

Can multinational firms promote gender equality? The role of labour mobility⁺

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A long and well-established literature exists on the role of multinational enterprises (MNEs) in transferring technology around the globe, enhancing local productivity. However, we know very little about the impact of foreign direct investment (FDI) and multinational enterprises on gender policy and practice. In this research, we focus on the role of MNEs in potentially promoting female empowerment and gender equality in Brazil. First, the research performs a descriptive exercise on the gender composition and gender earnings gaps at MNEs versus domestic firms. Then, we ask whether workers moving from multinational to domestic firms can transfer information about gender practice, by exploring the relationship across domestic firms with various proportions of workers with previous experience in a multinational. Unfortunately, despite the many theoretical reasons to expect MNEs to support and transfer best practice in gender policy, these ideas are not borne out in the data. Multinational firms employ fewer women and exhibit higher gender earnings gaps than their domestic firm counterparts. For this reason, it is no surprise that domestic firms with high shares of former MNE workers are not different from domestic firms with fewer former MNE workers in terms of gender policy and practice. Our work emphasizes the need for domestic policy to enhance the status of women in the economy and the international community to support best practice in gender policy across all types of firms.

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1. Introduction

A long and well-established literature exists on the role of multinational enterprises (MNEs) in transferring technology around the globe, enhancing local productivity.¹ Alongside the pure economic implications of foreign investment, MNEs are increasingly expected to maintain social and environmental responsibility and standards.² Even when supply chains are not entirely vertically integrated within the multinational firm, MNEs are increasingly held responsible for the labour and environmental practices of their suppliers by the international community. In fact, the idea that cross-border investment spreads cultural norms and practice has received widespread attention among anthropologists (Watson 2006).³ However, we know very little about the impact of foreign direct investment (FDI) and multinational enterprises on gender-specific policy and practice.

This paper seeks to fill this gap by investigating the role of foreign direct investment and multinational enterprises in spreading gender equality in Brazil. The Brazilian context is rich for such a study, given that the country underwent a substantive and unilateral liberalization of its economic policies in the 1990s, including, importantly, a relaxation of restrictions on foreign investment. According to aggregate statistics from the World Bank, foreign direct investment inflows to Brazil more than quintupled in the three years between 1996 and 1999 immediately after liberalization (World Bank 2020). Previous research on the implications of this sharp increase in foreign ownership suggests that Brazilian workers benefited through higher wages (Poole 2013); however, this work did not distinguish the effects for women differently from men.

In theory, there are several reasons to hypothesize an improvement in gender equality with increases in foreign investment. For example, FDI, like international trade, brings increased income levels—as gender equality tends to be positively associated with income levels across countries, this would predict an improvement in gender policy and practice. Similarly, as in Becker's (1957)

¹ For example, industries with high levels of foreign participation are more productive (Aitken and Harrison 1999) and more likely to export (Aitken, Hanson, and Harrison 1997). Bloom and van Reenen (2010) also offer evidence of high-quality management practice being transplanted by multinational firms. In addition to these direct productivity effects on subsidiaries, indirect spillovers may exist as domestic firms supply foreign firms or use their goods as intermediate inputs (e.g., Javorcik (2004) and Kee (2015)). A growing literature also posits that workers learn while employed at multinationals and then transfer this knowledge as they transition to domestic firms (Poole 2013).

² For instance, the United Nations Conference on Trade and Development's "Linkages" programme trains multinational executives on how to engage with domestic firms in the countries in which they invest.

³ For example, there is strong anecdotal evidence of multinationals spreading high-quality health standards (e.g., washing hands), customer service (e.g., queuing and smiling), and cultural norms (e.g., business attire).

seminal work, (gender) discrimination is expected to diminish as firms face heightened competition. Therefore, if MNEs increase local competition, firms have less capacity to discriminate against women. Finally, multinationals may also be subject to higher international (or FDI-source country) standards. Backlash from consumers may result if MNEs attempt to circumvent these standards. As such, reputational pressures may force multinationals to bring higher-quality policies and practices to their host countries.

The analysis in this paper largely tracks a long and well-established literature on productivity spillovers from multinationals to establish micro-evidence on the ability of foreign firms to promote female empowerment, to close gender wage and employment gaps, and, therefore, to enhance economic growth in developing countries (Diebolt and Perrin 2013). First, we investigate the *direct* spillovers to foreign-owned subsidiaries in Brazil, with a descriptive exercise on the differences between MNEs and domestic firms in their gender composition and gender earnings gaps.

In addition to our analysis of the potential for spillovers in the aggregate, we then further inquire about the mechanism underlying the international transfer of gender-equalizing policies and practice. Specifically, we examine whether labour mobility from multinational to domestic firms can transfer information about gender practice, as in the well-identified work of Poole (2013) for multinational wage spillovers. That is, when workers leave multinational firms and are rehired at domestic establishments, do they bring about equitable gender policy?

Our findings suggest that domestic firms that hire former multinational workers have similar female employment shares and higher gender earnings gaps when compared to domestic firms that do not hire former multinational workers. Unfortunately, despite the numerous theoretical possibilities that multinational enterprises may help to promote gender equality around the globe, this is not borne out in the data from Brazil. Part of the explanation may be that the MNEs in our sample, if anything, exhibit less gender-equal policies than their domestic counterparts—multinational firms employ fewer women and report higher gender earnings gaps. It is no surprise, then, that domestic firms with higher shares of former MNE workers are not very different from otherwise identical domestic firms with lower shares of former MNE workers in terms of their gender practice.

Our work emphasizes the need for domestic policies to promote the education and employment of women, through high-quality working conditions and employment protection (i.e., health and safety benefits), and to reduce the barriers for women to access employment in certain occupations and industries. In addition, our findings support a goal of more flexible labour markets to facilitate the transition of workers across firms. Finally, the international community should continue to promote positive female employment practice across all types of firms.

The rest of this paper is organized as follows. Section 2 offers a detailed overview of the main economic literature associated with our research question linking multinational firms and gender-related outcomes. Section 3 offers some theoretical predictions, based on the background literature, relating changes in exposure to foreign firms to women's empowerment. In Section 4, we present the main data sets and provide some descriptive statistics on women in the workplace, on FDI in Brazil, and on the diffusion of MNE experience. Section 5 describes the main empirical strategy and Section 6 reports the main results for the effects of MNE spillovers of gender-equalizing policies. We offer conclusions and implications for policy in the final section.

2. Background literature

While there are substantial bodies of research on the gender wage gap and on multinational spillovers, to our knowledge, there are very few papers at the intersection of these literatures – the impact of multinational firms on gender-specific outcomes. In this section, we briefly review the background literature on this topic. We are among the first to explore the role of multinational firms in spreading gender equality to the domestic economy. That is, many of the papers we cite explore the differences between MNEs and domestic firms in gender policy and practice, while our paper investigates whether and how multinationals may transmit policies towards women empowerment to the host economy.

MNEs and the gender wage gap. The takeover of domestic firms by foreign enterprises, or the entry of MNEs, is typically associated with a rise in the wages of local workers. The most direct effect of MNEs comes from their effects on productivity and the labour market. Multinationals compete with domestic firms in both the factor market and in the product market; as such, increased labour demand can result in an increased overall wage. Within foreign-owned firms, this increase is concentrated in higher-skilled and managerial positions. Managerial positions and positions with highly educated workers also tend to have higher gender wage gaps (e.g., Vahter and Masso (2018), Yahmed (2018), and Bertrand, et al. (2010)), which suggests MNEs may increase the gender wage gap.

This is not just a theoretical postulation: several studies from around the world have argued that the entry of MNEs exacerbate the gender wage gap. Seguino (2000) argues that Taiwan's reliance on FDI as a means of advancing its technological base contributed to a rising gender wage gap as compared to Korea. After 2002, Taiwan's Gender Equal Employment Act helped narrow the gap for some time, but the gap in FDI-intensive industries persisted (Lai and

Sarkar, 2017). Stolzenburg, et al., (2020) examine employer-employee linked data from South Africa, and find that firms receiving FDI exhibit a 2.4 percent higher gender wage gap than those that do not. Sharma (2020) also finds that greater FDI among Indian firms increased gender wage gaps, particularly for unskilled workers. Interestingly, in Estonia, Vahter and Masso (2019) find that foreign-owned firms display a much larger gender wage gap than domestic firms, and especially so for workers in managerial positions.

In Brazil, the unconditional gender wage gap declined over the 1990s and early 2000s (Arabsheibani, et al., 2003), a period marked by rapid increase in FDI inflows (Poole, 2013). As calculated by Arabsheibani, et al., (2003), men were paid on average 300 percent more than women in 1988, and only 33 percent more in 1998. The period between 1988 and 1998 was marked by an increase in education for both men and women, along with a movement out of agriculture into services for men, and out of both agriculture and production into services for women (Arabsheibani, et al., 2003). Along with structural changes, Arabsheibani, et al. (2003) attribute the declining gender wage ratio to increased economic liberalization. Likewise, Rendall (2013) emphasizes the role of structural change over the same time period in reducing gender inequality—with the shift from “brawn-intensive” to “brain-intensive” jobs playing a major role, as in Aguayo-Tellez, et al. (2014) for Mexico.⁴

MNEs and female employment. A recent body of research has shown that foreign investment leads to increased female employment in local MNE affiliates, especially in managerial positions. For example, Olcott and Oliver (2014) found that the number of female managers rose more sharply at acquired companies than at traditional companies over a five-year period in Japan, and Kodama, et al. (2016) found that foreign affiliates are more gender-equal than otherwise identical Japanese firms. Fernandes and Kee (2020) examine a cross section of Bangladeshi firms in 2005, and find that firms with FDI hire more women in managerial positions. For Chile, Delgado (2020) shows that foreign acquisition increased the share of female workers by 3.6 percent in the following two years; among managerial positions the increase was 6.6 percent.

The importance of the FDI-source country is clear in the work by Tang and Zhang (2017). The authors find that foreign firms, especially those from more gender-equal cultures, generate cultural spillovers to domestic firms within their study of Chinese manufacturing firm data over the period 2004 to 2007. The authors show

⁴ The distinction in job types can also work against women, however. A recent study on the Brazilian tourism industry finds that women are concentrated in perceived feminine activities such as being cooks and maids, which limits their mobility and earnings despite being slightly more educated and otherwise equally qualified as men in the same industry (Ferreira Freire Guimarães and Silva 2016).

that foreign affiliates whose home country culture is more gender equal tend to hire proportionately more women and appoint more female managers, and that there is a positive correlation between domestic firms' female labour shares and the prevalence of FDI across industries and cities. Similarly, Choi and Greaney (2020) find strong evidence that MNEs from more gender-equal countries tend to employ proportionately more women and female CEOs within their firm-level study of South Korea. One exception to this idea is Sharma (2020), who does not find the female employment composition effects of FDI in India to be positively related to the gender equality of the FDI-source country.

3. Conceptual framework

It is well documented that multinational firms are different from domestic firms, in terms of size, productivity, average wages, and skill composition (Helpman, Melitz, and Yeaple 2004). We also know from a substantive literature that multinational firms can transfer many of these differences to the local host economy – as productivity spillovers and increased education and training. There is also a small, and growing, literature suggesting that multinational firms are different from domestic firms in terms of their female workforce composition and gender wage gaps (see the discussion in the previous section). Whether these gender-equalizing practices can “spill over” into the domestic economy is the main topic of this paper. Therefore, we ask whether multinational firms transfer gender policies and practices to firms in their host countries, as they transfer productivity improvements.

As Brazil is a middle-income, emerging economy, increased foreign investment is also associated with increased income levels for the country. As income is associated with better working conditions and higher standards, we can expect female empowerment to improve via the income effect. In fact, according to the International Monetary Fund's Gender Inequality Index, advanced economies are more gender equal than lower-income developing countries. Furthermore, following Becker's (1957) model of labour market discrimination, if increased foreign presence increases local competition, MNEs may help to promote gender equality by forcing domestic firms to hire equally qualified and productive women.

Implicitly, we question whether MNEs may alter the legal frameworks and practices in the host countries in which they operate. On the one hand, there have long been concerns by opponents of corporate globalization of a race to the bottom; that is, countries compete via their tax levels, or labour and environmental regulations, to attract foreign investment. The theory suggests, then, that as multinationals seek places to operate around the globe, they

look for weak standards and low tax rates.⁵ In this context, it is theoretically possible that foreign firms contribute to poorer standards for women in Brazil. On the other hand, as is carefully documented for the case of Indonesia by Harrison and Scorse (2010), multinationals may also be subject to higher international standards. If, and when, they circumvent and diminish labour practices, they potentially face backlash from consumers. These reputational pressures force multinationals to bring higher-quality policies and practices to their host countries. In this case, we may expect multinational firms to have higher quality labour practices toward women.

If MNEs display more progressive gender policies and practices, and MNE workers learn about these high-quality labour practices toward women—either through explicit labour training or casual observation—then it is possible that these workers spread best practice by imposing or demanding better treatment when they leave MNEs for employment elsewhere. The expectation is that these transfers are likely to be stronger for female employees, for whom the policies are more pertinent, and for managers and human resources personnel, for whom applying these policies is part of their job. These workers then help to introduce these more progressive labour policies into their new establishments.

4. Data

The Brazilian context is suitable to the question at hand in part due to the wealth and depth of available data sources. In addition, the country experienced a dramatic and unilateral trade liberalization, accompanied by a relaxation of foreign investment restrictions in the mid-1990s, and an abrupt real exchange rate devaluation of the currency in 1999. Our research relies on several different data sources collected by Brazilian government agencies. We are able to match these different databases based on common and unique identifiers, such as worker registration numbers, establishment tax identification codes, and municipal location.

Matched employer-employee data. We exploit administrative data, collected by the Brazilian Labour Ministry and reported in the *Relação Anual de Informações Sociais* (RAIS), to observe the formal labour market. RAIS captures all formal job spells in Brazil, as classified by individual and establishment identifiers. The benefits of a linked employer-employee database are numerous. First, we observe the

⁵ Olney (2013) finds evidence of such a race to the bottom for foreign investment using data from the Organization of Economic Cooperation and Development. In his work, he demonstrates that larger volumes of foreign investment flows to countries with weaker employment protections.

complete formal employment history of all workers, including all job transitions both within and between firms, and across sectors and regions of the economy. Second, earnings reflect the average earnings for a particular job spell of a particular worker. Household surveys, by contrast, often report an individual's average wage for the year, which may confound a number of jobs throughout the year. Similarly, firm-level data sources often characterize average wages across the company's workforce, obscuring the composition of the workforce within the firm. Third, because firms are required by the Ministry of Labour to report on their workforce in order to comply with labour legislation, the data suffer far less from attrition and measurement error than would data based on individual-level recall survey questionnaires.

The main benefit of this data is the ability to trace workers over time across establishment-types, with detailed demographic and labour market information for each worker. These worker transitions will be our main measure of labour mobility. RAIS provides rich information about workers, firms, and job spells that we use to study female labour market participation in the context of a growing, low-to-middle-income country. The data include worker characteristics like (importantly) gender, age, and education. Information about companies includes detailed industry codes, the municipal location of each establishment, and establishment-level workforce composition.

We use data for the years 1996 through 2004, a period of dramatic trade and investment liberalization across the country. In 1996, the RAIS data includes over 29 million workers, employed in approximately 1.7 million establishments. By 2004, the formal labour force had grown significantly in our sample to cover over 37 million workers, employed in 2.6 million establishments.

Multinational establishments. The establishment identifier in RAIS is a public registration number, allowing us to merge external information about establishments. For example, we rely on firm-level information to discern foreign-owned from domestically-owned establishments using data from the Brazilian Central Bank. By law, all foreign investments must be registered with the Central Bank of Brazil (*Banco Central do Brasil*, BCB) in the *Registro Declaratório Eletrônico–Investimentos Externos Diretos* (RDE-IED). This is the same data previously used in Poole (2013) to estimate the wage spillovers of workers with experience at multinational firms.

The data include a list of all establishment tax numbers with a positive inflow of FDI for the years 1996 through 2003 and a list of all establishments with a positive stock of foreign capital in the years 2001 to 2004. Lacking direct information on an establishment's FDI stock by year, these data allow a procedure to infer with considerable confidence which establishments are at least partially foreign-owned in

a given year between 1996 and 2004.⁶ Specifically, following Poole (2013), we define an establishment to be at least partly foreign-owned in year t if the establishment received an inflow of foreign capital in year t . We note that establishments receiving inflows of foreign capital in year t may maintain a stock of foreign capital in later years. Therefore, establishments with a positive stock of foreign capital in later years are classified as foreign owned in all years $\tau \geq t$ after the initially observed inflow at year t , even if no inflow is observed in the intervening years.⁷

By this method, around 12,000 multinational establishments were operating in Brazil in 2004. This accounts for roughly 0.5 percent of all establishments in the country. However, as multinational firms tend to be larger, these firms account for around 2.2 percent of all formal-sector employment.

4.1 Descriptive statistics

We next offer some descriptive statistics as background for the empirical estimations ahead. First, we present evidence on the low participation of women in the workplace and the relatively high and steady earnings gap that exists between formally working women and men. Then we present figures on the presence of multinational establishments in the Brazilian economy, the workers employed in those establishments, and the diffusion of workers with experience at MNEs. Together, these statistics may help to explain some of the empirical findings reported in the next section.

Women in the workplace. While the level of participation was relatively low, the period we study saw large increases in both the number and proportion of women in the formal workforce. Figure 1 shows that the proportion of women in the formal workforce increased from about 37.9 percent to 40.0 percent during our sample period.⁸ These levels are relatively low; for example, the United States exceeded 37.4 percent in 1970 and 40.0 percent in 1976, and had reached 46.5 percent by

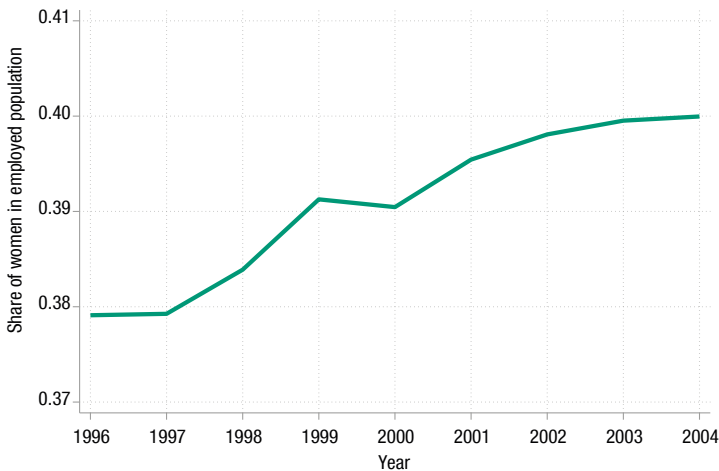
⁶ Unfortunately, the data we currently have available regarding establishment-level foreign ownership is limited. In future work, we intend to collect more detailed data from the BCB, which will allow us to identify the source country of the foreign investment. As the country of origin has been found as a strong determinant of the likelihood of positive gender policy spillovers in other countries (see, for example, Tang and Zhang (2017)), we see this as a fruitful avenue for future research.

⁷ The main concerns are establishments without any recorded inflows of foreign investment and no stock of foreign capital in 2001. By our definition, these would be considered domestically-owned enterprises. Therefore, if there was an initial inflow of foreign capital before the sample period and a full divestiture at some point during the sample period, we miss those foreign-owned establishments. If anything, this would reduce the likelihood of finding statistical differences between foreign and domestic firms.

⁸ Authors' calculations from RAIS data.

2004.⁹ However, although two percentage points sounds modest, combined with the growth in the total formal labour force, this represents a major increase in formal employment for women: almost 4 million more women were formally employed in 2004 compared to 1996.

Figure 1: Share of women in employed population



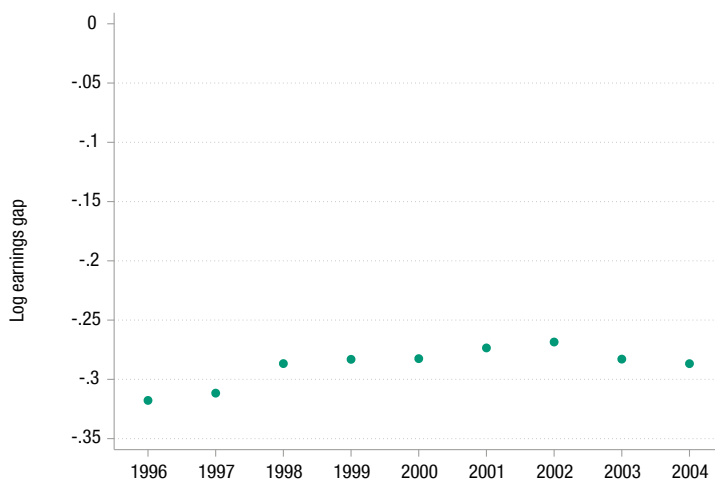
This remarkable increase in participation occurred despite a large and persistent gap in earnings. We find that, controlling for education, age, tenure, year, state, occupation, and industry, women earn around 25 percent less than men in Brazil.¹⁰ As shown in Figure 2, this gap remains relatively stable throughout the study period, in contrast to the unconditional gender gap we discuss in Section 2, as reported by Arabsheibani, et al. (2003). Whatever forces were drawing women into the formal workforce during this time, it does not appear to be improvements in relative

⁹ Authors' calculations from series i) U.S. Bureau of Labor Statistics, Employment Level [CE16OV], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/CE16OV>, July 23, 2020 and ii) U.S. Bureau of Labor Statistics, Employment Level - Women [LNS12000002], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/LNS12000002>, July 22, 2020.

¹⁰ Formally, in a sample of RAIS data, we regress the natural logarithm of earnings on age, age squared, tenure, year indicators, state indicators, education indicators, and a fully interacted set of indicators for occupation and industry. Figure 2 shows the coefficients on the interaction between female and year indicators. Changes in log units are roughly equivalent to percentage point changes. A difference of -0.25 log points corresponds an earnings gap of 22 percent. A difference of -0.3 log points corresponds to an earnings gap of 26 percent.

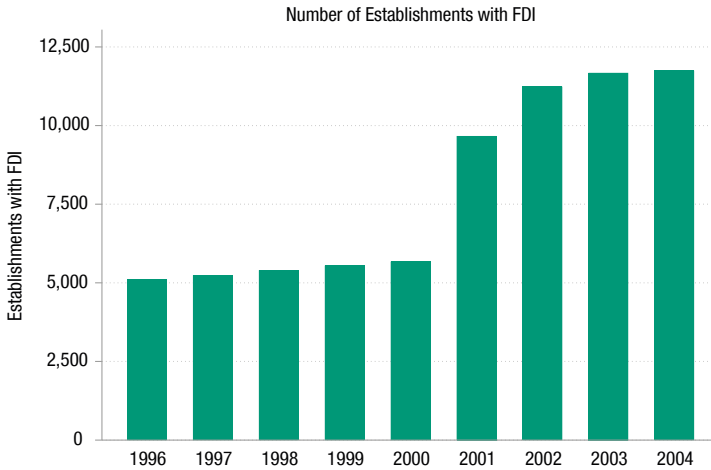
wages.¹¹ The level and trend of the earnings gap during this period in Brazil is similar to findings from the same period in the United States (Goldin et al., 2017), although those authors find a clear downward trend in relative earnings among highly-educated women.

Figure 2: Gap in log earnings between men and women



The growth of foreign investment in Brazil. The late 1990s and early 2000s witnessed significant increases in foreign investment in Brazil. Prior to 1996, foreign investment in Brazil was essentially prohibited, but restrictions were relaxed as a part of a broader package of economic liberalization (see Rodrigues (2000) and Goldfajn and Minella (2005)). The results were immediate: by the end of 1996, about 5,000 establishments across the country had received at least some foreign capital (Figure 3). Restrictions were further loosened in 2001 and, by 2004, almost 12,000 establishments reported foreign investment.

¹¹ At the same time, the strong increase in the supply of women may have contributed to downward pressure on female wages, suggesting that, all else being equal, the gender wage gap may have narrowed some over the time period.

Figure 3: Number of establishments with foreign direct investment

The nature of MNE experience. Until now, we have been working under the assumption, backed by some existing literature, as discussed in our conceptual framework, that multinational firms employ high-quality gender policy and practice around the world—either because they have reputational concerns, or they are monitored by international standards agencies, or they face heightened competition. In this section, we test this assumption with an investigation into the Brazilian data and report statistics on the differences between foreign-owned and domestically-owned establishments regarding employment composition and earnings.

In stark contrast to the theory, during the study period, our data report that multinational establishments do not offer systematically better employment outcomes for women as compared to domestic establishments. Multinational employment is concentrated in large, male-dominated industries. Even controlling for industrial composition, multinational establishments employ fewer women and, on average, show greater earnings gaps. This suggests that MNEs may not be an engine of gender equality in the Brazilian labour market.

Establishments receiving FDI are large, concentrated in male-dominated industries, and almost entirely absent from industries that tend to employ women. In 2000, the median (mean) domestic establishment employed only three (13) people, compared to 24 (150) for multinational establishments (Figure 4). Almost two thirds of employment in MNEs is in manufacturing, and over 70 percent of manufacturing workers are men (Figure 5). Perhaps not surprisingly, there is almost no MNE employment in the sector which accounts for almost half of all working women: public administration, health, and education.

Figure 4: Size of domestic and multinational establishments (2000)

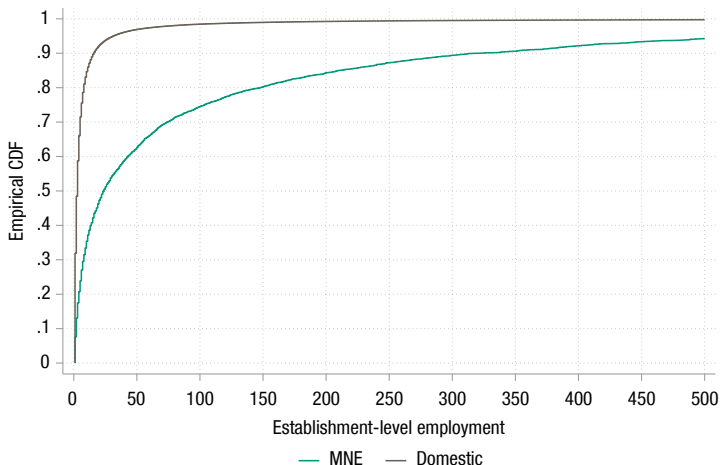
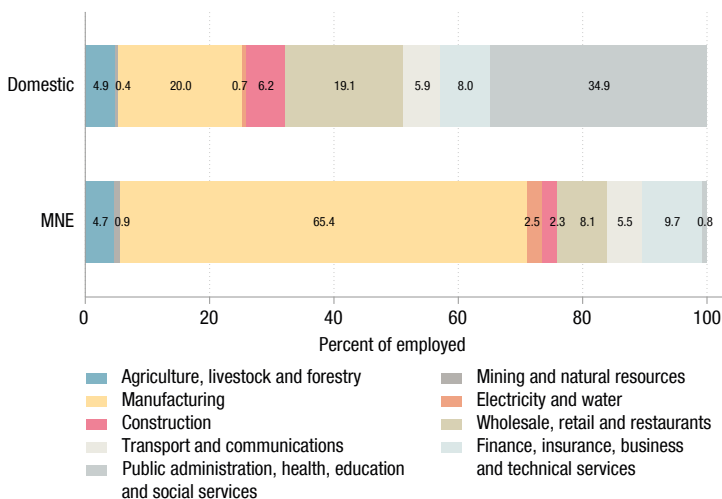
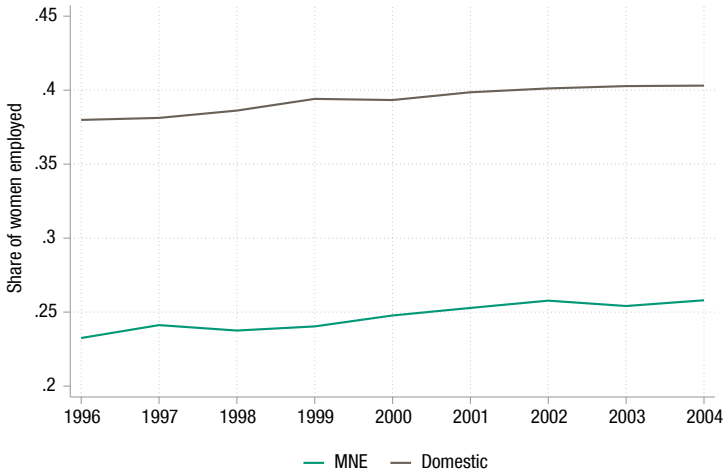


Figure 5: Employment by industry across establishment type



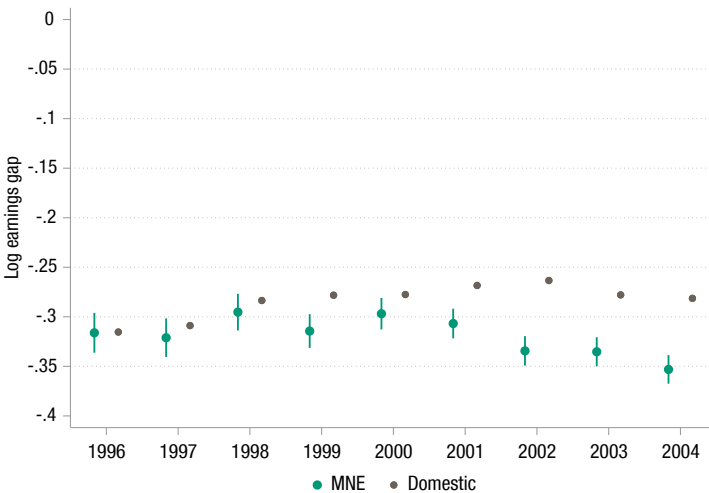
Female employment is lower among firms receiving FDI, even controlling for industrial composition. Throughout the period, the share of women employed in MNEs is about 15 percentage points lower than the share of women in domestic establishments (Figure 6), and this gap is consistent over time. The differences in industrial composition largely explain this gap, but not all of it; even controlling for industry, the share of women in MNEs is 3.3 percentage points lower than domestic establishments.

Figure 6: Female employment by establishment type



If anything, gender earnings gaps are more severe in MNEs. We repeat our analysis from Figure 2 separately for MNEs and domestic enterprises, estimating the earnings gap after controlling for basic individual, job, and establishment characteristics. Women in multinational establishments earn 25 to 30 percent less than their male counterparts (Figure 7). While this is similar in magnitude to the earnings gap in domestic establishments, it increases slightly during our study period.

Figure 7: Gap in log earnings by establishment type



Across several dimensions, these statistics show that multinational establishments are different from domestic establishments in terms of gender practices in an unexpected way – that is, that MNE establishments employ fewer women and report higher gender earnings gaps. We next wonder whether the types of establishments receiving foreign investment exhibited poor gender practice even before they received investment from abroad. Table 1 explores this exact idea. We report sample statistics from 1995 across two types of establishments – those that would receive foreign investment inflows at some point in the future (1996 through 2004) and those that would never receive foreign investment. Note that as of 1995 none of these establishments, to our knowledge, are yet foreign owned. Future MNEs are larger in terms of employment, more likely to be in the manufacturing industry, and pay higher average wages. Interestingly, even prior to foreign ownership, the future MNE firms employed fewer women (28 percent female labour force composition, on average, compared to 36 percent female in establishments that would not become MNEs) and paid lower total female earnings (on average, 24 percent compared to 35 percent of the total wage bill went to female workers). This suggests, at least, that foreign ownership is not worsening practices toward women, but that the types of establishments with the potential for future foreign investment pursue different practices toward women.

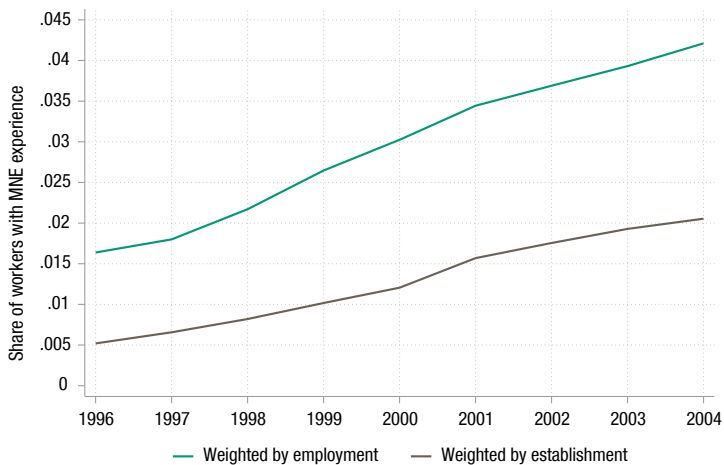
Table 1: Summary statistics, by establishment type

	Future recipient of FDI	Not future recipient of FDI
No. of establishments	1,145	1,058,777
Total employment	231,528	15,759,200
Est. employment (25th pctile)	7	1
Est. employment (50th pctile)	33	3
Est. employment (75th pctile)	155	6
Pct. of est. by industry:		
Agriculture	0.108	0.133
Extractive	0.034	0.004
Manufacturing	0.473	0.169
Utilities	0.006	0.003
Construction	0.034	0.049
Wholesale, retail, restaurant	0.203	0.348
Transport and communication	0.042	0.050
Finance, insurance, business	0.084	0.112
Public sector	0.016	0.133
Mean wages per employee (reais per month)	1,123	247
Female employment (pct)	0.280	0.359
Female earnings (pct)	0.239	0.351

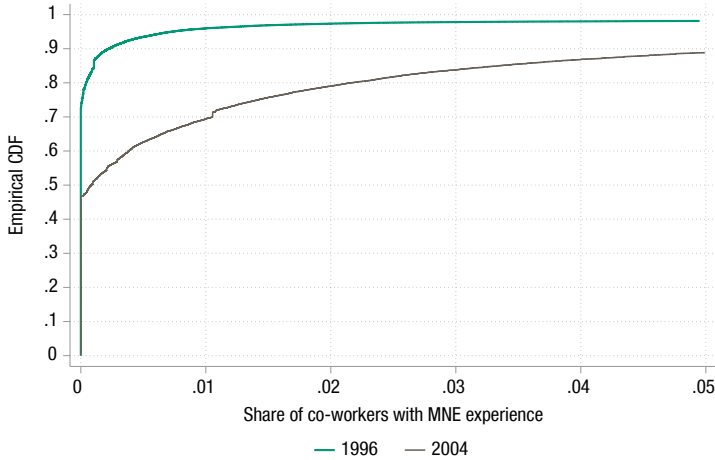
Source: RAIS, BCB.

The diffusion of MNE experience. One of our primary interests is whether MNEs transmit gender norms through labour mobility; that is, as workers move in and out of MNEs, they bring gender policies acquired from MNE experience to domestic employers. Given the statistics in the previous section, the expectation that workers moving from MNEs to domestic firms could help to promote gender equality is significantly diminished. In fact, there is even a risk that workers moving from MNEs might spread poor gender practices to new firms. Nevertheless, Figure 8 shows that MNE experience, while starting at a low baseline, was diffusing rapidly throughout Brazil during this time. In 1996, about 0.5 percent of workers at a typical establishment had previous MNE experience. By 2004, about 2 percent of the workforce at a typical establishment had had MNE experience. Larger establishments tend to have a larger proportion of workers with prior MNE experience; therefore, in 1996, about 1.5 percent of a typical worker's colleagues had MNE experience. By 2004, that number had almost tripled.

Figure 8: Diffusion of MNE experience



Workers were much more exposed to MNE experience in 2004 compared to 1996. In 1996, around three quarters of workers were in an establishment in which no one had MNE experience and almost nobody worked in an establishment where 5 percent of employees had MNE experience (Figure 9). By 2004, more than half the workforce had at least some co-workers with MNE experience. More than one in ten worked in an establishment in which 5 percent of employees had MNE experience.

Figure 9: Empirical CDF of share of co-workers with MNE experience

5. Empirical strategy

This research investigates the role of foreign direct investment and multinational enterprises in affecting gender-related employment outcomes in Brazil. We explore whether workers moving between foreign-owned and Brazilian-owned firms are a means of transferring female-friendly labour practices. That is, when workers leave multinational firms and are rehired at domestic firms, do they bring about equitable gender policy? Our empirical strategy follows the work in Poole (2013). Specifically, we allow a worker's wage to depend on the characteristics of the worker's economic environment – the establishment in which they are employed, as follows:

$$\ln \text{earn}_{ijt} = \gamma_M SM_{jt} + \mu_M SM_{jt} \times 1(\text{Female}_{it}) + \beta_1 X_{it} + \beta_2 Z_{jt} + \varphi_i + \theta_{j(i)} + \delta_t + \varepsilon_{ijt} \quad (1)$$

where i indexes the individual, j indexes the establishment, and t indexes time. The main outcome of interest we explore in this estimation are individual-level log earnings. SM_{jt} refers to the share of the establishment's workforce with previous experience in a multinational establishment. We also include time-varying individual characteristics (X_{it}), time-varying establishment characteristics (Z_{jt}), individual fixed effects (φ_i), establishment fixed effects ($\theta_{j(i)}$), and year dummies (δ_t). Because the sample is restricted to domestically-owned establishments and their employees, it is not subject to the estimation bias in previous research on productivity spillovers – that is, that foreign investment flows to already more productive firms. Finally, in order to explore the impact of these multinational earn spillovers on women

differentially from men, we interact the main variable of interest with a dummy signaling the worker's gender. The main coefficient of interest, μ_M , is identified by within-establishment variation in the fraction of workers with prior MNE experience.¹²

We restrict the estimation sample for both substantive and computational reasons. Importantly, we present results estimated from a 5 percent sample.¹³ Each year of RAIS data has tens of millions of observations; in conjunction with the large number of fixed effects, our estimation strategy is computationally expensive.

In addition to this individual-level analysis, we consider the possibility that establishments that have more MNE experience also hire more women. In particular, we estimate the following establishment-level regression:

$$PctFemale_{jt} = \gamma_M SM_{jt} + \beta_2 Z_{jt} + \theta_j + \varepsilon_{jt} \quad (2)$$

where all notation is as in equation (1). The main outcome of interest we explore in this estimation is the establishment-level share of female employment. As above, identification arises from within-establishment differential changes in the diffusion of multinational experience.¹⁴

6. Results

The movement of workers from multinational to domestic enterprises has relatively small effects on labour market outcomes for women. As shown in Table 2, increasing the share of workers with MNE experience modestly exacerbates the gender earnings gap (although the point estimate is statistically insignificant). Table 3 furthers this evidence with an establishment-level analysis. Across all domestic establishments, those with higher shares of former MNE workers report lower female employment shares. The coefficient estimates themselves are not small, but, scaled by the variation in the fraction of workers with MNE experience, the implied changes in female labour market outcomes are limited. As shown in

¹² The regression attributes differential trends in female earnings to changes in the share of workers with MNE experience. Thus, the estimate of μ_M may capture factors other than a causal relationship between labour mobility and female employment outcomes. For example, imagine the density of urban areas leads MNE experience to diffuse relatively quickly. Imagine further that, during our sample period, the burden of childcare falls faster for women in urban areas, leading to greater entry in labour markets, leading female earnings to decline relative to men. We would observe a negative estimate for μ_M due to increases in FDI, urban labour mobility, and changes in the availability of childcare.

¹³ Specifically, we first create a list of all individuals who ever appear in RAIS between 1996 and 2004. We randomly select one percent of those individuals. The final estimation sample includes the complete work histories for all sampled individuals.

¹⁴ This analysis cannot exclude the possibility that some third factor, e.g. a change in management practices, drives changes in both female and former multinational worker hiring.

Figure 9, roughly 90 percent of workers are employed in a workplace where at most 5 percent of their colleagues have MNE experience ($SM_{it} = 0.05$). Between 1996 and 2004, the average worker saw their share of colleagues with MNE experience increase by 1 percentage point. This would represent minor changes in female earnings gaps and employment. Nevertheless, this result cannot be explained by the simplest version of our conceptual framework.

Table 2: Individual-level regression analysis

Dep. Variable: Log (December Earnings)	
Share of Employees with MNE Experience	-0.180*** (0.030)
Female*Share of Employees with MNE Experience	-0.013 (0.057)
Observations	4,620,945

Sources: RAIS, BCB.

Notes: This table reports coefficients of individual-level log earnings on listed variables plus tenure, age, age-squared, education indicators, private-ownership indicator, and fixed effects for establishment, individual, and year. *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level. Robust standard errors, clustered at the establishment level, are reported in parentheses.

Table 3: Establishment-level regression analysis

Dep. Variable: Share of Female Workers	
Share of Employees with MNE Experience	-0.052*** (0.003)
Observations	16,211,575

Sources: RAIS, BCB.

Notes: This table reports coefficients of establishment-level share of female workers on listed variables plus fixed effects for establishment and year. *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level. Robust standard errors, clustered at the establishment level, are reported in parentheses.

This unexpected and intriguing result opens more questions than it answers. In what follows, we next consider the possibility that the economy-wide effect may vary across broad sectors of the economy. Some sectors of the economy are more female-labour intensive, while others are more skilled-labour or capital intensive. In Table 4, we re-estimate our main individual-level specification (as in equation (1)) across the nine 1-digit ISIC industries in our analysis. By and large, the gender disequalizing effects of former-MNE workers in domestic establishments is wholly driven by the result in the public sector. Given that there is virtually no foreign direct investment in the public sector, all of the former MNE workers are moving from outside the public sector. As policies and practices in the private sector are very different, perhaps this is an explanation for the weak transmission of positive employment practices toward women. Moreover, the public sector is known to be quite rigid in labour regulations and likely does not react to incentives in the same way that the private sector does.

Table 4: Individual-level regression analysis, by broad sector

Dep. Variable: Log (December Earnings)	Agriculture	Mining	Manufact.	Utilities	Construction	Wholesale / Retail	Trans. / Comm.	Finance / Bus.	Public
Share of Employees with MNE Experience	0.064 (0.049)	0.122 (0.408)	-0.035 (0.035)	-0.191* (0.088)	0.205** (0.068)	-0.039 (0.038)	-0.154*** (0.030)	0.058 (0.054)	-1.442*** (0.333)
Female*Share of Employees with MNE Experience	0.046 (0.116)	-0.405 (0.642)	-0.086 (0.051)	0.315 (0.610)	-0.095 (0.156)	-0.080 (0.069)	0.213** (0.069)	0.044 (0.056)	-0.168 (0.516)
Observations	202,196	18,489	841,067	41,275	166,930	672,404	229,359	276,702	2,125,748

Sources: RAIIS, BCB.

Notes: This table reports coefficients of individual-level log earnings on listed variables plus tenure, age, age-squared, education indicators, private-ownership indicator, and fixed effects for establishment, individual, and year. *** denotes significance at the 1% level, ** denotes significance at the 5% level; * denotes significance at the 10% level. Robust standard errors, clustered at the establishment level, are reported in parentheses.

Interestingly, across domestic establishments in the transportation and communication sector, those with larger shares of former MNE workers tend to exhibit lower gender earnings gaps. While our data do not allow us to investigate the exact mechanism, one plausible explanation is the relative advantage that women have in communication-intensive tasks. Perhaps employees at multinational enterprises learn about best practice in sales and customer service, strongly communication-intensive tasks, and bring that knowledge with them to their domestic employment. Given that these tasks are female-oriented, the increase in productivity differentially benefits women.

In fact, just as it is unlikely that policies affect men and women equally, it is also unlikely that the spread of good policy occurs through all workers in the same fashion. Therefore, we next explore the possible heterogeneity in the transfer of policy by the worker's demographic characteristics—female versus male, and managers versus production workers. We hypothesize that women and managers, workers who have the power and motivation to affect change, will be more likely to spread good gender policy and practice. Table 5 reports the main individual-level estimation (as in Table 2), in which the treatment variable is now the share of workers in the establishment who are female and have experience in a multinational enterprise. While the coefficient on the main interaction is still statistically insignificant, it is now positive – offering some potential for the idea that women may be better able to transfer good employment practices for women's empowerment. In fact, though unreported (but available by request), the transportation and communications sector again reports a large, positive, and statistically significant interaction coefficient, suggesting that establishments with larger shares of former MNE workers exhibit lower gender earnings gaps. This effect is also notably larger in magnitude (an even lower gender earnings gap) when we consider only female former MNE workers. Table 6 reports coefficients for a similar analysis for former MNE workers in management positions and the results are qualitatively similar, again pointing to the notion that those workers who may know about good policy are better able to transfer it.

Table 5: Individual-level regression analysis, female switchers

Dependent Variable: Log (December Earnings)

Share of Employees who are Female and with MNE Experience	-0.258*** (0.072)
Female*Share of Employees who are Female and with MNE Experience	0.051 (0.090)
Observations	4,620,945

Sources: RAIS, BCB.

Notes: This table reports coefficients of individual-level log earnings on listed variables plus tenure, age, age-squared, education indicators, private-ownership indicator, and fixed effects for establishment, individual, and year. *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level. Robust standard errors, clustered at the establishment level, are reported in parentheses.

Table 6: Individual-level regression analysis, manager switchers**Dependent Variable: Log (December Earnings)**

Share of Employees who are Managers and with MNE Experience	-0.280** (0.101)
Female*Share of Employees who are Managers and with MNE Experience	0.156 (0.092)
Observations	4,620,945

Sources: RAIS, BCB.

Notes: This table reports coefficients of individual-level log earnings on listed variables plus tenure, age, age-squared, education indicators, private-ownership indicator, and fixed effects for establishment, individual, and year. *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level. Robust standard errors, clustered at the establishment level, are reported in parentheses.

7. Conclusions and policy implications

Foreign investment is an important conduit of external financing for many developing countries and has been shown to significantly reduce poverty by raising average wages (Klein, Aaron, and Hadjimichael, 2001). Given that women comprise the bulk of the world's poor, a natural extension is whether foreign direct investment can promote more gender equal labour market outcomes and female empowerment around the world. This paper investigates the role of foreign direct investment and multinational enterprises in spreading gender equality in Brazil. Specifically, we examine whether labour mobility from multinational to domestic firms can transfer information about gender practices. That is, when workers leave multinational establishments and are rehired at domestic establishments, do they change gender employment outcomes?

Despite the strong theoretical reasoning for female empowerment via multinational activity, the Brazilian data do not support these ideas. A leading explanation may be that multinational firms in Brazil (as in Japan) do not appear particularly progressive in terms of policies and practices toward women. Multinational establishments exhibit larger gender earnings gaps and smaller female employment shares than do otherwise identical domestic establishments. It is then no real surprise to learn that labour mobility from multinational to domestic establishments is not the engine for gender equality proposed at the outset.

High-quality, evidence-based research on this topic will help inform policy in local governments and international organizations to potentially prioritize the expansion of socially-responsible multinational enterprises to contribute and reinforce the advances of women over the last century. Our work emphasizes the need for domestic policies to promote the education and employment of women, through high-quality working conditions and employment protections (i.e., health and safety benefits), and to reduce the barriers for women to access employment in certain occupations and industries. In addition, our findings support a goal of more flexible labour markets to facilitate the transition of workers across firms.

References

- Aguayo-Tellez, Ernesto, Jim Airola, Chinhui Juhn, and Carolina Villegas-Sanchez, (2014). "Did Trade Liberalization Help Women? The Case of Mexico in the 1990s," *Research in Labor Economics*, 38, pp. 1-35.
- Aitken, Brian, Gordon H. Hanson, and Ann E. Harrison (1997). "Spillovers, Foreign Investment, and Export Behavior," *Journal of International Economics* 43, pp 103–132.
- Aitken, Brian, and Ann E. Harrison (1999). "Do Domestic Firms Benefit from Foreign Direct Investment? Evidence from Venezuela" *American Economic Review* 89, pp 605–618.
- Arabsheibani, G. Carneiro and Francisco Henley, Andrew (2003). Gender Wage Differentials in Brazil: Trends over a Turbulent Era. *Policy Research Working Papers*. The World Bank. <https://doi.org/10.1596/1813-9450-3148>.
- Becker, Gary S. (1957). *The Economics of Discrimination*, Chicago: University of Chicago Press.
- Bertrand, Marianne, Claudia Goldin, and Lawrence F. Katz (2010). "Dynamics of the gender gap for young professionals in the financial and corporate sectors." *American economic journal: applied economics* 2(3), pp. 228-55.
- Bloom, Nicholas and John Van Reenen (2010). "Why Do Management Practices Differ Across Firms and Countries?" *Journal of Economic Perspectives*, 24(1), pp. 203-224.
- Chen, Zhihong, Ying Ge, Huiwen Lai, and Chi Wan (2013). "Globalization and gender wage inequality in China." *World Development* 44, pp 256-266.
- Coniglio, Nicola D., and Rezart Hoxhaj (2018). "Global interactions and the 'twin' gender gaps in employment and wages: evidence from Vietnam." *Robert Schuman Centre for Advanced Studies Research Paper* No. RSCAS 18.
- Diebolt, Claude and Faustine Perrin (2013). "From Stagnation to Sustained Growth: The Role of Female Empowerment," *American Economic Review* 103 (3), pp. 545-549.
- Feenstra, Robert C., and Gordon H. Hanson (1997). "Foreign Direct Investment and Relative Wages: Evidence from Mexico's Maquiladoras." *Journal of International Economics* 42 (3), pp. 371–93. [https://doi.org/10.1016/S0022-1996\(96\)01475-4](https://doi.org/10.1016/S0022-1996(96)01475-4).
- Fernandes, Ana M., and Hiau Looi Kee (2020). "Women empowerment, supply-chain linkages and FDI: evidence from Bangladesh." *Transnational Corporations* 27(3), pp. 115-132.
- Fernández Delgado, Karol (2020). "Foreign acquisitions and female employment in manufacturing firms: an empirical analysis for Chile" *Transnational Corporations* 27(3).
- Ferreira Freire Guimarães, Carla Regina, and Joaquim Ramos Silva (2016). "Pay Gap by Gender in the Tourism Industry of Brazil." *Tourism Management* 52, pp. 440–50. <https://doi.org/10.1016/j.tourman.2015.07.003>.
- Goldin, Claudia, Sari Pekkala Kerr, Claudia Olivetti, and Erling Barth (2017). "The expanding gender earnings gap: Evidence from the LEHD-2000 Census." *American Economic Review* 107(5), pp. 110-14.
- Harrison, Ann, and Jason Scorse (2010). "Multinationals and anti-sweatshop activism." *American Economic Review* 100(1), pp. 247-73.
- Helpman, Elhanan, Marc J. Melitz, and Stephen R. Yeaple (2004). "Export versus FDI with heterogeneous firms." *American economic review* 94(1), pp 300-316.

- Hijzen, Alexander, Pedro S. Martins, Thorsten Schank, and Richard Upward (2013). "Foreign-Owned Firms around the World: A Comparative Analysis of Wages and Employment at the Micro-Level." *European Economic Review* 60, pp. 170–88. <https://doi.org/10.1016/j.euroecorev.2013.02.001>.
- Javorcik, Beata Smarzynska (2004). "Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages," *American Economic Review*, 94, pp. 605–627.
- Kee, Hiau Looi (2015). "Local Intermediate Inputs and Shared Supplier Spillovers of Foreign Direct Investment," *Journal of Development Economics*, 112, pp. 56-71.
- Klein, Michael, Carl Aaron, and Bitu Hadjimichael (2001). "Foreign Direct Investment and Poverty Reduction," *World Bank Policy Research Working Paper* No. 2613.
- Kodama, Naomi, Beata S. Javorcik, and Yukiko Abe (2016). "Transplanting Corporate Culture across International Borders: FDI and female employment in Japan." *Research Institute of Economy, Trade and Industry (RIETI) Working Paper*.
- Lai, Yu-Cheng, and Santanu Sarkar (2017). "Gender Equality Legislation and Foreign Direct Investment: Evidence from the Labour Market of Taiwan ROC." *International Journal of Manpower* 38 (2), pp. 160–79. <https://doi.org/10.1108/IJM-08-2015-0133>.
- Magda, Iga, and Katarzyna Salach (2019). "Gender Pay Gap Patterns in Domestic and Foreign-Owned Firms." *IZA Discussion Paper* no. 12453.
- Olcott, George, and Nick Oliver (2014). "The impact of foreign ownership on gender and employment relations in large Japanese companies." *Work, Employment and Society* 28(2), pp. 206-224.
- Olney, William W. (2013). "A race to the bottom? Employment protection and foreign direct investment." *Journal of International Economics* 91(2), pp. 91-203.
- Poole, Jennifer P. (2013). "Knowledge Transfers from Multinational to Domestic Firms: Evidence from Worker Mobility," *Review of Economics and Statistics*, 95(2), pp. 393-406.
- Rendall, Michelle (2013). "Structural Change in Developing Countries: Has It Decreased Gender Inequality?" *World Development* 45, pp. 1–16. <https://doi.org/10.1016/j.worlddev.2012.10.005>.
- Seguino, Stephanie (2000). "The Effects of Structural Change and Economic Liberalisation on Gender Wage Differentials in South Korea and Taiwan." *Cambridge Journal of Economics* 24(4), pp. 437–59. <https://doi.org/10.1093/cje/24.4.437>.
- Sharma, Shruti (2020). "The impact of foreign direct investment on gender inequality in india." *Transnational Corporations* 27(3), pp. 39-60.
- Siegel, Jordan, Lynn Pyun, and B. Y. Cheon (2019). "Multinational firms, labor market discrimination, and the capture of outsider's advantage by exploiting the social divide." *Administrative Science Quarterly* 64 (2), pp. 370-397.
- Sjoholm, Fredrik and Robert E. Lipsey (2006). "Foreign Firms and Indonesian Manufacturing Wages: An Analysis with Panel Data," *Economic Development and Cultural Change*, 55(1), pp. 201-221.

- Stolzenburg, Victor, Marianne Matthee Caro Janse van Rensburg and Carli Bezuidenhout (2020). "Foreign direct investment and gender inequality: evidence from South Africa" *Transnational Corporations* 27(3), pp. 93-114.
- Tang, Heiwai and Yifan Zhang (2017). "Do Multinationals Transfer Culture? Evidence on Female Employment in China." *CESifo Working Paper*, No. 6295.
- Vahter, Priit, and Jaan Masso (2019). "The Contribution of Multinationals to Wage Inequality: Foreign Ownership and the Gender Pay Gap." *Review of World Economics* 155(1), pp. 105–48. <https://doi.org/10.1007/s10290-018-0336-2>.
- Watson, James L (2006). *Golden Arches East: McDonald's in East Asia*, 2nd Edition, Stanford University Press.
- World Bank (2020). *World Development Indicators*.