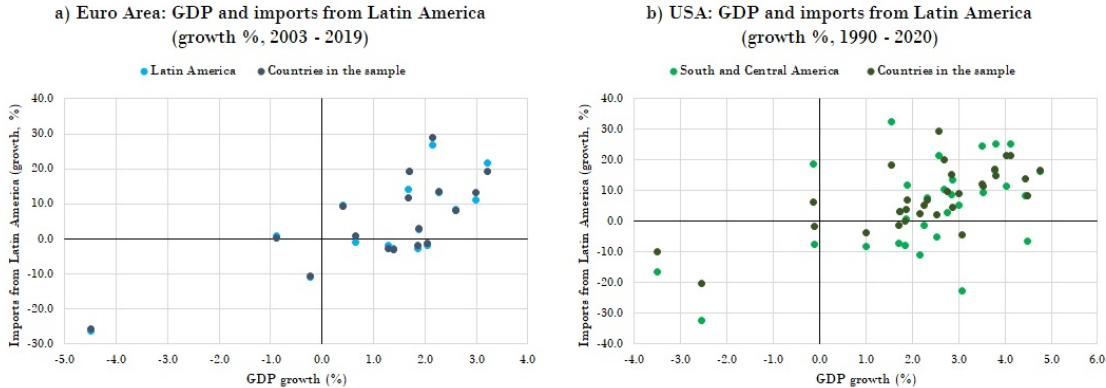
as “normal” or expansive, in at least one of the main trade partners of the sample of eleven Latin American countries. Due to the trade links between the economies analysed and their developed counterparts, lower economic growth is correlated with reductions in domestic and external demand, affecting the amount of exports originated in Latin America, further impacting its labour markets. Conducting this methodology, I found that there were ten foreign crises for the period analysed, which can be found in the first row of Table A.1 (see Appendix). This table displays those years in which the dummy of crises takes the value of 1. Rows 2-5 represent each of the four trade partners mentioned before, the second column accounts for the total number of crises, according to the definition previously explained, that were undergone by each of them, while the third column shows which years can be defined as crises periods, for each of the partners. As aforementioned, the dummy of foreign crises used in the analysis takes the value of one when at least one of these partners is found to be undergoing a crisis, so overall, Latin American economies faced ten external severe economic downturns during the period 1990-2020 (Table A.1, row 1). As an example, the fact that the year 1991 is considered a crises period, is only due to a severe economic downturn in the United States, while the other trade partners displayed a GDP growth considered as “normal” or “expansive”, according to the methodology used. Moreover, the year 2009 is treated as a crisis in the Euro Area, Japan and the United States. Additionally, China displays no severe economic downturns during the period analysed.

Another variable that also plays an important role in the analysis is the exports growth by sector of the eleven Latin American countries. The data for agricultural and industrial export growth were obtained from national estimates. Additionally, the data for service export growth by country were extracted from the United Nations Conference on Trade and Development (UNCTAD) database. Their descriptive statistics can be found in Table 1, and it is possible to observe that in the three sectors, the average export growth is between 6% and 7% yearly, for the complete sample, while their variation is considerable, noticeably in the industrial sector.

Since the analysis will also be carried out when external crises are originated in the different sectors of the economy, I constructed a dummy of crises following the methodology previously explained, but with data for each specific area. In other words, I used data of the value added (net output) corresponding to each sector of the four main trade part-

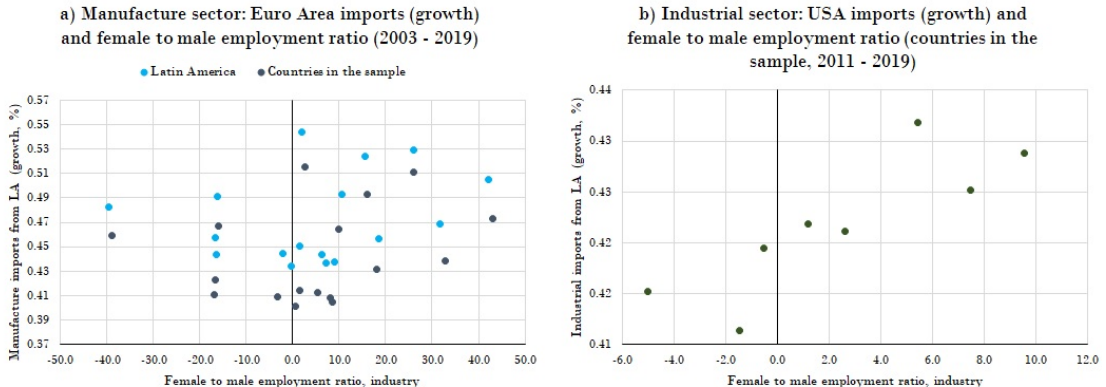
ners⁶ and calculated the real economic growth. With that, I determined which years were defined as crises periods, using the two-standard deviation below the five-year moving average and negative growth rate rules, for each partner. The sample of Latin American countries analysed is set to face these crises when at least one of the trade partners is undergoing one. The last three rows of Table A.1 display the number of sectoral and foreign crises for each of the three sectors previously described. As it can be observed, the agricultural sector has the highest number of periods defined as severe economic downturns, due to the high volatility of its output and the high frequency of negative growth rates, across the period analysed. Furthermore, the service sector seems to be the least affected by recessions, displaying only five crises years during the period analysed.

Figure 2: Transmission channel, from economic performance to trade



Source: Eurostat, United States Census Bureau, IMF World Economic Outlook.

Figure 3: Transmission channel, from international trade to employment allocation



Source: Eurostat, United States Census Bureau, IMF World Economic Outlook.

⁶Source: World Development Indicators database (2021), World Bank. Retrieved from <https://databank.worldbank.org/source/world-development-indicators>.

Figures 2 and 3 help to motivate the analysis and justify the external demand transmission channel. Figure 2 panel (a) displays the relationship between the Euro Area's GDP growth and its imports growth, from Latin America and the eleven countries in the sample, while panel (b) shows the analogous but for the United States. In both graphs, it is possible to observe a positive correlation between GDP growth and the growth of imports originated in Latin American countries, suggesting that during severe drops in economic activity in these two main trade partners, the external demand also falls. Moreover, when studying the relationship between industrial (or manufacturing for the Euro Area case) imports from Latin America and the percentage of women, relative to men, working in that economic sector, Figure 3 also displays a positive correlation, suggesting that a higher external demand for goods from certain sectors can enhance female employment participation, relative to male's.

Descriptive statistics for other variables that will be included as controls can also be found in Table 1. The next section gives more details regarding justifications of their inclusion and the empirical strategy.

3 Main empirical strategy

The main purpose of this thesis is to study the causal effect of foreign crises on employment allocation by gender and across sectors, through the external demand channel, on a sample of eleven Latin American countries. To do so, I will estimate the following equation:

$$\begin{aligned}
 \textit{Female to male}_{i,t,j} = & \beta_0 + \beta_1 * \textit{ForeignCrises}_{i,t} + \\
 & \beta_2 * \textit{Exports}_{i,t,j} + \beta_3 * \textit{ForeignCrises}_{i,t} * \textit{Exports}_{i,t,j} + X'_{i,t,j} \beta_4 + \gamma_i + \delta_t + \varepsilon_{i,t,j} \quad (2)
 \end{aligned}$$

where $\textit{Female to male}_{i,t,j}$ is the percentage of female employment, relative to male's, in country i , year t and sector j (defined in equation 1). β_0 is a constant, γ_i are country fixed effects, δ_t are time fixed effects, $\textit{ForeignCrises}_{i,t}$ is the dummy for Foreign crises described previously and it is interacted with $\textit{Exports}_{i,t,j}$, that is the growth of the volume of exports in country i , year t and sector j . $\varepsilon_{i,t,j}$ is the error term, and $X'_{i,t,j}$ contains a set of controls, that on some occasions vary across sectors, while in others are only specific

for countries and time. This equation will be estimated using robust standard errors.

A second analysis will also be performed, but to study the impact of foreign and sectoral crises, on the allocation of the relative share of female to male employment across sectors. In order to do that, I will estimate the following equation:

$$\begin{aligned} Female\ to\ male_{i,t,j} = & \beta_0 + \beta_1 * ForeignCrises_{i,t,j} + \\ & \beta_2 * Exports_{i,t,j} + \beta_3 * ForeignCrises_{i,t,j} * Exports_{i,t,j} + X'_{i,t,j}\beta_4 + \gamma_i + \delta_t + \varepsilon_{i,t,j} \end{aligned} \quad (3)$$

where all the variables have the same meaning as in equation (2), with the exception of $ForeignCrises_{i,t,j}$, which corresponds to the dummy for sectoral and foreign crises. This means that this variable takes the value of one when a crisis originated abroad and in a specific sector (same as j) is being faced by country i , sector j and in year t .

As explained in Section 1, the main hypothesis of this thesis is that foreign crises have a negative impact on female employment allocation, relative to male's, across all sectors. Regarding the analysis that studies the impact of external economic downturns on specific sectors, those that are less exposed to international trade should exhibit a less significant effect.

To argue the causality of my results, I must rule out the possibility of being in presence of Omitted Variable Bias (OVB). First, and in order to avoid OVB in the form of unobserved variables, I included country and time fixed effects. Additionally, and to control for the observed portion of variables, I included covariates present in vector $X'_{i,t,j}$. Following Bussolo and De Hoyos (2009), the authors argue that women can take advantage of international trade in developing countries as long as they have lower skills than men, following the Hecksher-Ohlin model. Nevertheless, it has been studied that this is not the case for Latin America. Table A.2 (see Appendix) presents a portion of a table obtained from Tejani and Milberg (2016), which shows the ratio between the mean schooling years of women and men every five years, from 1980 to 2010, for nine out of the eleven countries in the sample. It can be observed that since 1980, this ratio is around one for most of the countries, and it does not change drastically throughout the years. Peru is the nation displaying the lowest ratio, indicating that women's years of school only reach 90% of men's on average. Consequently, I decided not to control for educational variables.

The same authors mentioned in the previous paragraph discuss how women can be ben-

efited from openness to trade, but most recent studies have found that what contributes more to how employment allocates across genders and sectors is how the country/sector participates in the GVC. According to the report by the World Bank (2020), the spread of the GVC promotes female employment among the areas that contribute more to the value-added of trade. Therefore, I will control for the natural logarithm of the country/sector value-added of trade, obtained from the Eora Global Supply Chain Database, in order to avoid β_1 to be picking up some of the effects that the participation in the GVC might have on gender employment allocation. Following previous literature, the hypothesis when including this variable would be that its impact on the relative employment share of women to men should be positive. In Table 1 it is possible to find the descriptive statistics for this control. On average, the countries in the sample contribute the most to the value-added of trade in the industrial sector, compared to the other two. Since the variables are in natural logarithms, US\$ 935 million are originated in each of the countries of the sample on average, per year, in the industrial sector. The standard deviation of these variables represents a variation of around US\$2 million for the three economic sectors.

The report from the World Bank (2020) and Shepherd and Stone (2017) also highlight that informal employment is high in Latin America, and more frequent among women. Walby (2009) and Nandal (2011) emphasize that women are more likely than men to leave formal employment when losing their jobs, due to higher vulnerability. For these reasons, I will include a control for the percentage of female vulnerable employment⁷, while I will not control for employment in the informal economy. The variable for vulnerable employment used in this thesis is equivalent to the sum of own-account female workers and contributing family female workers, divided by total female employment. Women holding vulnerable jobs are less likely to have formal employment contracts and are usually in low-paid positions without adequate representation and social security conditions. Therefore, the hypothesis for this control would be that the higher the percentage of female vulnerable employment, the higher the share of women employees, relative to men. It can be observed in Table 1 that around 35% of female employment is considered vulnerable on average in the eleven countries of the sample. Nonetheless, the variation is significant, being equivalent to 14.73 percentage points (pp).

⁷Source: World Development Indicators database (2021), World Bank. Retrieved from <https://databank.worldbank.org/source/world-development-indicators>.

The decision to not include informality in the analysis is based on restricted data availability (see Table 1 for the number of observations) and because it can also raise concerns for reverse causality. A higher level of female informal employment is probably negatively correlated with the relative employment allocation across economic activities by gender, but the causality can also work the other way round. A low participation of women in formal employment in a certain economic sector, due to discrimination or gender norms, can increase informal employment of the gender facing the lower labour demand in that specific activity.

Another variable that has been studied to impact how female employment is allocated are tariffs. Aguayo-Tellez et al. (2010) study the impact on the Mexican female labour market conditions, after signing the North American Free Trade Agreement (NAFTA), which was associated with significant tariff reductions. One of the findings is that when these reductions are concentrated in female-dominated sectors, they can benefit women. So, controlling for tariffs will avoid the main coefficient to pick up some of the effects on domestic labour markets, due to a sharp change in these duties. The difference between my variable of tariffs and the one in Aguayo-Tellez et al. (2010) is that I will control for the duties charged by the sample of countries, and not faced by them. This means that the expected impact of the level of tariffs on the relative employment allocation should be different. If a country raises tariffs on its imports, it can be interpreted as protecting national production. In the local market, domestically produced goods or services become relatively cheaper, and therefore, more demanded. In order to meet this higher demand, local firms should increase their labour demand. Female unemployment is higher than male's in my sample of eleven countries, and hiring women is cheaper for firms due to the persistent gender wage gap, so it would be expected that when facing these types of issues, sectors increase their proportion of female employees. Table 1 includes descriptive statistics for the tariffs variables⁸. For the agricultural sector, I used the tariff applied for primary goods, while for the industrial sector I used the tariffs applied for manufacturing products. Regarding the service sector, because the same source does not publish the mean applied tariffs for that activity, I used the ones corresponding to all the products. It can be observed that on average, governments levy between 9% and 10% of the value of their imports, being lower for the agricultural sector. The variation

⁸Source: World Development Indicators database (2021), World Bank. Retrieved from <https://databank.worldbank.org/source/world-development-indicators>.

observed of around 4 pp suggests that even after trade liberalization, some countries have experienced sharper tariff cuts than others, highlighting the relatively low current tariff levels of Chile, Colombia and Peru.

Finally, some macroeconomic variables used in Bussmann (2009) will also be included in the analysis. The first of them is the natural logarithm of GDP per capita. Based on the article aforementioned, in less developed countries, poorer families do not have the economic capacity to properly educate all their members, or attend basic medical evaluations, having to “rely on the income of every family member”. Therefore, the level of income per capita should have an effect on the distribution of female employment across sectors. With respect to descriptive statistics (Table 1), the mean of the GDP per capita in this sample is equivalent to US\$ 14.387⁹. Additionally, the country’s level of democracy and political stability should also affect positively female employment. For that matter, I will control for the Polity V database democracy index per country and year (from 0 to 10).

To perform a sectoral analysis, I will split the sample, studying each of the three areas separately. This decision is based on, among others, Ocampo (2009). He states that during the Global Financial Crisis, the manufacturing sector was particularly more affected than the others. Therefore, I would like to separately study the three areas present in this research, expecting that sectors that are less exposed to international trade, such as services, should be less hit by foreign economic crises.

Some concerns could be raised regarding reverse causality of some controls. For instance, a higher proportion of female employees could boost international trade, because of the gender pay gap; paying lower wages for firms would reduce production costs, making the firm more competitive at an international level. Nevertheless, this would be counterintuitive to the transmission mechanism presented in this thesis.

Ultimately, and with respect to encountering measurement error issues, I would argue that most of the data were obtained from reliable, international and independent sources, like the World Bank. Therefore, if there was measurement error, it should not be systematic, since these types of organizations base their databases on national estimates but review and correct the data, if necessary, before publication. Even though the variable regarding exports growth was obtained from national estimates, it should be reliable and

⁹Purchasing power parity; 2017 international dollars.

not present systematic measurement error, since data published during periods of more political instability, that could have systematic measurement error, was revised in posterior administrations. If there was random measurement error, the estimates in this thesis would present attenuation bias, which can be ignored.

4 Results and robustness check

This section provides an analysis of the main results of estimating equation (2) for the whole sample and when splitting it between the different sectors. Additionally, the third subsection studies the result of estimating equation (3), analysing the impact of sectoral and foreign crises on the relative share of female to male employment across sectors. The final subsection aims to study whether the findings of the main specification change when using an alternative definition of crises, as a robustness check.

4.1 Main results

Table 2 presents the results of estimating equation (2) for the whole sample. Column (1) shows the estimates without additional controls, while in columns (2)-(6) I added each of the covariates aforementioned separately and finally, column (7) includes all controls. Concretely, the results show that the impact of foreign crises on the relative share of women to men working in different sectors is negative. Moreover, exports growth is associated positively with the percentage of women working, relative to men, in the different economic sectors. Accordingly, the mechanism studied is international trade; higher exports growth during a specific year, enhances sectoral participation in foreign markets, increasing the demand for firms' production, whereas firms must increase their labour demand as well. More active participation in international markets has a series of impacts on the firms' hiring decisions; it reduces discrimination and pushes the firm to be more competitive, being sometimes forced to lower production costs. Both of these outcomes promote higher levels of female hiring.

As mentioned before, column (1) of Table 2 displays the results for the whole sample, without additional controls. It can be observed that during years of foreign economic crises, the ratio between the proportion of women and men working in different sectors decreases by 0.324 pp, while a higher growth rate of exports by sector lifts female par-

participation, relative to male's, but in a lower magnitude. Regarding the effect of exports in the presence of crises (interaction term), the coefficient is not statistically significant. The latter holds throughout the vast majority of the specifications present in this thesis. Statistically, this would be expected, suggesting that the positive impact that higher exports growth may have on female participation, relative to male's, is being offset by the presence of economic crises. Economically, the meaning is that since Latin American exports are affected during downturns, their growth when undergoing periods of insufficient economic performance has not been able to reverse the negative effect of the recession on the relative share of female to male employees, in the period analysed. Moreover, the coefficient of correlation between the dummy of crises and the exports growth by sector is negative, suggesting that goods and services produced in the sample of Latin American countries and consumed abroad tend to decrease on a yearly basis when facing foreign crises. Overall, the positive impact that an expansion in the level of exports might have on the relative share of women to men working in the different sectors, is offset by the subdued economic growth of the main trade partners.

Table 2: Female to male employment by sector and foreign crises

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Ratio between female and male employment share						
Foreign crises	-0.324***	-0.236*	-0.354***	-0.471***	-0.260*	-0.329***	-0.277
	[0.119]	[0.127]	[0.122]	[0.178]	[0.155]	[0.117]	[0.228]
Exports by sector, growth	0.002*	0.003**	0.002	0.003**	0.002*	0.003**	0.003**
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
F.Crises*Exports	0.003	0.002	0.003	0.002	0.003	0.002	0.002
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
GVC		0.036**					0.041**
		[0.018]					[0.019]
Vulnerable employment, female			0.006				0.007
			[0.006]				[0.009]
Tariff				0.008			0.007
				[0.007]			[0.008]
GDP per capita					0.151		0.159
					[0.212]		[0.303]
Democracy						0.005	0.010
						[0.009]	[0.014]
Constant	0.661***	0.126	0.534***	0.600***	-0.847	0.629***	-1.831
	[0.121]	[0.288]	[0.185]	[0.136]	[2.124]	[0.153]	[2.940]
Observations	689	623	689	629	689	656	572
R-squared	0.133	0.151	0.134	0.140	0.134	0.142	0.157

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates include country and time fixed effects.

In columns (2) - (6) I added separately each of the controls previously discussed.

Column (2) includes the natural logarithm of GVC, and its coefficient suggests that a sector that contributes with a higher value-added of trade, has more female participation, relative to male's. This would reinforce the conclusions obtained in the report of the World Bank (2020) in the sense that women hold a higher representation in foreign-owned firms that participate in the GVC. Here, the coefficient on foreign crises continues to impact the dependent variable in a negative, but less significant way. Moreover, the magnitude of the coefficient decreases moderately. On the other hand, the growth of exports becomes more significant and still displays a positive impact on the ratio between the female and male employment distribution.

Proceeding to column (3), I control for the percentage of vulnerable employment, which I found has a positive, but not statistically significant impact on the ratio between the female and male share of employment across sectors. This finding would be in line with the fact that even when women increase their representativeness in some economic sectors, female employment becomes more vulnerable since women are typically employed by shorter terms, with lower salaries, more self-employed and with fewer guarantees regarding social security issues. In this specification, the crises coefficient displays a negative and statistically significant impact on the relative gender employment distribution. Additionally, the increase in the significance level of the crises coefficient seems to be picking up the significant impact of exports growth on the dependent variable, displayed in the other columns.

In column (4), I control for tariffs, which display a positive, but not statistically significant coefficient. As explained before, this variable is equivalent to the average of the tariff applied in each sector to the country's imports. Therefore, the meaning of this coefficient is that the higher the duty levied on goods and services produced abroad, the more women will participate in the labour market, relative to men. This is in line with the hypothesis regarding this covariate, since when controlling for tariffs charged to imported goods, it can be observed that the more the country protects its national industries, the more it can rise women's participation relative to men. Accordingly, the foreign crises coefficient continues to have a negative and significant impact, with the highest magnitude compared to all the other specifications for the whole sample. This means that during severe economic downturns, the ratio between the proportion of women and men working in different economic activities decreases by 0.471 pp. Moreover, the exports transmission

mechanism plays an important role, displaying a significant and positive impact on the dependent variable.

Columns (5) and (6) include explanatory variables aiming to control for country-level macroeconomic factors that should impact female employment participation, relative to male's. In these columns, I control for the natural logarithm of GDP per capita and the Polity V measure of democracy, respectively. In both cases, these new controls enter the regression as not significant but positive, hence displaying the expected sign. Consequently, a higher level of economic development and institutional quality, promote female participation in the labour force and less labour segregation. The lack of statistical significance in these macro-level variables can be due to the fact they do not vary across sectors. Moreover, the level of GDP per capita persistently increases in the countries in the sample, with exception of peaks or drops during economic expansions or downturns, respectively. With respect to the democracy index, it displays low variation, mainly rising throughout the period analysed. Additionally, external crises continue to have a negative and statistically significant impact on the relative distribution of female to male employment, across sectors.

Finally, column (7) contains the results of estimating equation (2) including all the controls in vector $X'_{i,t,j}$. The results here are relatively stable compared to the other specifications, but foreign crises no longer have a statistically significant effect on the dependent variable. This shift in the results would suggest that the impact that external economic downturns may have on how people allocate their employment domestically by genders in Latin America, may not be remarkable. Therefore, the results do not display the desired stability, and when including all the additional controls, foreign crises do not have a significant impact on women's proportion of employment, relative to men's, across sectors. Nevertheless, the level of value-added to trade by sectors (GVC) and exports growth display a positive and statistically significant impact on the ratio between female and male's employment allocation, reinforcing some of the conclusions obtained in previous literature, such as in the report of the World Bank (2020).

4.2 Results on specific sectors

The results of estimating equation (2) for separate sectors can be found in Tables 3 - 5, for agriculture, industry and services, respectively. In Table 3, the results for the

agricultural sector are displayed applying the same logic as in Table 2. As it can be observed, the results change from one specification to another. Regarding the impact of foreign crises on the ratio between female to male employment distribution in agriculture, the coefficient is unstable, changing the sign and level of significance across specifications including different controls. When incorporating all the covariates of vector $X'_{i,t,j}$ (column 7), the impact of crises on the relative employment distribution becomes positive, but loses its statistical significance, while the other controls seem to play a more important role in determining how employment allocates by gender in the agricultural sector. So, in column (7), the impact of crises might be positive due to the fact that it is a male-dominated sector (see Table 1), affecting proportionally more men than women. Consequently, the impact on the proportion of women, relative to men's, working in the agricultural sector of an external economic downturn is unclear.

Table 3: Female to male employment and foreign crises, agricultural sector

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Ratio between female and male employment share						
Foreign crises	-0.055 [0.041]	-0.047 [0.074]	-0.117*** [0.045]	-0.038 [0.079]	0.110** [0.054]	-0.079* [0.044]	0.161 [0.099]
Exports by sector, growth	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
F.Crises*Exports	-0.001 [0.001]	-0.000 [0.001]	-0.000 [0.001]	-0.000 [0.001]	-0.001 [0.001]	-0.000 [0.001]	-0.000 [0.001]
GVC		0.003 [0.032]					0.061* [0.036]
Vulnerable employment, female			0.013*** [0.002]				0.011*** [0.002]
Tariff				-0.002 [0.003]			-0.005** [0.002]
GDP per capita					0.373*** [0.066]		0.232*** [0.080]
Democracy						-0.003 [0.003]	-0.000 [0.005]
Constant	0.348*** [0.025]	0.308 [0.467]	0.050 [0.044]	0.361*** [0.026]	-3.386*** [0.664]	0.397*** [0.040]	-3.077*** [0.806]
Observations	268	246	268	244	268	257	225
R-squared	0.893	0.896	0.916	0.903	0.908	0.894	0.924

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates include country and time fixed effects.

Concerning the impact of exports growth and its interaction with foreign crises, both coefficients are equal to zero in every column (Table 3). Moreover, when analysing the main specification, containing all the additional explanatory variables, in column (7), it can be observed that four coefficients pose a statistically significant impact on the

Table 4: Female to male employment and foreign crises, industrial sector

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Ratio between female and male employment share						
Foreign crises	0.255*** [0.014]	0.333*** [0.060]	0.244*** [0.016]	0.225*** [0.023]	0.290*** [0.020]	0.261*** [0.016]	0.322*** [0.073]
Exports by sector, growth	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
F.Crises*Exports	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]
GVC		0.035 [0.025]					0.024 [0.027]
Vulnerable employment, female			0.002 [0.001]				0.001 [0.001]
Tariff				0.004*** [0.002]			0.005*** [0.002]
GDP per capita					0.084*** [0.032]		0.036 [0.046]
Democracy						0.005*** [0.001]	0.009*** [0.002]
Constant	0.346*** [0.014]	-0.165 [0.365]	0.308*** [0.027]	0.300*** [0.020]	-0.492 [0.317]	0.298*** [0.019]	-0.526 [0.478]
Observations	268	246	268	244	268	257	225
R-squared	0.945	0.948	0.946	0.948	0.947	0.948	0.952

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates include country and time fixed effects.

employment allocation of women relative to men in the agricultural sector, which seem to be driving the results. Firstly, the estimates show that the higher the participation of the country in the GVC of the agricultural sector, the more proportion of women are employed there, relative to men. Therefore, participation in the GVC enhances conditions for women to work in this area. Additionally, the higher percentage of female employment is considered vulnerable, the more percentage of women work in this sector, relative to men. This is an expected result for this specific economic sector since it is common that employees hold temporary and less stable jobs. Furthermore, the higher tariffs the country levies on foreign agricultural products, the more women the activity employs, relative to men. Finally, the level of economic development of each country has also played an important role in determining the gendered allocation of employment in agriculture. This positive impact could be translated into labour markets being less gender-segregated in more developed economies since, in this sample of countries, women represent a small fraction of employment in the agricultural sector (Table 1). The fact that exports growth does not play a significant role in the results for agriculture does not necessarily mean that international trade is not affecting the distribution of employment by gender. Since

Table 5: Female to male employment and foreign crises, service sector

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Ratio between female and male employment share						
Foreign crises	-0.014 [0.019]	-0.074* [0.045]	-0.026 [0.019]	-0.019 [0.020]	0.008 [0.021]	-0.020 [0.018]	-0.087* [0.046]
Exports by sector, growth	0.000 [0.000]	0.001 [0.001]	0.001 [0.000]	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	0.001 [0.000]
F.Crises*Exports	-0.001 [0.001]	-0.001 [0.001]	-0.001* [0.001]	-0.001 [0.001]	-0.001 [0.001]	-0.000 [0.001]	-0.001** [0.001]
GVC		0.114 [0.071]					0.147** [0.069]
Vulnerable employment, female			-0.007*** [0.002]				-0.007*** [0.002]
Tariff				-0.002 [0.002]			0.000 [0.002]
GDP per capita					-0.102* [0.057]		-0.105 [0.077]
Democracy						-0.032*** [0.012]	-0.028** [0.013]
Constant	1.502*** [0.017]	-0.059 [0.972]	1.664*** [0.036]	1.528*** [0.033]	2.501*** [0.558]	1.832*** [0.127]	0.943 [1.126]
Observations	153	131	153	141	153	142	122
R-squared	0.846	0.849	0.876	0.866	0.850	0.853	0.899

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates include country and time fixed effects.

the participation of agricultural exports in the GVC is promoting female employment in agriculture, relative to men's, it can be picking up the effect of exports growth in the specification using the whole sample. Hence, to determine the relative share of women to men in a specific sector, the "quality" of trade represents higher importance than the "quantity".

Moving towards Table 4, it displays the impact of foreign crises on the female to male employment percentage share of the industrial sector. In this case, the effect changes dramatically. Before analysing it thoroughly, it is worthwhile to highlight that in this sample of eleven countries, around half of the proportion of women, compared to men's, are employed in this sector (Table 1). Moreover, the definition for this economic area used in this thesis covers the construction and manufacturing activities, both being particularly procyclical and male-dominated, while the first one is highly non-tradable. So, for the industrial sector, the impact of external crises on the female employment allocation, relative to men, is positive and statistically significant across all specifications. This can be explained by the fact that during these periods, contagion leads to severe domestic economic downturns, in which the industrial sector is heavily affected, inducing hikes in

male unemployment and reducing the percentage of men employed in this activity, relative to total male employment. Thus, it does not necessarily mean that foreign crises benefit female employment. Regarding the specification used in column (7), during a foreign crises year, the percentage of women working in the industrial sector increases by 0.322 pp with respect to the percentage of men. Additionally, the coefficients of international trade variables, like exports, its interaction with the dummy of crises and GVC, are not statistically different from zero. Other controls, such as tariffs and the democracy index, have a positive and significant impact in the industrial sector, suggesting that the more a country protects its industrial area by higher tariffs, and the higher quality of institutions, the more women will participate in this sectoral labour market, with respect to men. The lack of significance posed by the international trade coefficients can be explained by other coefficients picking up the effect of exports. As it can be observed in Table 1, the variation in the dependent variable for the industrial sector is limited. Moreover, looking at the time series (Figure 1, panel c) there is a clear downward trend of the ratio between female to male employment for this sector. Consequently, the “peaks” observed in the dependent variable can be studied solely by the presence of foreign crises. Additionally, the trend can be modelled by more structural variables, such as sectoral tariffs and democracy.

Finally, and when analysing the impact of foreign crises on the ratio between the female and male employment percentage share in the service sector, the results are less stable (Table 5). Gender norms seem to have allocated female paid employment mainly to the service sector, at least in the past decade, and Latin America is not an exception. Table 1 shows that female employment in this sample of eleven countries is highly concentrated in the service sector. Additionally, the exports of the service sector are lower compared to the exports of goods (agricultural and industrial), so it is expected that foreign crises would have a more limited effect on this sector. Estimates present in Table 5 count on fewer observations than the results in Tables 3 - 4, due to limited data available for exports of service (Table 1, see number of observations). The specification in column (7), as in prior tables, includes all the controls previously discussed. In this case, the coefficient of foreign crises has a negative and significant (at a 10% level) impact on the percentage share of female employment, relative to male's. Additionally, the effect of exports in presence of crises (interaction) also displays a negative effect. All of this can possibly be explained by the fact that, during economic downturns, more men are

being laid off in the goods' sectors, so either they are reallocating to the service sector, or the total male employment decreases, leading the percentage of men working in services to represent a higher proportion of total male employment. Conversely, the overrepresentation of women in the service sector makes them more susceptible to being laid off, compared to men. Regarding the additional controls, and in line with the report of the World Bank (2020), the level of the GVC positively impacts female participation in this sector, relative to male's. Nevertheless, female vulnerable employment and the democracy index have an opposite impact on female employment allocation, relative to male's, in the service sector, when comparing it to previous estimates. Regarding democracy, as explained before women have been overrepresented in the service sector for several decades, so irrespective of the improvement in this index for Latin American countries, women increased their labour force participation, and gradually allocate to other male-dominated sectors, reducing labour segregation.

One phenomenon that is possible to observe in Tables 3 - 5 is that the R^2 increases substantially. The goodness of fit improves in regressions separating the sectors because the lower variation of the dependent variable allows the predicted values to explain a higher proportion of it. For instance, women represent a lower share of employment in the agricultural and industrial sectors, and this is true for all the countries in the sample and the periods included in the study. The opposite happens in the service sector. So, estimating for the whole sample does not allow the model to fit the predicted value in a precise way, not necessarily refuting a causal interpretation.

4.3 Foreign and sectoral crises

This subsection analyses the impact of foreign crises when severe economic downturns are originated in specific sectors of the four trade partners. Therefore, the aim is to study the effect on the dependent variable corresponding to the relative share of female to male employment across sectors, of specific sectoral crises originated abroad. To conduct this analysis, a new variable of crises was created for each economic sector, following the methodology previously described. Using data from the WDI database regarding the value added (net output) of the three sectors (agriculture, industry and service), I constructed a dummy variable that takes the value of one, when the real growth of at least one of the partners is below two standard deviations of a five-year moving average,

or negative, and zero in the other cases. As it can be observed in Table A.1, during the period analysed (1990-2020), I found 21 foreign agricultural crises, ten industrial crises and five downturns originated in the foreign service sector. Some noteworthy facts of this dummy are that once again, no crises are originated in China. Additionally, the relatively large number of crises originated in the agricultural sector is mostly explained by negative growth rates. Furthermore, the service sector is the one exhibiting fewer severe economic downturns, suggesting that it is less sensitive to the economic cycle.

Table 6: Female to male employment and foreign crises by sector

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Ratio between female and male employment share						
F. crises by sector	-0.384*** [0.040]	-0.391*** [0.048]	-0.384*** [0.040]	-0.389*** [0.042]	-0.384*** [0.040]	-0.371*** [0.042]	-0.406*** [0.050]
Exports by sector, growth	0.005*** [0.002]	0.006*** [0.002]	0.005*** [0.002]	0.006*** [0.002]	0.005*** [0.002]	0.005*** [0.002]	0.006*** [0.002]
F.Crises*Exports	-0.002 [0.002]	-0.003 [0.002]	-0.002 [0.002]	-0.003 [0.002]	-0.002 [0.002]	-0.002 [0.002]	-0.003 [0.002]
GVC		-0.036* [0.020]					-0.033 [0.021]
Vulnerable employment, female			0.004 [0.006]				0.004 [0.008]
Tariff				-0.002 [0.007]			-0.002 [0.008]
GDP per capita					0.130 [0.201]		0.170 [0.290]
Democracy						0.005 [0.009]	0.006 [0.014]
Constant	0.358*** [0.103]	0.784*** [0.271]	0.258 [0.186]	0.265 [0.182]	-0.888 [1.920]	0.307** [0.134]	-1.099 [2.706]
Observations	689	623	689	629	689	656	572
R-squared	0.241	0.248	0.241	0.253	0.241	0.244	0.260

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates include country and time fixed effects.

When performing the econometric analysis and running the regression present in equation (3), what is being studied is the impact on the relative share of female to male employment across economic sectors, when each of them faces crises originated in the same industries, but in their main trade partners. Table 6 shows the results for the whole sample applying the same logic as in Tables 2 - 5. As it can be observed, there are important differences regarding the economic interpretation when comparing them to Table 2. When the crises analysed are sectoral, their impact on the relative share of female to male employment is consistently negative and highly significant (Table 6). The magnitude of the crises coefficient is somewhat larger in most specifications, compared to the original

one (Table 2), and it is relatively stable when incorporating different controls. Overall, and looking at the results in column (7), sectoral crises originated abroad have a negative impact on the relative participation of women, compared to men, across the economic activities, equivalent to a reduction of 0.406 pp. The transmission mechanism of the results in Table 6 would be that sectoral crises originated abroad reduce external demand, so Latin American countries that usually supply commodities or raw materials, perceive a drop in demand as well. If this reduction is significant and leads to layoffs, women are possibly more prone to be dismissed from their jobs in the presence of gender norms favouring men in paid jobs. Moreover, it is possible to observe an improvement in the goodness of fit of this model, compared to the original specification (Table 2), reflected in the R^2 .

Regarding the other controls, the growth of sectoral exports in Latin American countries continues to have a positive impact on the relative share of female to male employment across economic sectors. In Table 6, the coefficient is always significant at a 1% level and slightly larger than those present in Table 2. The positive effect of international trade on female employment, relative to men's, is consistent with previous literature and with the results found in the original specification. Even when the additional controls are not significant when studying the impact of sectoral crises, some of them display an opposite sign when compared to Table 2, which is the case of GVC and tariffs. Nevertheless, both of them are statistically insignificant.

I also estimated equation (3) splitting the sample for the three sectors being analysed. Results can be found in Tables A.3 - A.5 (see Appendix). Regarding the agricultural sector (Table A.3), it can be observed that the impact of foreign sectoral crises on the relative employment distribution of women to men is unstable. The sign and magnitude of the crises coefficient are unclear, while in the specification containing all the covariates (column 7), the dependent variable seems to be driven mainly by additional controls, which maintain their magnitude, sign and significance, comparing it to Table 3.

When analysing the results for the industrial sector present in Table A.4, there is a dramatic change in the impact of crises on the relative share of female to male employment. In this case, when the downturn is originated in the same sector, women are negatively affected and represent a fewer proportion of employment by gender, than men. So, despite broadly maintaining the magnitude and significance level, the coefficient on

crises displays the opposite sign compared to the original specification (Table 4) when splitting the sample. This means that when the foreign crises are originated in the industrial sector, it is not possible to observe the positive effect of women’s participation, relative to men, in the same sector, which could be interpreted as “the added worker effect”. Conversely, female sectoral employment is relatively more affected, which would be in line with previous literature regarding women being overrepresented in the exports sector (Pearson and Sweetman, 2011; Seguino, 2010), and therefore perceiving a larger impact of foreign economic downturns. An example of this would be the textile sector, considered in the definition being used in this thesis for the industrial sector, which was particularly studied in Aguayo-Tellez et al. (2010), regarding the maquiladoras in Mexico.

Finally, Table A.5 displays the results when studying the effect of service crises originated abroad on the relative share of female to male employment in the same sector. Comparing it to the original specification (Table 5), it can be observed that the results remain broadly unchanged. Foreign crises do not present a stable and consistent impact on the relative gendered employment allocation of the service sector, while additional controls play a more important role in modelling the dependent variable. As a reminder, this sector is less exposed to international trade compared to the others and faces fewer foreign sectoral crises.

4.4 Robustness check: alternative definition of crises

In order to analyse the robustness of the results, I estimated equation (2) using an alternative definition of crises. In this case, the eleven countries in the sample are considered to be facing an external crisis when at least one of the four main partners previously mentioned had a real economic growth below one standard deviation of a five-year moving average or displayed a negative rate of economic growth. This definition is more flexible in the sense that it allows periods when economic growth is mild and only slightly below the average to be considered as severe economic downturns. Table A.1 (sixth row) shows that when constructing the dummy variable using one, instead of two standard deviations below the average, the sample accounts for 20 crises periods during the years analysed (1990-2020), compared to the ten years considered as severe economic downturns in the main specification.

Results of estimating equation (2) using the alternative definition of crises, for the

whole sample, can be found in Table A.6. The significance level and sign of the foreign crises coefficients are maintained, compared to Table 2. Regarding the magnitude, it remains broadly unchanged for these coefficients, but it is slightly lower using the new definition of crises. The direction of this negligible change in the magnitude was expected since the original specification considers only the most severe economic downturns. Overall, foreign crises maintain their negative impact on the relative employment allocation of women and men, across sectors, suggesting that during external economic downturns, women’s employment is more affected than men’s.

Regarding the coefficients of the variable measuring exports growth by sector when estimating equation (2) with the new definition of crises (Table A.6), they preserve their sign and magnitude comparing it to the main specification (Table 2). Nevertheless, the impact of exports is less significant in this case, but still has a low but positive impact on the sectoral allocation of female employment, relative to male’s. With respect to the additional controls, they all maintain their sign, level of significance and magnitude compared to the original specification. Moreover, the level of value-added of trade by sectors (GVC) is the only variable displaying a significant impact on the ratio between the female and male employment distribution across sectors, both in the specifications adding each control separately and in column (7).

When estimating equation (2) only for the agricultural sector, but with the alternative definition of crises (Table A.7), results remain broadly unchanged compared to the original specification (Table 3). Again, when adding all the controls (column 7), the main determinants of female percentage employment share relative to male’s, are the percentage of female vulnerable employment, the tariffs charged to imported agricultural goods and the GDP per capita. As in Table 3, foreign crises, agricultural exports growth and the interaction between both variables do not play a significant role in determining the percentage of women working in the agricultural sector, relative to men. But the participation of this economic activity in the value-added of trade (GVC) encourages relatively more women to work there.

Table A.8 displays the results of estimating equation (2) only for the industrial sector and with the alternative measure of foreign crises. The findings for this sector, regarding the impact of severe external economic downturns on the proportion of female employment, relative to male’s, remains broadly unchanged when comparing it to the original

specification (Table 4). It is possible to observe that a foreign crisis impacts positively and significantly the dependent variable. In column (7), the specification that includes all controls suggests that during economic downturn years, the relative employment allocation of women to men increases by 0.336 pp in the industrial sector. This is also economically significant since the average of the dependent variable in the industrial sector is equivalent to 0.51 (Table 1) and presents a standard deviation of 0.15. As explained before, this effect is probably due to an important proportion of male employees that are forced to stop working in this sector, during crises, since the definition of industry used in this thesis encompasses the construction and manufacturing activities.

When relaxing the definition of crises, allowing for periods with economic growth only one standard deviation below a five-year moving average to be defined as crises periods, the female percentage share of employment, relative to male, seems more responsive in the service sector (Table A.9). As before, column (1) displays the results of estimating equation (2) without including any additional controls. In this case and compared to the original specification results (Table 5), the coefficient on foreign crises turns significant and more negative, suggesting that the service sector employment allocation is more sensitive to mild economic performance. In columns (2) - (6) I add each control separately, and the coefficient on foreign crises becomes more significant in some specifications. Regarding column (7), where all covariates are added, the magnitude, sign and significance of the coefficients remain broadly unchanged. The results still show that the impact of foreign crises and export growth in the presence of crises, on the relative percentage share of employment of women to men, are negative for the service sector. As discussed before, possibly the main reason for this to happen is that men's employment is more volatile during economic downturns in the other economic sectors, so the proportion they represent in the service sector increases during crises.

Summarising, the results of the main specification (column 7 of Tables 2 - 5) remain broadly unchanged when altering the definition of crises to a more flexible one, which accounts for double the number of crises periods.

5 Conclusion

This thesis aims to study which is the effect of foreign crises on female labour allocation (relative to male's), across sectors in eleven Latin American countries, analysing the demand transmission mechanism. To address this issue, I constructed a dummy variable for severe external economic downturns, based on the GDP growth of the four main trade partners of my sample of Latin American countries. Then, I estimated an econometric model where the dependent variable was the relative percentage share of employment allocation between women and men, and the main independent variable was the dummy for foreign crises, followed by exports growth and their interaction. The estimates included country and time fixed effects, intending to control for time and country-invariant factors, and in order to rule out the possibility of unobserved OVB. Additionally, and to avoid observed OVB, I included other covariates, justified with previous literature.

The main finding is, that the overall impact of foreign crises on female employment, relative to male's, across all sectors, is negative. Even though the significance of the result is unstable when including all the additional controls, this outcome contradicts previous knowledge regarding “the added worker effect” and how women could be benefited in times of crisis. When analysing the impact of severe economic downturns estimating separately for each economic activity, the findings are not very conclusive but in line with the hypotheses. It is noteworthy that the impact in the service sector, which is less exposed to international trade, is closer to zero. Moreover, in the industrial sector, it is possible to observe “the added worker effect”, since the definition used in this thesis encompasses the manufacturing and construction activities, which are typically male-dominated and highly procyclical. For the agricultural sector, the impact is also unclear, and the employment allocation across genders seems to be driven by other factors. When studying the impact of sectoral and foreign crises on the relative share of female to male employment, the results become more negative and significant. Furthermore, the impact remains negative across all sectors when splitting the sample, suggesting that women's employment is more susceptible to a negative cycle originated abroad but in the same activity in which they are employed.

The results for the main specification are robust to changing the definition of crises, to a less strict one, and allowing periods of mild economic performance to be considered as crises years. Nonetheless, and as aforementioned, these results are not stable across

different specifications, and the impact of crises is unclear, especially when analysing employment allocation by gender in the agricultural and service sector. Yet, in the industrial sector defined in this document, the impact seems to be consistent, suggesting that women represent a higher proportion of employees in the industrial sector during crises periods, compared to “normal” ones.

As previously mentioned, this thesis only focused on studying the demand channel of transmission, discussing the impact of foreign crises, in the context of lower external demand. Nevertheless, severe economic downturns can also be transmitted through prices, which might impact differently employment decisions taken by individuals and employers. Even though the prices transmission mechanism was not the focus of this thesis, it can be suggested as further research to study the impact of foreign crises on the relative gendered employment allocation across sectors.

Finally, the results found in this thesis may also have some policy implications. As discussed in the Introduction, female employment is particularly vulnerable in Latin America and women represent a higher proportion of the informal economy than men. This suggests that, besides encouraging gender equality through bills and regulations in “normal” periods, governments should specifically target women when building stimulus packages during hard economic times. Women are also overrepresented in the exports sector, which is one of the main channels of transmission of external crises, so when contagion comes from abroad, the more exposed workers should be especially cared for, since they are more likely to become unemployed or leave formal employment. For instance, the COVID-19 crisis has particularly affected women, leading governments to conduct policies that specifically target them. Figure A.1 (see Appendix) displays a map published by the ECLAC with the measures applied by Latin American administrations regarding gender issues. Some of the countries have put in place more than 20 of them, until June 2021. One example of this is the Chilean government, which has implemented 25 policies trying to dampen the impact that the crisis has had on women, and seven of them are specifically targeting female employment and income. For instance, a subsidy has been put in place that promotes employers to hire women, since the percentage of the salary covered by the government is higher for women, compared to men. Nonetheless, there are still some economies falling behind, which would be the case of Venezuela and Bolivia, two of the poorest countries in Latin America. Hence, the results found in this thesis relate to mea-

sures taken by governments in the most recent crisis, suggesting that administrations are refocusing their targets towards women during hard economic times, who are more likely to be overrepresented in vulnerable and informal employment. Unfortunately, there is still much to be done, especially among less developed countries where the COVID-19 pandemic has erased decades of progress towards achieving gender equality in Latin America, which possibly could have been avoided by focusing policies on women.

Appendix

Table A.1: Foreign crises

Foreign crises	Number of crises	Years
Foreign crises (total)	10	1991 1993 1998 1999 2008 2009 2011 2012 2013 2020
Euro Area	5	1993 2009 2012 2013 2020
China	0	
Japan	7	1993 1998 1999 2008 2009 2011 2020
USA	4	1991 2008 2009 2020
Foreign crises (for robustness)	20	1990 1991 1992 1993 1996 1997 1998 1999 2001 2002 2003 2007 2008 2009 2011 2012 2013 2016 2019 2020
Agriculture	21	1993 1994 1999 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2014 2015 2016 2017 2018 2019
Industry	10	1993 1999 2001 2002 2008 2009 2011 2012 2013 2020
Services	5	2008 2009 2012 2014 2020

Source: Constructed based on IMF World Economic Outlook and WDI.

Table A.2: Ratio of mean schooling years (female to male)

Year	1980	1985	1990	1995	2000	2005	2010
Country							
Argentina	0.99	1.01	1.02	1.03	1.02	1.00	1.01
Brazil	1.00	1.03	1.06	1.06	1.05	1.03	1.06
Chile	0.97	0.98	0.98	0.99	0.96	0.99	0.97
Colombia	0.97	0.97	0.98	0.99	1.00	0.97	0.99
Costa Rica	0.99	1.00	1.00	1.00	1.01	0.98	1.01
Ecuador	0.92	0.92	0.93	0.96	0.97	0.98	0.99
Mexico	0.85	0.88	0.92	0.93	0.93	0.93	0.97
Panama	1.01	1.02	1.01	1.02	1.02	1.04	1.04
Peru	0.79	0.85	0.87	0.88	0.89	0.90	0.90

Source: Tejani and Milberg (2016).

Table A.3: Female to male employment and foreign sectoral crises, agricultural sector

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Ratio between female and male employment share						
F. agricultural crises	0.058*	0.062	0.118***	0.020	-0.105**	0.080**	-0.168*
	[0.035]	[0.070]	[0.039]	[0.058]	[0.047]	[0.037]	[0.094]
Exports by sector, growth	0.001	0.001	0.001	0.001	0.001	0.001	0.000
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
F.Crises*Exports	-0.001	-0.002**	-0.001	-0.001	-0.001	-0.002*	-0.001
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
GVC		-0.004					0.060*
		[0.031]					[0.035]
Vulnerable employment, female			0.013***				0.011***
			[0.002]				[0.002]
Tariff				-0.003			-0.005**
				[0.003]			[0.002]
GDP per capita					0.370***		0.227***
					[0.066]		[0.081]
Democracy						-0.004	0.000
						[0.003]	[0.005]
Constant	0.295***	0.354	-0.063	0.345***	-3.242***	0.325***	-2.838***
	[0.026]	[0.385]	[0.058]	[0.058]	[0.633]	[0.034]	[0.763]
Observations	268	246	268	244	268	257	225
R-squared	0.894	0.898	0.917	0.904	0.909	0.895	0.924

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates include country and time fixed effects.

Table A.4: Female to male employment and foreign sectoral crises, industrial sector

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Ratio between female and male employment share						
F. industrial crises	-0.234***	-0.313***	-0.227***	-0.210***	-0.268***	-0.251***	-0.318***
	[0.016]	[0.060]	[0.017]	[0.025]	[0.019]	[0.016]	[0.068]
Exports by sector, growth	0.000	0.000	0.000	-0.000	0.000	0.000	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
F.Crises*Exports	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
GVC		0.032					0.024
		[0.024]					[0.027]
Vulnerable employment, female			0.002*				0.001
			[0.001]				[0.001]
Tariff				0.004***			0.005***
				[0.002]			[0.002]
GDP per capita					0.083***		0.038
					[0.031]		[0.046]
Democracy						0.006***	0.009***
						[0.001]	[0.002]
Constant	0.586***	0.193	0.544***	0.515***	-0.204	0.548***	-0.219
	[0.013]	[0.303]	[0.030]	[0.033]	[0.301]	[0.017]	[0.432]
Observations	268	246	268	244	268	257	225
R-squared	0.945	0.948	0.946	0.948	0.947	0.948	0.952

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates include country and time fixed effects.

Table A.5: Female to male employment and foreign sectoral crises, service sector

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Ratio between female and male employment share						
F. services crises	-0.019 [0.019]	-0.084* [0.050]	-0.034* [0.020]	-0.025 [0.022]	0.004 [0.022]	-0.024 [0.018]	-0.095* [0.053]
Exports by sector, growth	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]
F.Crises*Exports	-0.000 [0.001]	-0.000 [0.001]	-0.000 [0.000]	-0.000 [0.001]	-0.000 [0.001]	0.000 [0.001]	-0.000 [0.000]
GVC		0.108 [0.072]					0.136* [0.071]
Vulnerable employment, female			-0.007*** [0.002]				-0.007*** [0.002]
Tariff				-0.002 [0.002]			0.000 [0.002]
GDP per capita					-0.102* [0.057]		-0.113 [0.077]
Democracy						-0.033*** [0.012]	-0.030** [0.013]
Constant	1.504*** [0.018]	0.024 [0.980]	1.664*** [0.036]	1.535*** [0.033]	2.499*** [0.559]	1.842*** [0.125]	1.196 [1.130]
Observations	153	131	153	141	153	142	122
R-squared	0.845	0.847	0.874	0.865	0.849	0.853	0.896

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates include country and time fixed effects.

Table A.6: Female to male employment by sector and foreign crises, alternative definition of crises

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Ratio between female and male employment share						
Foreign crises (1SD)	-0.309*** [0.105]	-0.226* [0.119]	-0.328*** [0.106]	-0.450*** [0.149]	-0.245* [0.147]	-0.318*** [0.110]	-0.246 [0.209]
Exports by sector, growth	0.003* [0.002]	0.003 [0.002]	0.003* [0.002]	0.004* [0.002]	0.003* [0.002]	0.003* [0.002]	0.003* [0.002]
F.Crises*Exports	0.000 [0.002]	0.001 [0.002]	0.000 [0.002]	0.001 [0.003]	0.000 [0.002]	0.001 [0.002]	0.001 [0.003]
GVC		0.037** [0.018]					0.042** [0.019]
Vulnerable employment, female			0.004 [0.006]				0.006 [0.008]
Tariff				0.008 [0.007]			0.007 [0.008]
GDP per capita					0.144 [0.215]		0.162 [0.304]
Democracy						0.004 [0.009]	0.010 [0.014]
Constant	0.683*** [0.119]	0.120 [0.288]	0.591*** [0.183]	0.616*** [0.130]	-0.753 [2.153]	0.634*** [0.152]	-1.857 [2.952]
Observations	689	623	689	629	689	656	572
R-squared	0.131	0.151	0.132	0.139	0.132	0.141	0.157

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates include country and time fixed effects.

Table A.7: Female to male employment and foreign crises, agricultural sector
(alternative definition of crises)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Ratio between female and male employment share						
Foreign crises (1SD)	-0.072*	-0.048	-0.136***	-0.041	0.093*	-0.080*	0.160
	[0.040]	[0.073]	[0.045]	[0.075]	[0.056]	[0.041]	[0.100]
Exports by sector, growth	-0.001	-0.001	-0.001	-0.001	-0.000	-0.001	-0.000
	[0.000]	[0.001]	[0.000]	[0.001]	[0.001]	[0.000]	[0.000]
F.Crises*Exports	0.001	0.001	0.000	0.000	0.000	0.000	-0.000
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
GVC		0.004					0.061*
		[0.032]					[0.036]
Vulnerable employment, female			0.013***				0.011***
			[0.002]				[0.002]
Tariff				-0.002			-0.005**
				[0.003]			[0.002]
GDP per capita					0.372***		0.233***
					[0.067]		[0.080]
Democracy						-0.003	-0.000
						[0.003]	[0.005]
Constant	0.365***	0.298	0.071	0.368***	-3.353***	0.397***	-3.078***
	[0.029]	[0.464]	[0.046]	[0.031]	[0.676]	[0.041]	[0.800]
Observations	268	246	268	244	268	257	225
R-squared	0.893	0.896	0.916	0.903	0.908	0.894	0.924

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates include country and time fixed effects.

Table A.8: Female to male employment and foreign crises, industrial sector (alternative definition of crises)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Ratio between female and male employment share						
Foreign crises (1SD)	0.244*** [0.015]	0.334*** [0.058]	0.235*** [0.015]	0.222*** [0.026]	0.283*** [0.021]	0.263*** [0.017]	0.336*** [0.071]
Exports by sector, growth	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]
F.Crises*Exports	-0.000 [0.000]	-0.001 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
GVC		0.035 [0.024]					0.026 [0.027]
Vulnerable employment, female			0.002* [0.001]				0.001 [0.001]
Tariff				0.004*** [0.002]			0.005*** [0.002]
GDP per capita					0.087*** [0.032]		0.037 [0.046]
Democracy						0.005*** [0.001]	0.009*** [0.002]
Constant	0.351*** [0.014]	-0.168 [0.354]	0.312*** [0.026]	0.309*** [0.019]	-0.518 [0.320]	0.298*** [0.019]	-0.561 [0.480]
Observations	268	246	268	244	268	257	225
R-squared	0.945	0.948	0.946	0.948	0.946	0.948	0.952

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates include country and time fixed effects.

Table A.9: Female to male employment and foreign crises, service sector (alternative definition of crises)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Ratio between female and male employment share						
Foreign crises (1SD)	-0.062*** [0.019]	-0.080* [0.042]	-0.066*** [0.019]	-0.065*** [0.020]	-0.037* [0.022]	-0.029 [0.019]	-0.075* [0.043]
Exports by sector, growth	0.001 [0.001]	0.001* [0.001]	0.001 [0.001]	0.001 [0.001]	0.001 [0.001]	0.001 [0.000]	0.001* [0.001]
F.Crises*Exports	-0.001* [0.001]	-0.002** [0.001]	-0.001 [0.001]	-0.001* [0.001]	-0.001* [0.001]	-0.001* [0.001]	-0.001** [0.001]
GVC		0.113 [0.069]					0.141** [0.069]
Vulnerable employment, female			-0.007*** [0.002]				-0.006*** [0.002]
Tariff				-0.002 [0.002]			0.000 [0.002]
GDP per capita					-0.099* [0.056]		-0.109 [0.074]
Democracy						-0.031*** [0.012]	-0.030** [0.013]
Constant	1.495*** [0.016]	-0.067 [0.950]	1.655*** [0.038]	1.522*** [0.031]	2.463*** [0.545]	1.814*** [0.125]	1.071 [1.071]
Observations	153	131	153	141	153	142	122
R-squared	0.848	0.853	0.875	0.868	0.852	0.856	0.900

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates include country and time fixed effects.

Figure A.1: Measures and actions at the national level regarding gender (COVID-19)



Source: ECLAC (<https://www.cepal.org/en/topics/covid-19>).

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