Patient Zero: Unintended Consequences and Infectious Upgrading

The Effect of Outward Investment Linkages with Europe on Decent Working Conditions in Brazil

Inaugural dissertation submitted by Patrick Wagner in fulfillment of the requirements for the degree of Doctor rerum socialium at the Faculty of Business, Economics and Social Sciences of the University of Bern.

Submitted by
Patrick Wagner
Glendale, California, USA

2021

Copyright Page

The faculty accepted this work as dissertation on 15 April, 2021 at the request of the two advisors Prof. Dr. Damian Raess and Prof. Dr. Manfred Elsig, without wishing to take a position on the views presented therein.

Dedication

To Mom, Dad, and Patnini. In loving memory of Travis and Uncle John.

Abstract

Over the last two decades there has been a major shift in the global political economy. In that time, the BRICs asserted themselves as champions and drivers of global economic integration. But what does this new found political economic prominence mean for workers and working conditions in developing countries? While there is already a sizable body of research on the impact of trade and North to South investment flows on labor standards, the greatly increased flow of South to North outward investments and its effect on working conditions in the investing countries remains understudied. Globalization pessimists would contend that this new phase of international economic integration would harm workers as it decreases their overall bargaining power in home countries and brings low road practices to relatively high-standard Northern markets. More optimistic accounts might predict there is the possibility of a net gain for workers, as increasing exposure to high road labor practices and stakeholder monitoring in developed countries drive upgrading of practices in emerging market multinationals (EMNEs). This thesis, as part of the BRICS Globalization Project, investigates for the first time whether South to North investments are associated with improving or degrading conditions for home-country workers.

In doing so, I propose an "investing-up" effect whereby high standard working conditions diffuse back from European hosts to developing country locations,

driven by compliance and standardization effects. To test this proposition, I construct a novel database that draws on numerous governmental, academic, and private sector data sources and which maps outward investment linkages with Europe and decent working conditions by economic sector in Brazil's 27 states and 5,563 municipalities. Using this novel data, this thesis tests whether direct investment in Europe by Brazilian companies leads to the introduction of decent working conditions between the years 2000 and 2015 and further explores how these practices spread within sectors and between municipalities in Brazil in the post-investment period. The empirical results provide strong support for the investing-up effect across a range of decent working conditions and for subsequent diffusion between Brazilian municipalities and states using a mixture of panel data analysis and spatial econometrics. Moreover, I supplement the econometric results with text analysis of thousands of union and employer organization press releases and blog posts. Using sentiment analysis and topic modeling the objective econometric results are bolstered by a study of the subjective experience of Brazilian workers as communicated through their representatives associated with the outwardly invested Brazilian multinationals in the pre- and post-investment periods. The text data is also leveraged to provide qualitative evidence for the causal mechanisms proposed in the theory. Overall, the results suggest that economic integration with high-standard developed countries can act as a powerful mechanism for labor standard improvements and more equitable development in developing countries.

Acknowledgements

The list of people I would like to or need to thank is long and probably beyond my recollection. But, to start, I would like to thank my parents for their love and support. Life has not always been easy for me and I frequently have made it harder on myself than it needed to be, yet they were always there, ready to show me love whenever I was willing to accept it (and even sometimes when I wasn't).

On the professional side, I owe a debt of gratitude to my supervisor Damian Raess. Thank you, firstly, for giving me the opportunity to join this project and pursue my PhD. This is an opportunity that, 10 years ago, I would not have believed was possible and your support throughout has been invaluable. I've learned so much from you about best practices in conducting, writing, and submitting research; working collaboratively; as well as aspects of qualitative political economy research that I simply would not have learned, otherwise. On the topic of methods, I would also like to thank Octavio Fernandez-Amador for the talks on econometrics and economic research and for always pushing me and the other PhDs to improve our work. Though the feedback from you and Doris could be frightening at times, it was always so valuable. I'd also like to thank Manfred Elsig for giving the opportunity to teach and for his feedback on my work. You and Damian both are always pushing researchers from every discipline to take seriously the necessity of grounding our work in the academic

and real worlds and to read more broadly (and thoroughly).

In Brazil, I cannot express enough my gratitude to Luis, Celi, and the whole team working tirelessly at DIEESE. I wish you all health and safety and pray that Brazil recovers from the concurrent health and political crises. I would also like to thank my good friends Ricardo Jacques and Priscila for the weekly talks while I was there and for giving me insight into aspects of the Brazilian workers' movement, political life, and culture that I might have missed out on, otherwise.

To Achim, Sean, and Sebastian, I've enjoyed our meetings for coffee, food, or just to vent, as well as the time we got to spend planning seminars and the like. It can be difficult to open up but you guys helped me feel comfortable at WTI and made PhD life so much more bearable.

Special thanks are due also to my previous supervisors, Matthew Shugart and Michael Plouffe. Matthew first introduced me to research when I was an undergrad and helped set me on this path. His influence on me cannot be overstated and I will always remember the long nights poring over data on UK parliamentary members and committees fondly. Michael helped me realize that I have value as a researcher and that it is not just something I can look at with respect but, rather, is something to which I can contribute. He believed in me during a very difficult period of my life and helped me achieve my first publication within the first two years of my PhD studies, which was no small feat.

I would also like to thank my patni, Advaitha. This chapter of my life has been tough but it was made infinitely more beautiful with you. You've helped me grow and I am a better man for knowing you. This is just incontestable.

Lastly, to my sponsor, Lee, and all of my friends in recovery in Bern, Zurich, London, Davis, Ventura County, Dublin, and LA, the life I have is thanks to

you and all those that came before us. To the rest of my friends, those that stuck with me through everything, I love you all.

Contents

List of Figures

List of Tables

Chapter 1

Introduction

The debate over the consequences of globalization for workers continues unabated. Early academic contributions attempted to establish irrefutably whether economic openness was cause for concern or celebration with regard to labor rights. Public discourse had a similar "feast or famine" tone, predicting that economic growth and productivity enhancements associated with economic openness would broadly improve quality of life or that footloose capital would pit workers around the world against one another in a catastrophic race to the bottom. The predicted consequences for workers in developing countries were especially dire, particularly following exposés of egregious abuses in Latin America, Africa, and South and Southeast Asia.

The actual impact of globalization has proven to be far more nuanced and complicated with research finding that outcomes like labor rights depend to a large degree on a variety of influential factors. The type of flow (trade vs. investment) has proven to be important as exports from developing countries have frequently involved arms-length contracting by multinationals from developed countries in the past and come from relatively low-skill sectors that are more likely to employ abusive labor practices while foreign investment involves direct control by the same reputation conscious multinationals who often bring with

them wages and practices that are better than those provided by local companies. However, the impact of flow-type also depends on their directionality (exports vs. imports, outward vs. inward foreign direct investment), which is associated with the level of development of the partner countries (developed vs. developing), as these characteristics imply exposure to different consumer preferences as well as the presence (or lack thereof) of activist groups and stakeholders and varying degrees of regulation and enforcement. Both flow and direction also directly intertwine with two other characteristics, namely, economic sector and type of labor outcome. Certain sectors bring with them higher levels of union organization, as well as different levels of transparency and greater ability to markup prices, all of which can interact with trade and investment flows in their impact on labor rights and working conditions. Finally, the type of condition, whether collective or individual, in law or in practice, has a role in determining whether the effect of either trade or investment is positive or negative. Exports arguably would have more of an impact on in-law, or *de jure*, practices than foreign investment, due to the role of importing country government interference through generalized system of preferences and the relatively low cost of unenforced improvements in on-the-books labor regulations. Foreign direct investment would conversely have less of an impact on regulations and more of an impact on *de facto* working conditions, as it involves direct control of facilities under existing regulations and likely would not lead to the capture of a significant enough proportion of an internal market to lead to regulatory changes at the national level.

Depending on the precise confluence of these (and even still other, such as institutional) factors, the effects of globalization on labor rights were, in some cases, found to be decidedly negative, confirming the fears of globalization pessimists while, in others, globalization appeared to be largely welfare enhancing,

supporting the claims of globalization optimists. Others emphasized that the effects of globalization, when controlling for domestic institutions and economic trends, are null, though this perspective may be fading as the results from more narrowly specified globalization-nexus research questions seem to be consistently supporting some type of effect, whether upgrading or degrading.

Today, globalization and its consequences continue to occupy public and academic attention and, as the duration of this attention increases, so does the complexity of the phenomenon. Before the onset of the (currently ongoing) pandemic, one of the most novel contributions to the complexity of this topic was the rapid economic growth in many developing countries. As these countries experienced unprecedented growth from 2000 on, many also drastically increased their international presence. By 2015, outward foreign direct investment (OFDI) from developing countries made up nearly 20% of global OFDI flows, up from only 4% in 1995 (Perea and Stephenson 2017). The indisputable leaders of this group were the BRICS countries and, while China has certainly led the group in outward investment most recently, Brazil has been a consistent and significant investor, especially in certain regions and in the first decade of the 2000s.

As Brazil and other developing countries transitioned from passive non-agents (or even victims) in the evolution of economic globalization, established knowledge about what are or will be the distributive effects of economic integration are again being questioned. Most existing theory and empirical evidence regarding the effects of trade or investment on social outcomes, like labor rights, consider flows dominated by the Global North, for example, from Europe, the USA, or Japan. While this research has become more nuanced over time, incorporating fine-grained details that allow a more realistic interpretation of globalization's effect on labor outcomes, they have thus far failed to incorporate the last 20 years of growth in economic power in the so-called Global South.

Globalization pessimists likely fear that, given the well-known concept of the 'race-to-the-bottom' hypothesis, growth in outward investment flows from the Global South can only portend further degradation in labor standards worldwide. Whether the recipient countries are developed, developing, or among the least developed, capital flows from low or middle-income countries can only introduce a new source of competition that undermines labor's power to resist and bargain from the next generation of multinationals who will have learned from their experience maturing during the heyday of inward FDI (IFDI) in their home countries. Optimists would, on the other hand, likely argue that productivity increases as well as exposure to high-road labor practices and new pressures from more conscious consumers and activists in host countries will lead to social upgrading. Both perspectives would be well-grounded in existing theoretical and empirical developments, especially considering the effect is most likely highly-dependent on the institutional characteristics of the host countries and the economic sector in which the investment was occurring. In addition to failing to account for the growing role of developing countries in the global economy, much of the existing research has failed to take into consideration how the effect of increasing trade or investment flows on labor outcomes is spatially dependent *within* active, globalizing countries.

The purpose of this thesis is to tackle much of this uncertainty and, for the first time, judge what are the effects of South to North investment on labor outcomes. In particular it focuses on the consequences for working conditions in Brazil, one of the BRICS countries. Since 2000, outward foreign direct investment (OFDI) from the BRICS (Brazil, Russia, India, China, and South Africa) increased by a factor of nearly 20, representing over 30% of global FDI stocks by 2015. Nearly half of these investments went to developed economies and one third went just to the EU (UNCTAD 2013, 2015). These South to North

investment linkages represent a relatively novel channel for a variety of potential outcomes including productivity increases, process and product innovation, and resource acquisition (Breinbauer et al. 2019). One unstudied impact of South-North investments is whether and how it affects labor outcomes. While there is already a sizable body of research on the impact of investment in emerging economies on collective labor rights (*for example* Klaver and Trebilcock 2011; Mosley and Uno 2007; Olney 2013), the impact of investment *from* developing countries *to* developed countries on labor standards in the investing country remains unexplored. Popular discourse surrounding investment by emerging market multinational enterprises (EMNEs) has largely focused on labor abuses in Chinese subsidiaries or worsening inequality in countries like Brazil or renewed fears of the proverbial "race to the bottom." But, these concerns do not necessarily reflect the reality of South-North investment and, arguably, the political economic consequences are variegated and context-dependent. The practical impacts of developing country FDI in developed countries are likely not unidirectionally liberalizing and I argue can act as a channel for social upgrading in working conditions and improvements in worker well-being in the investor's home country. Moreover, this can extend beyond the more commonly studied collective labor rights outcomes, to individual labor rights and so-called decent work outcomes.

Decent work is defined by the ILO as employment that is not only productive and delivers a fair income but that includes job security, humane working hours, social security and supplemental benefits (ILO 2009a). While media and popular attention are most often focused on the most egregious abuses such as child or slave labor or infringement of workers' right to organize, the ability of workers in emerging economies to live and work decently has grown in importance as middle classes in developing countries expanded and the focus of interna-

tional organizations and national governments shifted (Guérin and Srivastava 2012). Recently, UNCTAD[1], UNDP[2], Eurofund[3], and NGOs such as Solidar Suisse[4] have joined the ILO in stressing the importance of access to decent work in creating fair economic globalization as part of the Sustainable Development Goals (Ribeiro et al. 2019). While the work of these organizations and private initiatives (such as the growing CSR movement among Brazilian companies, *see* Mayer and Pickles 2011; Pureza and Lee 2020) certainly can contribute to the provision of decent work conditions, there are potentially other, less explicit channels through which improvements can occur. I propose that one such channel is exposure to relatively higher standard practices in European investment locations, whereby Brazilian firms will adopt better practices regarding working conditions. This can occur via complimentary processes of compliance with prevailing regulations in European countries and socialization of subsidiaries to European norms and concepts concerning worker relations which are then reverse-diffused to the headquarters and facilities in Brazil.

This thesis also provides insight into how globalization's effects on labor outcomes are distributed within a country through effects on labor demand competition and union activity. Existing research has largely treated distributional effects as a theoretical assumption or simply ignored them altogether, opting instead to focus on aggregate developments at the national level and making informed interpretations of the results. However, it is of arguably equal interest to take specific account of whether improvements or degradation in labor outcomes occur in isolation within a country following globalization events, dragging up (or down, as the case may be) aggregate statistics among relatively unchanging

[1] https://stats.unctad.org/Dgff2016/prosperity/goal8/index.html

[2] https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-8-decent-work-and-economic-growth.html

[3] https://www.eurofound.europa.eu/observatories/eurwork/industrial-relations-dictionary/decent-work

[4] https://www.solidar.ch/en/decent-work

conditions in otherwise unaffected areas or whether developments have run-on effects that disseminate from the precise locations of internationalized firms.

Lastly, I also consider whether improvements in labor conditions are reflected in improvements in worker perceptions of their internationalized employers. The concept of decent work is arguably as much a subjective experience as it is objective. Improvements in statistical measures of decent work may not have sufficient impact on individual's lives leading to the question of whether anything had improved at all. Brazil's unions are active and vocal, publishing reports, blogs, and work-related news on their web sites that frequently highlight individual cases of abuse of workers and workers' rights by employers brought by individual or groups of employees, national and international campaigns, and recount the evolution of conditions at specific locations. These provide a rich source of subjective material on how workers perceive their employers as communicated by their representatives. Labor union press can also be combined with reporting from employer union reports for evidence supporting or disproving the existence of specific causal mechanisms. This thesis leverages this rich documentary evidence to this end, as well.

The thesis continues with *Chapter 2*, which provides an overview of research on the globalization-labor nexus, emerging and Brazilian multinationals, decent work and labor in Brazil and European countries, as well as an elaboration of the theoretical mechanisms behind my primary proposition. This is followed by description of the data used and its sources.

Chapter 3 examines the relationship between Brazilian outward investment linkages with Europe and provision of decent work outcomes in host-country locations. Based on empirical analysis conducted at multiple levels of aggregation and with multiple individual decent work indicators, the main conclusion is that South-to-North investment linkages are associated with backwards-diffusion of

labor practices from the host to home locations. Moreover, the study also shows that there is a variegated effect when disaggregating the data by sector. The results from this chapter are shown to be robust to multiple model specifications and levels of aggregation.

Chapter 4 expands the theory developed in the second chapter by incorporating a spatial component in order to test whether the improvements associated with outward investment linkages in Chapter 3 have broader spillover effects. The primary question is whether improvements from the first stage, international diffusion of labor standards have secondary subnational diffusive effects, in the sense that there is a positive spillover of social upgrading or whether spatial dependence actually leads to increasing inequality, in effect contributing to the literature on winners vs. losers in globalization but also to the diffusion literature which has not (to my knowledge) yet tested this form of multi-stage diffusion. The chapter utilizes spatial econometrics, again, with multiple model specifications in order to test how labor outcomes in neighboring municipalities are affected by improvements nearby. The analysis in this chapter also investigates how the skill-level and other sector-specific characteristics (informality and worker mobility) interact to mitigate the spillover of decent working conditions. The results indicate while there is an overall positive spillover of decent working conditions, this dependence is highly dependent on sectoral differences in worker skill profile. There is also a significant impact of informality within low-skill sectors and mobility in high-skill sectors which conditions the spatial dependence found earlier in the chapter.

Chapter 5 presents text analysis which is used to corroborate the econometric analysis in the previous two chapters as well as test for evidence that can support the proposed causal mechanisms. The text data is scraped from Brazilian labor and employer union websites reporting on various aspects of

the Brazilian multinationals identified in the process of gathering the data used in the statistical analysis. Using term frequency, word correlation, and sentiment analyses, the results indicate that the subjective experience of workers substantiates the statistical evidence in the previous two empirical chapters. Then, using filtering functions to isolate stories about Brazilian multinationals operating in European countries the analysis proceeds with an exploration for causal mechanisms buried in the thousands of articles scraped from the Brazilian web pages. Evidence suggests that Brazilian unions are using linkages with their European peers established through their employers acquisitions to construct union networks in order to pressure the multinationals for better working conditions and improved social dialogue. Moreover, the employer union texts support the idea that Brazilian multinationals are engaging in a form of "deep integration" which is exposing them to alternative practices and conceptions of the employment relationship as well as previously non-existent consumer-based pressures to upgrade their labor practices at home. Though these latter results are arguably circumstantial, they do support the idea that the employers are being exposed to novel ideas and may be incorporating them in their corporate culture through the influence of subsidiaries.

The empirical contribution of this thesis establishes the positive impact that host countries can have on the home-countries of EMNEs through international labor activity as well as diffusion through compliance and socialization. In a larger sense, the results of these analyses may provide some hope regarding the effects that this latest period of globalization may have on labor outcomes in fast-developing emerging economies. In the wake of the global financial crisis, when developed countries were starved for capital and the largest emerging economies, the BRICS, were in a particularly advantageous position, the reversed relationship vis a vis globalization provided novel opportunities for social

upgrading. In the current climate, with the next chapter in the global economy uncertain, there may be new (or old) champions from the Global South who find themselves on the cusp of newly sped up economic growth, looking to spread their investment further abroad, which could lead to similar upgrading.

Chapter 2

Literature, Theory, & Data

2.1 Literature & Theory

This chapter proceeds first by reviewing facts and literature regarding the globalization-labor nexus; multinationals from emerging economies (EMNEs) and, specifically, from Brazil; and important characteristics regarding labor in Brazil and Europe and the concept of decent work, more generally. The reviewed facts and literature are then brought together in the final section which proposes the main theoretical mechanisms driving the diffusion of better working conditions from host to home countries. Finally, the chapter concludes by describing the data that has been constructed to test the hypothesis derived from the literature and theory in this chapter, as well as the data generating process.

2.1.1 Globalization-Labor Nexus

Scholars, politicians, and the public have debated for decades whether globalization can help or ultimately will harm the rights and interests of workers in the Global South. Many are by now familiar with the 'race to the bottom' concept. According to this line of thought, globalization applies liberalizing

pressures on labor market institutions, workers, and workers' representatives by allowing free, transnational movement of capital and encouraging international competition, leading to competitive labor market deregulation in an effort to attract investment or gain price advantages over export competitors (Chan 2003; Mosley 2011a). The evidence for this competitive lowering of standards, however, is mixed (*see* Mosley and Uno 2007; Mosley 2011b; Davies and Vadlamannati 2013). In fact, there is another body of literature that proposes a (frequently conditional) 'race to the top,' which can occur, for example, through normative socialization between high and low standard markets (Vadlamannati 2015) or a combination of consumer preferences and leveraging purchasing power and market access by developed country retailers (Distelhorst and Locke 2018).

As these conflicting views demonstrate, the effects of globalization on labor outcomes are frequently variegated. This has led many researchers to seek out ways in which they can capture some aspect of this complexity. Some have moved beyond aggregate concepts of global economic flows in the form of trade or foreign investment and labor-related outcomes. Mosley and Uno (2007) and Mosley (2011a) argue that arms-length contracting and FDI should lead to very different results, largely stemming from differences in the complexity in the structure of incentives. In a direct investment context, MNEs from developed countries have an incentive to invest in their host-country workforce in order to ensure better skill acquisition and higher quality products and to avoid negative exposure in developed consumer markets whereas arms-length contracting will follow the familiar race to the bottom argument as developing countries seek to make themselves attractive, low-cost options for upstream production or service provision. Ronconi (2012) presents evidence that supports Mosley's argument using fine-grained data from Latin America, finding that increasing inward FDI flows increase enforcement of labor regulations whereas increasing trade flows

lead to reductions.

Another approach emphasizes the importance of with whom countries are economic partners, rather than just simply the total amount of trade or investment in which a country is involved. One highly influential paper, Greenhill et al. (2009), adapts Vogel's concept of the California Effect (1997). Originally, Vogel proposed that large, powerful markets with high environmental standards can have a broad upgrading impact on importers' standards. The results supported this proposition, finding that California's more stringent environmental regulations forced auto importers to the US to standardize their products regardless of which state they ultimately imported to, thanks to California's large consumer base. Greenhill et al. then applied the same logic to the effect of international trade between low and high-income countries on labor rights. They argued that import destinations with high purchasing power, concerned consumers, and influential, coalesced interest groups can leverage their consumers' purchasing power to force regulatory upgrading in low-income exporter countries. The results supported the hypothesis, though more for *de jure* than *de facto* labor standards.

Adolph et al. (2017a) propose a complimentary Shanghai Effect in which, as developed countries decreased their consumption of goods imported from Africa, China began to purchase more of the slack exports, removing incentives for regulatory upgrading and leading to a small depressing effect on labor rights, continent-wide, and a stronger effect for some countries. Malesky and Mosley (2018) further refine this 'trading up' (or 'trading down') literature, conditioning the established relationship between labor outcomes and trade flows from developing to developed countries with inter-firm heterogeneity, characterized by the degree of cross-market differences in markups of MNE's products.

One drawback of this earlier research is that it frequently relegates devel-

oping countries to exporters of primary or intermediate goods and recipients of direct investment from developed countries. Yet, as the leading emerging economies have grown over the last two decades, their economies evolved away from exporting primary products or low-skill manufactures and their largest and most productive firms became significant outward investors. Many of these EMNEs, who started investing regionally and into other developing countries, have begun investing in countries in the Global North, often in pursuit of intangible assets such as brand names and technological and productive expertise. As of yet, with rare exception (*see, for example* Aguzzoli and Geary 2014; Raess 2020a,b), little to no research has been conducted on what effect these knowledge-seeking South to North investments have on labor, either in the host or home countries. Based on the existing labor-globalization nexus research, these investment linkages are expected to provide channels through which standards can be transmitted and practices affected but understanding precisely how or why requires reviewing existing research on the EMNEs involved in these investments.

2.1.2 Emerging and Brazilian Multinationals

Investment by EMNEs in developed countries is, generally speaking, a novel phenomenon. It is understandable, then, that there is not yet any research on what effect these investments might have on labor standards. Much of the research that has been conducted has focused on the factors that influence the location choice of EMNEs in developed countries (Li et al. 2018), their productivity (Sanfilippo 2013), how they interact with their host locations (Giuliani et al. 2014), and whether their behavior differs substantially from that of traditional MNEs from developed countries (Ramamurti 2012).

While some question whether multinationals from emerging markets really

differ significantly from developed country MNEs (e.g. Cuervo-Cazurra and Ramamurti 2014), there is a growing literature that argues that, in fact, they do. Of these, many, such as Rugman (2009), Fiaschi et al. (2015), and Sanfilippo (2015), state that EMNEs differ from developed country MNEs (DMNEs) in that they lack firm-specific advantages and instead rely mostly on home country-specific advantages during their process of internationalization. Traditionally, the concept of firm-specific advantages is built on the theory of internalization (Caves and Caves 1996) and the eclectic paradigm (Dunning 1993). Both argue that one of the determinants of whether a firm chooses to invest abroad is the possession of firm-specific advantages that can be leveraged for a competitive edge in foreign markets, leading to asset-*exploiting* outward investment motivations. EMNEs on the other hand, lacking these advantages, initially rely on country-specific advantages such as low production costs and state support as they seek market access for exports or early-stage FDI in other emerging economies (Ramamurti 2009; Fleury and Fleury 2016). Then, driven by the desire to internationalize further, EMNEs continue their expansion beyond their home regions searching for ways to become more competitive i.e. to obtain firm-specific advantages, for example, through mergers and acquisitions (M&As) of producers in developed countries that already possess knowledge related to more efficient or otherwise superior production processes (Meyer 2015; Fleury and Fleury 2016).

These asset-*exploring* motivations appear to be driving a continued wave of M&As in Europe and elsewhere in the "Global North" (Zeng and Eastin 2012; Nair et al. 2018). This has been especially true following the Global Financial Crisis and prolonged debt and Euro crises. Developed economies, and especially those of Europe, became capital hungry as a result of these successive crises and developing countries, many of which recovered at a much more rapid pace (Carrasco and Williams 2012), transformed into invaluable sources of in-

ward investment for industrialized countries, leading to considerable growth in FDI inflows which "often took the form of takeovers." (Breinbauer et al. 2019, p.52). Indeed, following the 2008 financial crisis and Brazil's rapid recovery[1], many Brazilian muiltinationals pursued long-term strategies to maintain growth in foreign markets (Abreu Campanario et al. 2012) while investment from developed countries struggled to recover (Poulsen and Hufbauer 2013). While there were some divestments in the form of capital repatriation and intra-company loans by Brazilian multinationals in the immediate fallout from the GFC, the FDC Transnationality Report from 2011 indicates that there were few exits or production slowdowns as a result of the crisis (Cretoiu et al. 2011).

So, lacking firm-specific advantages, EMNEs go further abroad, seeking out advantageous practices and processes that may help them become more competitive and expand the boundaries of available markets. In the specific case of multinationals from Brazil, Fleury and Fleury (2011) identify a unique advantage that is particularly helpful in this pursuit, which can arguably be extrapolated to many EMNEs more generally. This is adaptability, or what Coutinho et al. (2008) simply call "survival." This advantageous characteristic is the result of extended periods of political and economic instability which, in Brazil, occurred frequently from the mid-1980s on. Many of Brazil's successful firms had to endure these tumultuous periods which deserve a brief recounting.

After the fall of the dictatorship in 1985, the Brazilian government tried unsuccessfully to spur economic development by trying to attract FDI from de-

[1]According to Carrasco and Williams (2012), Brazil only experienced a temporary disruption as a result of the Global Financial Crisis. Though the Brazilian government did have to provide a stimulus package, it was only 1.5% of GDP (Knowledge@Wharton 2009). Brazil fared so well for a number of reasons, including limited access to US securities markets (thanks to reforms that started under President Cardoso); having only a single financial regulator in the form of Banco Central do Brasil which could efficiently supervise all aspects of the banking sector (contrary to the US and other countries)(Mesquita and Torós 2010); and enjoying low unemployment and less trade dependence on developed markets, which meant the consumer base for Brazilian goods was still relatively healthy in terms of purchasing power (Knowledge@Wharton 2009).

veloped countries, hoping for technological spillovers along with job creation. But, most developed country multinationals (DMNEs) conformed their productive strategies to take advantage of the abundant unskilled labor pool migrating from Brazil's rural areas, leading instead to a cycle of technological devolution and stagnation. In addition, numerous other modernizing projects in this early period failed for a number of reasons, including lack of foresight, unforeseen market changes, and protectionist trade policies including a government program intended to encourage exports which "had huge negative repercussions for... all things 'Made in Brazil'" due to their poor quality (Fleury and Fleury 2011, p.162).

In the early 1990s, the government again embarked on an ambitious plan "to improve international competition, deregulate trade and achieve... improvements in competitiveness, ...skills and product quality" (Fleury and Humphrey 1993, p.14). Unfortunately, these plans not only failed to stabilize the economy but inflation skyrocketed, reaching 2,781% by 1993. The Real Plan, the design of which was led by then-Minister of Finance Fernando Henrique Cardoso (who also later became President), did finally manage to control inflation in the mid 1990s, but was joined by ambitious plans for opening the Brazilian economy, as well. What followed was a massive influx of FDI from developed country MNEs resulting in Brazil having "the lowest ratio of local to foreign capital ownership" with "405... of the 500 largest companies in the world [having] operations [there]" (Ferraz et al. 1999, p.17; Matesco and Hasenclever 2000, p.161). The resulting increase in domestic competition further challenged Brazilian companies who were recovering from the previous decade while simultaneously weathering exchange rate and debt crises. Many local companies responded by looking outside of Brazil, either for less competitive markets with low barriers to entry, such as in their neighboring Mercosur partner countries (Misoczky and Imasato

2014), or for new sources of knowledge and competences in Europe, Canada, or the United States (Cui et al. 2014). The constant instability that the surviving, internationalizing Brazilian (or other emerging country) firms experienced produced an extraordinary form of adaptability and "active waiting" making them particularly well-suited to identifying opportunities for advancement and then rapidly incorporating them into their corporate strategy and practices.

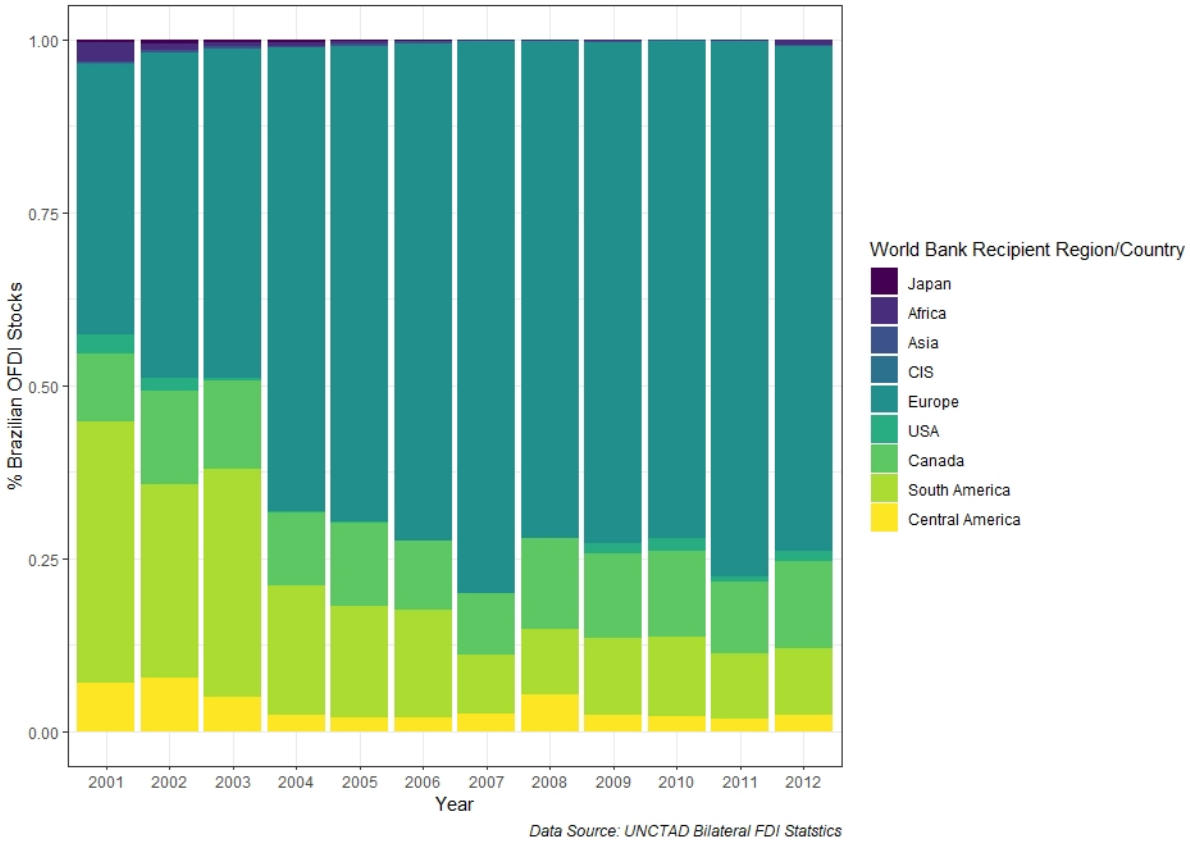
As part of this adaptive mode of operation, Fleury and Fleury (2011) also find that Brazilian MNE subsidiaries report having a high degree of influence over practices adopted by their headquarters in Brazil, including in the areas of human resources management and labor practices. Giuliani et al. (2014) concur and report similar findings for EMNEs more generally operating in Europe. They find that EMNEs operating in Europe are able to learn relatively quickly from the local context in which their recent acquisitions are situated. Their results indicate that EMNE subsidiaries in Germany and Italy are more deeply embedded in their local institutional context, learn more from that local context, and are more influential within their broader corporate networks than are comparable subsidiaries of traditional MNEs from developed countries. Rugman (2009) also finds that EMNEs that are actively seeking firm-specific advantages through acquisitions in advanced economies tend to disseminate them company-wide, rather than piecemeal in certain parts of the corporate network, as some might argue.

Moreover, Zhang and Edwards (2007) and Zhang et al. (2008) find that while traditional MNE HR practices are headquarter-dominant, the opposite is often true in EMNEs. They ascribe this to, at least in part, integration of best practices learned from the firms' internationalization with the intent of achieving economies of scale and scope (Festing and Eidems 2011). Yet, Mellahi et al. (2016) argue otherwise, finding that it is actually a desire to appear legitimate in

the eyes of developed country competitors and consumers that drives adoption and standardization of practices throughout the corporate network of Brazilian (and, arguably, other emerging country) multinationals. These results become even more important in light of the fact that stocks of Brazilian outward investment has greatly favored European markets over those in Latin America, Asia, or elsewhere since 2004, as illustrated in Figure 2.1, which displays the percentage of Brazilian outward FDI stocks in different regions of the world (*see also* Arbix and Caseiro 2012b). Indeed, by 2010, the EU had become the largest recipient of Brazilian OFDI (Amal and Kegel 2012) in terms of flows, as well, and Brazil was the largest investor in the EU of the BRICs with over 67.5 billion Euros in stock FDI (though they have since been largely overtaken by Chinese investment) (Nölke 2014).

I argue that the idiosyncrasies of EMNEs in general, and BMNEs in particular, among the larger population of multinationals, means they are more highly influenced by the local context in which their newly acquired subsidiaries are situated, especially when operating in developed countries. They approach their acquisitions in Europe as opportunities from which to learn best practices that can then be leveraged for firm specific advantages, making them more competitive at home and abroad (Arbix and Caseiro 2012a) as well as helping them to achieve legitimacy in their host-countries. Furthermore, Brazilian MNEs are exposed to local employer networks and institutions in Europe which seek to socialize local enterprises to a holistic conceptualization of society in which what is good for the worker is good for the business and vice versa (Martin and Swank 2012). Some, such as host-country unions and worker representatives, fear shutdowns and job cuts which may be justified in light of experience with American and other non-European investors (Emons 2019; Raess 2020b), but many EMNEs are keen to acquire knowledge and know-how through partnership-style

Figure 2.1: Distribution of Brazilian OFDI Stocks 2001-2012



M&As with central, knowledgeable companies in mature economies (Breinbauer et al. 2019, p.67). But, how does this receptiveness, adaptability, and deep integration impact labor practices within the corporate network of a Brazilian MNE?

2.1.3 Decent Work & Labor in Brazil & Europe

According to the logic of Giuliani et al. (2014) and others, exposure to the norms of decent treatment of workers, and the benefits they provide to the businesses themselves, ought to influence treatment of workers throughout the network of invested Brazilian enterprises. Moreover, there are problems endemic to the labor market in Brazil, which should make decent work condition implementation advantageous to the multinationals in addition to their employees. Practices such as fewer work hours and provision of supplemental benefits can enhance labor productivity and worker retention can enhance a firm's stock of human capital, further improving productivity and efficiency, allowing Brazilian multinationals to better compete with the developed multinationals and domestically oriented firms back home. Although it could be argued that these companies would try to change regulations at home to force competitors to play by the more stringent rules they would be adopting and thereby maximizing potential benefits, these companies, despite being relatively large and influential, lack the ability to force changes in labor law in Brazil due to their being relatively few in number and the labor laws in Brazil being stringent and difficult to change.

Until very recently, Brazil was considered to be one of the least flexible labor markets in the world (Almeida and Carneiro 2009a; Feierherd 2017; Ulyssea and Ponczek 2018). The *Consolidação das Leis do Trabalho* (or CLT), largely unchanged since 1943 (until the recent *reforma trabalhista*), is the central regula-

tory repository governing types of employment, permissible working conditions, and terms for termination. Formal employees are required by the CLT to have a work card (*Carteira de Trabalho*) which is signed by the employer and contains the employee's work history. By virtue of having this signed card, each worker is officially entitled to the full range of rights and benefits ascribed in the CLT, including 13th month bonus pay, unemployment insurance, severance payment, paid vacation and overtime premium pay. The 1988 Constitution expanded these rights by increasing severance payments, reducing the maximum work week from 48 to 44 hours, and introducing other mandatory benefits including social security coverage and transportation benefits. Employers also not only have to pay severance and unemployment but they have to give their employees at least one month notification of termination and allow the worker-to-be-terminated time *on the job* to look for a new position.

These accumulated employment-related costs introduce incentives to shirk legally-mandated responsibilities. This arguably can lead to a tension between employers and their employees as the former seek any opportunity to withhold the latter's legally guaranteed benefits. Harter et al. (2013) find that as worker satisfaction decreases, so too will business outcomes, such as productivity, profit, and employee turnover which, in the Brazilian context, appears to contribute to a vicious cycle of low productivity and poor treatment in a relatively high cost labor market. As a result, there appears to be a stalemate between workers and employers with a lack of identification between the two groups that has produced persistent productivity stagnation, high turnover, and low levels of human capital accumulation (Aguiar do Monte 2012). While the regulations on the books remain sticky, individual firms still have room to maneuver as enforcement is still limited, meaning the floor for *de facto* labor practices is still quite low, and improvements might still be relatively less costly if they mean higher labor

productivity due to a more engaged and capable work force. This relatively low *de facto* regulatory and socio-normative floor allows for greater room for growth and greater probability of improvements in practices and, in addition, stakeholder expectations which can help drive socially beneficial changes (Zeng and Eastin 2012).

Recent surveys have indicated that, in general, workers in Brazil do not identify with their place of employment. They cite a lack of work-life balance, supplemental benefits, and humane treatment as areas in which they would like to see improvements. Lack of identification leads to degraded employee satisfaction which contributes to lower levels of productivity and higher rates of turnover (Halkos and Bousinakis 2010; Böckerman and Ilmakunnas 2012; Mahdi et al. 2012; Arnold et al. 2016; Alam et al. 2019). Each of these areas of dissatisfaction are important components of the ILO's concept of decent work, which was first established in 1999.[2]

Decent work was defined by the former Director General of the ILO as "opportunities for women and men to obtain decent and productive work in conditions of freedom, equity, security, and... dignity," and remains a "pivotal aspect for effective development and poverty reduction." As major transition economies like Brazil started to put the most egregious forms of labor abuse behind them, other aspects of work and working conditions grew in salience. While many researchers and stakeholders have focused on collective labor rights, individual rights and individuals' work-related outcomes are arguably of equal importance, especially as developing economies continue to develop and the worst forms of labor exploitation decrease in frequency. In particular, during the period of this study, Brazil experienced a number of important changes, including: sharp drops in child and forced labor[3], an increase in formal employment, in-

[2]ILO, Decent Work: Report of the Director General, International Labour Conference, 87th Session.

[3]Also, commonly referred to as "working conditions analogous to slavery" (or slave labor)

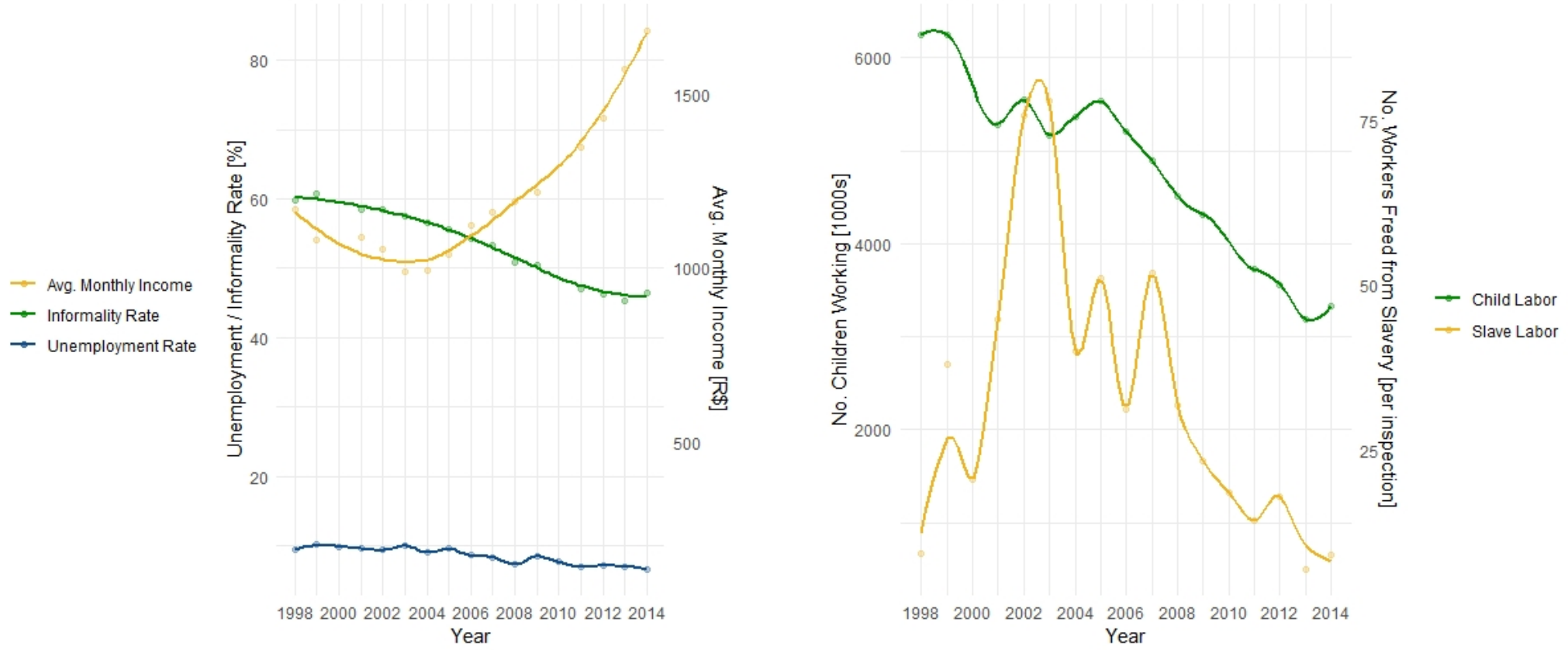
creasing minimum wage, recovery of purchasing power, drop in unemployment and curb on unprotected subcontracting (as illustrated in Figure 2.2, but see also de Andrade Baltar et al. 2010). Progress in these areas in a developing country like Brazil brings less egregious but still very important aspects of the realm of work and workers' rights into focus, namely decent work conditions.

Labor rights and working conditions in Europe are, generally speaking, the converse of those in Brazil. As Brazilian multinationals invest in Europe writ large they are faced with labor standards and practices that are of a comparatively and historically high standard.[4] Central to this is the European social capitalist model, what Hall and Soskice (2001) refer to as Coordinated Market Economies in Varieties of Capitalism terminology. In the ideal form of this capitalist model workers, employers, and state representatives negotiate in order to come to mutually beneficial regulatory and practical outcomes with a long-term view toward maintaining profitability and productivity and encouraging social and individual development.

in Brazil.

[4]While it can be argued that developed countries more generally have high standards relative to developing countries like Brazil, European countries, defined as the EU+EFTA countries, stand well apart from the main alternative, the USA (King and Rueda 2008). Historical accounts of rapidly declining union membership, stagnant wages, declining benefits provision, and excessive (by European or even Brazilian standards) work hours in conjunction with recent controversies concerning things like employees being forced to wear diapers to avoid taking bathroom breaks or even urinating on a production line emphasize this point. Therefore, this analysis focuses on the influence of European (i.e. EU + EFTA) countries only.

Figure 2.2: Child & forced labor, unemployment, informality, and wages 2001-2014



Sources: PNAD, IPEA, Portal da Inspeção do Trabalho

Unions and works councils are relatively strong and prevalent in social capitalist Europe, and take a major role in negotiating wages, hours, employment conditions, and non-wage remuneration and benefits (Marginson and Sisson 2004). This has prevented wide-spread hollowing out of practices or the creation of a large low-wage sector, as has happened in the US where wage and benefit negotiations are largely done on an individual basis (King and Rueda 2008). Furthermore, workers in Europe supply relatively few hours of work, especially in France and Germany, with the former being the birthplace of the 35-hour workweek and the latter being where metalworkers recently won a record low 28-hour workweek with virtually no compensatory concessions. Europeans also enjoy strong dismissal protections and flexible work arrangement regulations, though admittedly these have become somewhat more liberalized since the adoption of flexicurity policies beginning in the 1980s and 90s (Wilthagen and Tros 2004). Still, many governments introduced parallel or subsequent regulations alongside the liberalizing reforms in an attempt to preserve equal treatment of agency, part- and fixed-term workers and to protect the well-being of dismissed workers by expanding social security and welfare programs (Arndt and Hörisch 2015).

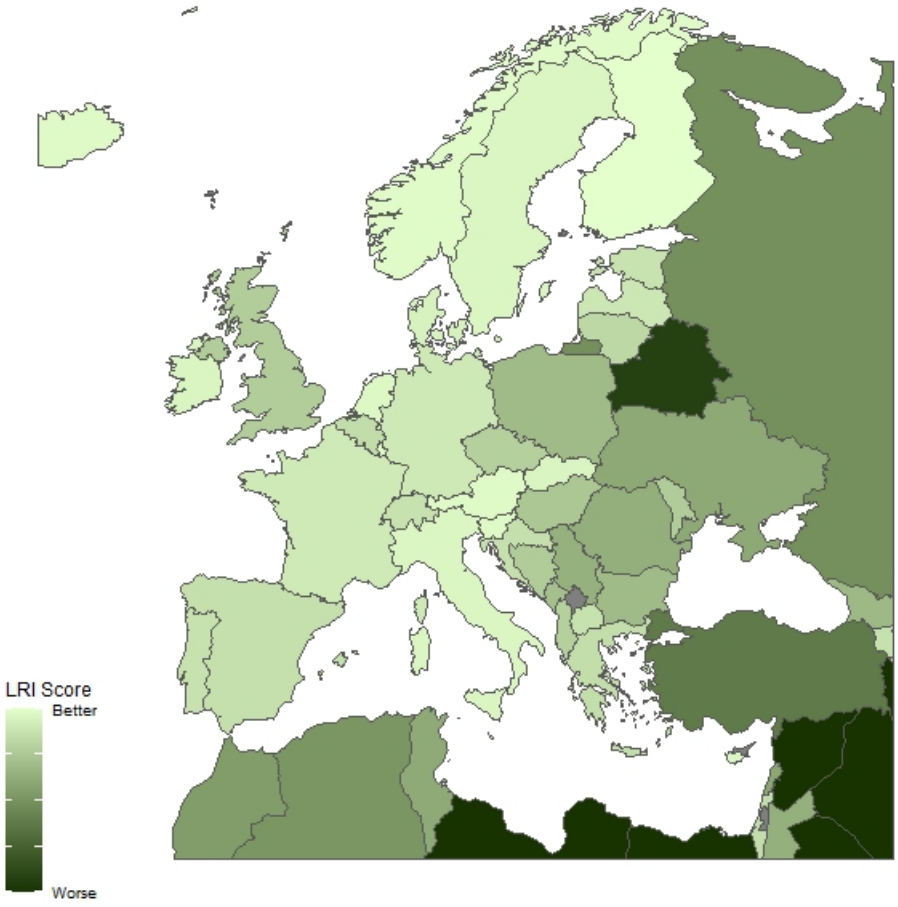
Of course, the degree to which the above characterization is true will vary from country to country within Europe and it is clear that standards and practices in the UK do not perfectly mirror those in Germany or Denmark. Yet there is EU-level activity in the field of employment and social policy that sets binding minimum standards for members and EU Directives are legally binding, obliging members to implement them into national law. Furthermore, even in the relatively liberal UK economy, there still exists areas in which social dialogue and high-standard industrial relations persist, often as a result of intra-European diffusion (Tüselmann et al. 2002). Figure 2.3 illustrates viola-

tions of labor rights throughout Europe and neighbor countries, as measured by the Overall Labour Rights Indicator developed by Center for Global Workers' Rights (2021). This indicator scores countries according to violations of collective labor rights, in law and in practice. While there is some variation between countries in Europe, that variation is minor relative to differences with even immediate neighbors such as Belarus, Libya, Turkey, and Russia. Lastly, although practices vary throughout much of Europe, investors from developing countries arguably expect that they will need to conform to higher standards across the continent due to the gap between average practices in Europe and those in a developing country like Brazil. Therefore, I expect an Europe-wide effect, which is not only limited to those countries in Europe with the highest standards or most generous practices.

2.1.4 Theoretical Mechanisms

There are two broad mechanisms through which the transmission of better standards or practices can diffuse. The first reflects the mechanisms theorized in the trading-up dynamics of the California Effect and its related papers, identified above. This can be broadly understood as compliance with European laws and the preferences of consumers and other stakeholders. The second mechanism concerns socialization to norms concerning worker relations and the potential benefits of better working conditions. For the first mechanism, reputation and access to developed-country markets are key and EMNEs investing in Europe will conform to the preferences of consumers and local firms in the recipient countries in order to preserve access and avoid scandals brought by labor advocates and/or the consequences of shareholder activism (Fiaschi et al. 2017; Rao-Nicholson and Svystunova 2020). EMNEs bring with them problems of reputation and legitimacy, largely derived from the poor institutional quality of

Figure 2.3: Average Overall LRI Score in Europe 2000-2017



Source: Center for Global Workers' Rights (2021)

their home countries (Khanna and Palepu 1997) which translates into credibility and legitimacy deficits (Fiaschi et al. 2017; Madhok and Keyhani 2012; Park 2018) or what Giuliani et al. (2016) call a "liability of origin." Moreover, they may be trying to outrun the existing negative stigma brought by corporate irresponsibility on the part of their peers, for example, when Vale won the "Nobel Prize of Shame" for its part in building the Belo Monte Dam in the Amazon.[5]

As EMNEs become increasingly global, and especially as they grow their presence through asset-seeking M&As in high standard developed regions such as the EU and EFTA countries, they increase their exposure to active, vocal NGOs, IOs, activists, and stakeholder groups scrutinizing their behavior (Demirbag et al. 2009; Deng and Yang 2015; Liou et al. 2017). As one manager of a Brazilian multinational put it: "[Rights abuses] are among the worst nightmares of managers responsible for obtaining social license for [a] firm's operations" (Fiaschi et al. 2017). In order to ensure continued access to valuable knowledge, technology, and other intangible assets in the relatively stable Northern markets, EMNEs will adopt policies intended to avoid attention grabbing scandals. In the case of working conditions in Brazil, this can mean not only avoiding the most egregious abuses[6] but also avoiding worker treatment in their home-country locations that could be viewed unfavorably from the perspective of developed-country norms and behaviors. This could lead to strikes or outreach efforts by local, home-country unions, activists, and stakeholder groups, as in the case of Embraer.[7] To put it briefly, Embraer, producer of civilian and military aircraft and one of Brazil's most well-known multinationals, was not giving wage and workday adjustments to its home-country employees that were comparable to the industry standard in developed countries. This led to

[5] http://amazonwatch.org/work/belo-monte-dam

[6] Such as slave and child labor.

[7] http://www.sindmetalsjc.org.br/imprensa/ultimas-noticias/139/assembleia+discute+pauta+de+reuniao+com+a+embraer.htm

a days-long strike and the eventual involvement of the *Banco Nacional de Desenvolvimento Economico e Social* (National Development Bank), which has provided much of the company's financing for exports and international expansion. Following the negative exposure and involvement of BNDES, Embraer gave in to the workers' demands.

Second, FDI involves establishing a physical presence in another country. In the case of developing country OFDI, this normally means mergers and acquisitions (M&As) rather than greenfield investment (Madhok and Keyhani 2012; Khan et al. 2017) with the majority of Brazilian MNEs undertaking production-related operations in Europe "in sectors as diverse as petrochemicals, engineering and construction, industrial equipment, steel, automotive parts, and meat processing" (Nölke 2014, p.143). As mentioned in the previous section, Brazilian MNEs invest deeply in European hosts, frequently interacting with educational and social institutions. This heavily implies exposure to foreign practices and standards as the purchasing investors interact with the managers, consumer groups, and unions both in and outside their already established though newly purchased operations. This means novel experiences with relatively more humane treatment of workers which can have productivity and human capital enhancing effects (Bassanini and Venn 2008). Furthermore, developing country firms are similarly exposed to high-road labor management practices in Europe which can also provide benefits to the firms in areas that are problematic in the Brazilian labor market (turnover, low capital accumulation, etc.). These practices are defined not only by the stringent labor laws in European countries and their enforcement but also by common practice in European markets such as limitations on excessive hours, occupational health and safety regulations, good pay, relatively generous benefit packages, and use of formal employment that ensures access to the full range of protections afforded by law and collective

agreement.

Following exposure to these better practices and novel pressures, managers in these foreign subsidiaries will seek to transfer improved standards back home (Ferner and Varul 2000). Although popular conception of how multinationals function may make this seem implausible there is evidence that it occurs within non-US, developed country MNCs (*see* Edwards and Tempel 2010) and even is common in developing country MNCs operating in developed countries due in part to the knowledge or intangible asset-seeking motives behind their investments (Smith and Meiksins 1995; Rui and Yip 2008; Ambos and Schlegelmilch 2008). Furthermore, developing country MNC subsidiaries frequently have sufficient operational autonomy and organizational influence to experiment with best practices based on acquired knowledge in their location and transfer those practices back home. Fleury and Fleury (2011), in their typology of MNC subsidiaries, term these innovative foreign operations "rebel subsidiaries" and in particular emphasize the prevalence of these rebels in Brazilian MNCs, finding that half or more of Brazilian MNC subsidiaries consider themselves superior to headquarters in commercial, financial, and human resources management (HRM) competences and transfer their superior competences back to the headquarters. This process is commonly referred to as "reverse diffusion" (e.g. Edwards and Tempel 2010) and is the core of of this investing-up effect. These two mechanisms form the core of my hypothesis which contends that as outward investment linkages from developing countries (here, Brazil) to developed (here, EU and EFTA) countries increase, there will be associated improvements in workplace-level labor practices in the home country, i.e. decent work conditions.

Given the existing research on the globalization-labor nexus, the particularities of emerging multinationals in general and Brazilian multinationals specif-

ically, and the characteristics of the labor market and regulations in Brazil, I propose the following hypothesis and then elaborate on its foundations: *Increasing investment linkages with Europe lead to higher probability of implementations of decent work outcomes in Brazil.*

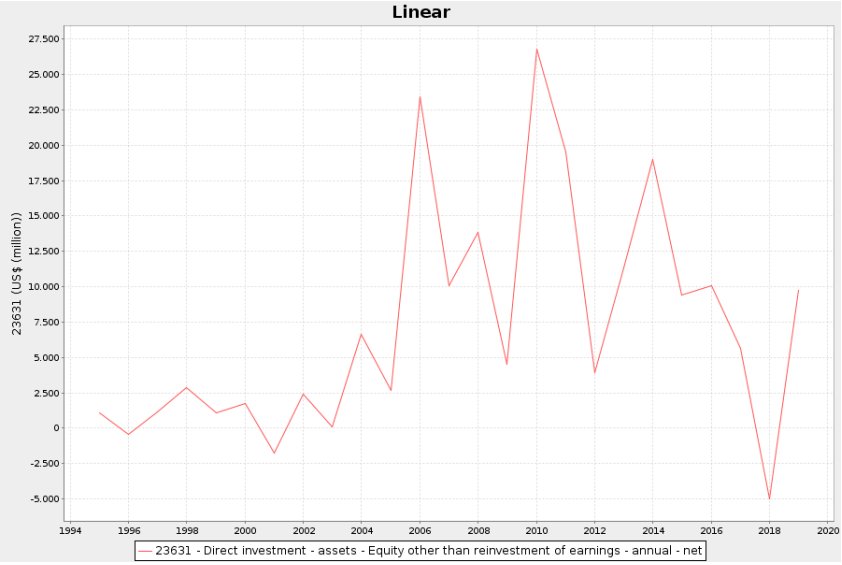
2.2 Data

2.2.1 Independent Variable

In order to investigate the transmission of decent working conditions through an investment pipeline it is necessary to construct a measure of outward investment. The *Banco do Brasil* keeps a registry of inward and outward investment flows, however, disaggregated annual data, especially at a sub-national level, is by-and-large not publicly available. At best, one can access annualized inward investment flows at the national level, with *either* a sectoral *or* partner-country dimension (and only for the years 2001-2006) or sub-national flows at the level of state but only measured every five years. Moreover, the sector or partner-country dimensions are only available for inward FDI and not outward. Outward FDI can only be accessed as a national measure, with no further disaggregation but with a much broader time period (1995-2020), illustrated in Figure 2.4.

While official governmental data on outward Brazilian investment in Europe (or any other location, for that matter) is effectively unavailable for this sort of research, there are other alternatives. However, they also suffer from problems of coverage and completeness. A common alternative in the international business management literature seems to be privately collected and maintained databases, such as those kept by *Refinitiv* (a subsidiary of Thompson Reuters) and *fDi Intelligence*. These private entities employ investigators who monitor trade publications and financial news sources for indications of foreign invest-

Figure 2.4: Banco do Brasil's OFDI Data



ment activity, collecting vital information about the details of green and/or brown-field (i.e. M&As) investments including the companies involved, the percentage ownership acquired, the ultimate parent of either involved company, and even the dollar amount paid and numerous contractual conditions. Problematically, the coverage of this data is often very limited and it is frequently incomplete, especially when it comes to reporting the value of the acquisition or greenfield investment. At last glance, the actual transaction amounts for Brazilian investments in other countries are only provided for roughly 65% of the acquisitions in *Refinitiv*'s data. Furthermore, many acquisitions are simply missed by these organizations.

Another option is to use inward investment data from the host-countries, however, this too could be problematic. Similar to the Brazilian data, rarely if ever can one find inward investment data that can be used to construct a subnational measure, especially for the country from which the investment is coming. But, furthermore, there is the problem of inconsistency in how invest-

ment is measured between countries. There is also a more conceptual issue in using FDI flows or stocks at all. Kerner (2014, p.804) points out that FDI can be conceptualized as "foreign ownership of domestic assets and foreign control over domestic production" or "as a financial phenomenon relating to the cross-border movement of capital between parent MNCs and their foreign affiliates." How best to conceptualize and operationalize foreign investment depends on the particularities of the research in question. The common FDI flow operationalization used in most political science applications describes "a macroeconomic phenomenon that differs from... most political science theories... and these differences... are likely to cause bias" (Kerner 2014, p.804). These biases can result from repatriation of capital (which could lead to significant measurement error, depending on the research context), exchange rate fluctuations, or failure to differentiate between productive investment or investment meant for tax avoidance or portfolio investment. Moreover, in the case of the present (and similar) research, it does not necessarily make sense conceptually to use financial amounts (stock or flow) since it would not make sense to say that a $250 million acquisition is somehow more or less important for establishing linkages than a $750 million acquisition, per se.

This problem of data that is either incomplete or lacking coverage as well as these conceptual issues are similar to problems encountered in the international aid literature. This is especially the case in non-traditional aid donor data, such as that produced and maintained by AIDDATA which provides data on aid disbursements from Brazil, India, and - most notably - China. A common drawback in using the data produced by AIDDATA (and this is by no means a critique of their work) is that it often suffers from a problem of incompleteness or, at the very least, some uncertainty concerning the veracity of values reported for individual projects or for aid flows to a given recipient country. This is almost

entirely due to the Chinese (and other countries') government's unwillingness to follow traditional (that is, OECD-DAC) norms concerning transparency. One means for working around incomplete, missing, or otherwise undependable financial values has been to measure aid allocation by the project, rather than financial values (for example in Dreher and Fuchs 2015). Arguably, this can be a superior measure when the financial value is of less importance than the presence of a project. I argue that here this is the case, as this research is less concerned with financial values and more concerned with the establishment of a presence in high-standard European countries which can provide opportunities for exposure to the norms, practices, and preferences of consumers and partners in high-standard, developed markets where social sustainability is of relatively greater importance.

However, that is not to say that with increasing number of acquisitions of European subsidiaries, a company wouldn't be under greater pressure due to increasing levels of exposure, or that a location in Brazil that has more of what I term "investment linkages" with European markets wouldn't necessarily experience higher levels of social upgrading in the form of improving working conditions. I therefore opt to produce a measure of European outward investment linkages that resembles the per-aid-project measure used in some of the international aid literature. This is not an entirely novel approach, as Arbix and Caseiro (2012a) utilize a similar strategy in their study of the determinants of Brazilian OFDI location choices, however I add an additional dimension of variation which incorporates the number of locations domestically, as well as internationally.

The independent variable I constructed for use in my statistical analysis is a measure of what I call "outward investment linkages" with Europe (*EU FDI Linkage* in results tables). As pointed out by Arbix and Caseiro (2012a) and

others, there is no sub-national data on outward investment stocks or flows from Brazil. In order to circumvent this and other data issues, I followed a similar approach to Arbix and Caseiro (2012a) and Dreher and Fuchs (2015) by mapping M&A subsidiaries of Brazilian MNEs in Europe[8] between the years 1998 and 2015 according to a number of overlapping and complimentary sources beginning with the annual Brazilian multinational listing published by *Fundação Dom Cabral* and supplemented by BCB reports, Valor, the Thompson Reuters-Refinitiv M&A data base, and individual company shareholder reports and web sites. The finished product includes the cities and economic sectors of non-retail, non-customer service units[9] possessed by each Brazilian multinational in Brazil and the country locations in Europe. This was then aggregated at the level of the Brazilian municipalities and states so that the measure of investment linkages with Europe would increase by 1 for a given state or municipality in Brazil whenever a Brazilian MNE opened a new unit there or in Europe.

This means that if, say, the Companhia Siderúrgica Nacional (CSN), a company operating in the manufacture of steel products and chemicals headquartered in São Paulo, opens a new plant in the municipality of Volta Redonda in the state of Rio de Janeiro in 2003, the outward investment linkage measure would go up by one for each of those sectors in that location. Moreover, if CSN were to acquire another European subsidiary in that same year, the outward investment linkage measure would increase by one in Volta Redonda/Rio de Janeiro, São Paulo, and every other sector and location in Brazil where CSN

[8] I exclude greenfield investments because the vast majority of Brazilian FDI in Europe is in the form of M&As. This is even more true focusing on asset-seeking FDI. Moreover, conceptually greenfield investments arguably would not lead to the same types of exposures to foreign practices. M&As are more likely to bring with them to the acquiring company native management, workforce, and unions; social, business, and institutional linkages; and existing operational customs than would greenfield investments.

[9] This is to avoid including retail stores that sell things like Havaiana sandals and Natura makeup but also because sales or business offices should be conceptually distinct from productive facilities directly linked to the core operations of invested Brazilian multinationals as they likely will not be embedded in the same way as the acquired, productive facilities.

has facilities.[10] Of course, a more simplistic alternative would be to have the indicator vary across only one dimension, more or fewer locations in the state or municipality *or* Europe, rather than across both but this would provide less information about the level of "exposure" each city/state gains to the working conditions in Europe through the investment linkages established by the Brazilian MNEs' acquisitions. The finished product provides a measure of outward investment linkages across all economic sectors[11] for the entire country of Brazil including all 27 states and 5563 municipalities, the latter of which are harmonized across years to minimal comparable areas (MCAs), a concept developed by the IBGE for use in statistical and geographical research to cope with changing municipal boundaries over time (see Dix-Carneiro and Kovak 2017; Dix-Carneiro et al. 2018a; Dix-Carneiro and Kovak 2019, for more details). While all 27 states have outward investment linkages, only about 3% of municipalities do. These municipalities vary from very small (effectively company towns) to the major metropolises in Brazil's southeast.

The distribution of investment linkages throughout Brazil's municipalities in 2000, 2008, and 2015 are illustrated in Figure 2.5. Similar maps illustrating the evolution of the establishment of outward FDI linkages at the municipality level in select industries can be found in the Appendix (Figures 7.1).

These maps demonstrate the growing depth and breadth of the investment linkage channel throughout the country. While this was primarily a phenomenon

[10] CSN, Vale, and a number of other Brazilian multinationals operate in multiple sectors in Brazil. Each Brazilian facility of each multinational is coded according to the sector in which that facility operates. In the example of CSN that is provided that means that each of those sectors in, for example, São Paulo experience an increase in the investment linkage variable when CSN acquires a subsidiary in Europe. This allows for improved linking of worker outcomes defined in the next section and the investment linkages in their location/sector.

[11] These are based on the Seção (Section) level of the latest governmental sector classification of the Brazilian government (the *Classificação Nacional de Atividades Econômicas* 2.3 - CNAE). In a complementary set of models, I also disaggregate the sectors further into the next lower level of classification: Divisões (Divisions). The structure of the CNAE classifications, as well as the regression results from the Divisões level data, are in the Appendix but, in sum, the results are consistent at either level of aggregation.

constricted to the populous and better developed southeast in 2000, it has since spread throughout Brazil. By 2015, all 26 states and the federal capital district had these investment linkages with European countries. Moreover, the municipality-level maps in the appendix show that these linkages have spread well beyond the urban centers of São Paulo, Rio de Janeiro, Brasilia, Curitiba, Belo Horizonte, Fortaleza, Salvador, and Recife. Indeed, they extend into less populated or less urban parts of the Center-West region and even into the Amazonian states in the North (though this admittedly is still quite rare). The full list of cities (identified by their official IBGE codes), companies, and the related economic sectors of the specific facility at the Divisão and Secão levels can be found in the Appendix in Table 7.5.

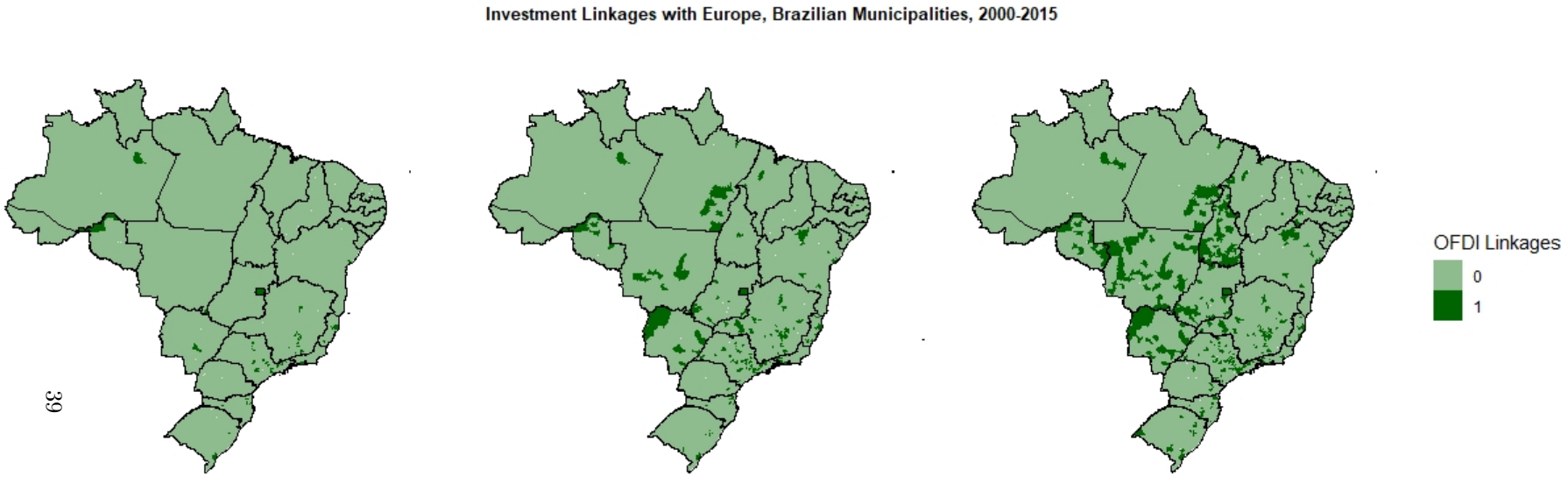
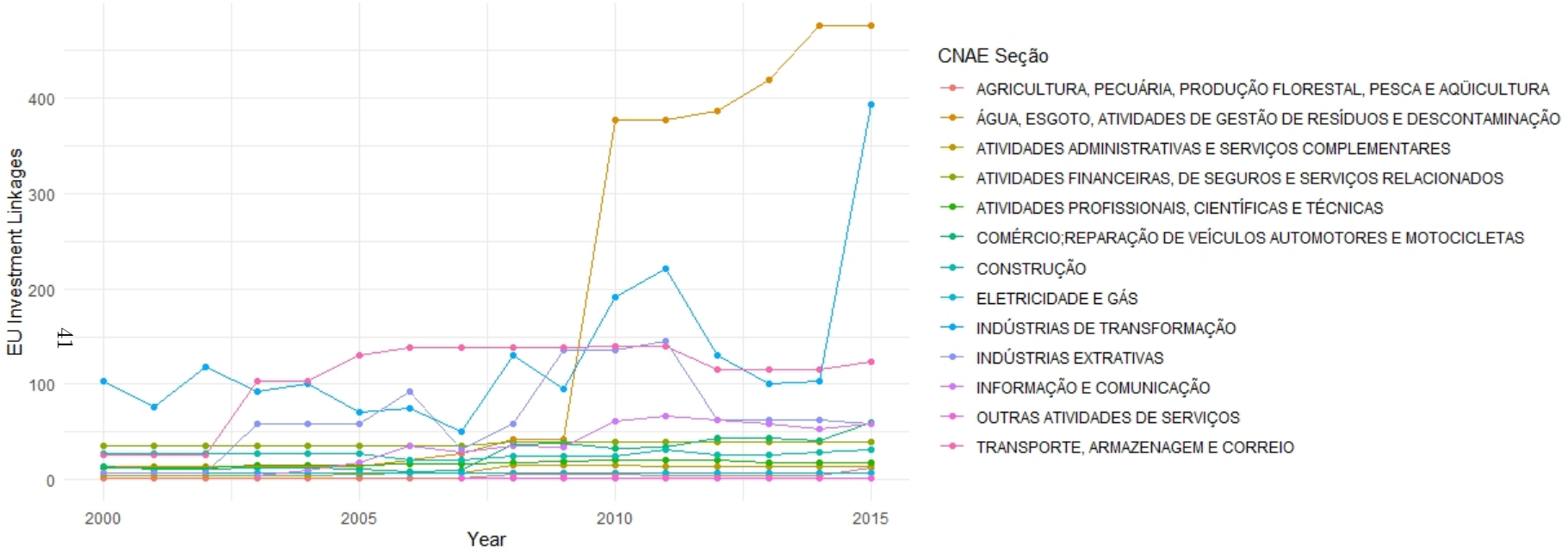


Figure 2.5: European Outward Investment Linkages in Brazil Municipalities in 2000, 2008, and 2015

The sectors in which they operate and how the investment linkages have grown within those sectors (at the Secão level) is illustrated in Figure 2.6. This figure shows that there is fluctuation in many sectors. In manufacturing (Indústrias de transformação) the trend is generally positive, however, starting in 2011, there is a period of reduction in outward investment linkages that lasts until 2014. This likely reflects post-recession contractions in some companies. The only sector whose growth out performs that of the manufacturing sector is the water and sewage treatment (Água, esgoto, atividades de gestão de resíduos). The sudden and dramatic increase in linkages in this unexpected sector is due to the purchase by Odebrecht Ambiental of water treatment facilities first in three major cities[12] which was followed by purchase of utilities at Thysenkrupp Brasil and Klabin and then the purchase of the water and sewage treatment facilities for the entire state of Tocantins.

[12]Blumenau in Santa Catarina and Mairinque and Santa Gertrudes in São Paulo

Figure 2.6: Evolution of Outward Investment Linkages by Sector, 2000-2015



These maps and plots plus the extensive table listing the company-city-sector combinations with outward investment linkages to Europe illustrate not only the extent of this phenomenon in Brazil but also the amount of work involved in constructing this variable. It required multiple revisions as new information became available and meticulous work to identify the productive facilities of each company and the sector that each of these facilities is engaged in, in Brazil, and the years in which they were established or removed.

2.2.2 Dependent & Control Variables

2.2.2.1 Main Dependent Variables

I rely on multiple sources to generate my dependent and control variables. Primary among these are the *Pesquisa Nacional da Amostra Domiciliar* (Annual National Household Survey or PNAD), the Censo Demografico (decennial demographic census), and the *Relação Anual de Informações Sociais* (the Annual Reports of Social Information, or RAIS). From these sources, I constructed four measures of decent work conditions based on those published originally by the ILO in partnership with the Brazilian government (e.g. in Guimarães 2013). These are: the rate of overworking; the rate of voluntary, supplemental benefits provision; and two measures of job security: the (log) number of long-term employed and (log) number of permanent (as opposed to third-party or temporary) employment. More detailed descriptions follow.

I utilize both the PNAD and Census data for two reasons. The PNAD survey asks many more questions related to work than does the decennial census but is unfortunately only representative at the state-level given its stratified random sampling of municipalities (IBGE 2007). The IBGE is also very strict about making available the PNAD microdata with local identifiers below the level of the state due to concerns related to the anonymity and privacy of respondents.

Yet, the state-level of aggregation is arguably quite high which is a drawback despite allowing more time periods for estimation and one further measure of decent work conditions (benefit rate). But, where the survey data is flawed, the Census data excels and vice-versa. The Census data is measurable at the much lower level of aggregation and so relatively unaffected by aggregation bias though it is only available for two years in the period under study and with one fewer measurable outcome. Therefore, I use both, leveraging the advantages of each to try and make up for the shortcomings of the other in trying to establish whether or not South to North investment flows have a positive impact on the provision of decent work conditions in the home country.

2.2.2.2 Overworking Rate

Overworking is defined for an individual as working more than 48 hours per week in any given week. This aspect of working conditions is part of the core components of the decent work program, namely a healthy work-life balance and "requires the reconciliation of the normally divergent interests of... employer and workers" (Guimarães 2013). When the work-life balance tilts too far toward work, it can lead to deterioration of home life (Institute for Workplace Studies 1999; Clarkberg and Moen 2001; Cha 2010), compromised personal relationships (Fenwick and Tausig 2001), reductions in productivity and creativity (Hochschild et al. 2001; Lamberg 2004), negatively impacted health (Haight 2001), and even death (Golden and Altman 2008; Sullivan 2014). This is especially true when the pressure to overwork is not voluntary (Dembe et al. 2005), that is, when it comes from the employer. Due to the inherent conflict between the divergent interests of workers and employers, the state has an important role to play as mediator by enacting and enforcing baseline restrictions on working hours and other related aspects of working conditions such

as salaries. According to the ILO, promoting a healthy work-life balance by limiting forced overworking reduces worker stress, improves worker efficiency, increases employee work satisfaction which leads to improvements in commitment and productivity, and reduces personnel turnover and attendance issues (Guimarães 2013).

In Brazil, the first law regulating the maximum number of allowable work hours was instituted in 1932, permitting eight hour work days or a maximum of 48-hours per week, though with exceptions whereby employers could extend this to 10-hour days or 60-hour weeks (Mocelin 2011). Mandatory overtime wage rates were added in 1934 and, with the introduction of the CLT, extra hours were limited to a maximum of only two hours. With the ratification of the 1988 Constitution, the maximum allowable number of work hours was reduced to 44 and overtime bonuses were again increased, making extra hours even more costly (ILO 2009b; de Oliveira et al. 2015). Accepting that some amount of overtime is often unavoidable and even desirable for some workers but also recognizing that overtime hours are costly both in terms of labor costs and potentially reduced productivity, I define *Overworking* as the percentage of workers in a given sector, location, and year working over 48 hours per week. This variable is constructed using responses to PNAD survey and census questions regarding number of hours worked per week. Specifically, it provides a measurement for the percentage of working age (ages 14-64), employed persons per state/municipality, economic sector, and year that worked over 48 hours per week.

2.2.2.3 Benefits Rate

Provision of non-wage remuneration in the form of supplemental benefits is an important component of aggregated and disaggregated decent work and

job quality indicators and the associated research (Johnson and Corcoran 2003; Floro and Messier 2011; Burchell et al. 2014; Blustein et al. 2016; Owoo et al. 2020). According to Messier et al. (2008), health and other benefits provide workers with "additional risk coping mechanisms in the event of a negative shock" while other benefits such as transportation, education, or food supplements can help mediate or subsidize specific aspects of work- and non-work related daily life, as pointed out in Helppie and Macis (2009). Moreover, they contribute to some of the same worker and firm benefits as keeping the rate of overworking low, that is, improved worker health and job satisfaction, higher rates of productivity, greater employee retention, and improved attendance. While these benefits are enjoyed by recipients, mandated benefits have an associated downside for workers that the cost of provision is sometimes passed on to employees in the form of lower salaries (MacIsaac and Rama 1997).

However, as Almeida and Carneiro (2009b) point out, while this may be the case at the very top of the wage distribution in Brazil, wage rigidity at the bottom means that most of the costs are passed on to Brazilian employers. Moreover, only certain kinds of benefits are mandated in Brazil. These include an annual 13th month salary bonus, vacation time, severance fund (FGTS) contribution, and pregnancy leave. The case of voluntary benefits, used in order to attract workers or as part of a European-style coordinated capitalist model, whereby what is good for the worker is recognized as being good for society, may not necessarily lead to similar passing of costs. In either case, the incentive and motivations differ significantly, which arguably could lead to different outcomes (Simon and Kaestner 2004; Lowen and Sicilian 2009).

To measure the rate of voluntary benefits provision, I utilize four questions in the PNAD annual survey. Each pertains to whether or not a given person that is employed has received either educational, housing, transportation, or health

benefits from their employer. Each of these benefit types represent significant improvements in working conditions (Reeg 2015). For each respondent, a dichotomous variable takes the value of 1 if they have received one or more of these supplements and 0 otherwise. Then, I count the number of positive responses in each sector, state, and year and divide this by the total number of employed, working-age persons, as defined above to create the dependent variable *Benefits Rate*. Since questions about benefits provision are not asked as part of the decennial census, this variable is only available at the state-sector-year level.

2.2.2.4 Job Security

Job security is an inseparable part of the concept of decent work (ILO 2009a). It minimizes the necessity for workers to straddle multiple jobs and allows people to plan for their future. Moreover, it ensures access to the voluntary and mandatory benefits that come with employment including health insurance, transportation and housing subsidies, and disability insurance. Having stable and secure employment also removes a significant source of stress for households (Floro and Messier 2011).

Job security is related not only to the benefits of decent work for employees but its converse (that is, high turnover) is commonly associated with low levels of human capital accumulation and productivity, major issues for employers, especially in Brazil and similar middle and low income countries (Orellano and Pazello 2010; Guimarães 2013). This is of particular importance since labor turnover increased significantly following establishment of the time served fund (FGTS) in 1996 which also introduced mandatory 30-day notice by employers and severance payments. Both the FGTS and mandatory notification period for permanent employees significantly increased the costs of direct, formal employment, especially as tenure increases. As a result, employers faced increased

incentives to avoid expensive permanent employment and employees. Moreover, these policies introduced perverse incentives for employees to collaborate with employers in some cases to terminate a work contract prematurely since the benefits of doing so earlier in the period of employment rather than later were greater than the costs of finding a new position and a new employee (Gonzaga et al. 2003). According to the RAIS data, between 2000 and 2010, average job permanence was only about 5 years (Guimarães 2013). The same data also indicates that around 70% of dismissals are initiated by the employer and only about 20% are initiated by the employee. Therefore, much of the impetus behind job security lies with the employers and not workers, in line with the post-1996 increase in turnover associated with the correlation between tenure and firing costs.

In order to measure job security, I rely on the RAIS administrative data. The micro-data includes matched employee/employer data and can be accessed but requires application and approval by the Brazilian government, which I unfortunately could not obtain.[13] Therefore, I utilize the data at the lowest possible level of aggregation that was publicly available, that is, the state and municipal levels cross-indexed by time and economic sector. Every employer is required by law to report wage and contract information (including start date, duration, occupational code, and permanence of contract) on an annual basis as well as worker characteristics, the city of the employment, and the economic sector. From the RAIS data set, I use two measures of job security: the frequency of long-term employment and permanent contracts. The former is defined as all formal employees that have worked for more than 5 years in their current position and the latter is the number of formal employees with permanent (that is, non-temporary, direct) contracts. Each variable is a count variable, providing

[13]The reorganization of the Brazilian government following election of Jair Bolsonaro has made obtaining some microdata that used to be maintained by the *Ministerio do Trabalho* very difficult, if not impossible.

the number of long-term employed and employees with permanent contracts, respectively, in each location, sector, and year. I then log transform these variables, in order to normalize their distribution, as recommended in most (if not all) statistics and econometric texts. This results in the dependent variables *Long Term Employ* and *Permanent Contracts* that are used in the regressions. I opt for two measures as regressions using the long-term employment variable, which is used by the ILO in its original decent work profiles of Brazil, could be plagued by endogeneity, especially in the spatial econometric analysis in Chapter 4. If the results for both measures of job security are consistent, possible critiques along the lines of endogeneity should hold less sway.

2.2.2.5 Controls

Using data from the PNAD and Census microdata, I construct a number of socio-demographic controls that can also have an effect on the provision of decent working conditions. The firs is the *Education Rate* in each location. This is the percentage of the working-age population that have competed the equivalent of a high school education. *Female Population* and *Non-white Population* capture the proportion of the local population that are either females or black, indigenous, Asian, or mixed. There is a plethora of research articles establishing how individual and systemic discrimination lead to greater frequency of poor working conditions for workers that are not male and/or white. I also include the *Employment Rate* and *Informality Rate*, as each should have an impact on working conditions, as well. Lower employment (higher unemployment) reduces the bargaining power of workers which has historically been associated with degrading working conditions. If an employee expresses anger over the conditions, they are easily replaced, which also reduces incentives for employers to competitively ratchet up the quality of conditions to attract higher quality workers.

Informality should have a similar effect as well as a more direct impact in that informal workers are more likely to experience excessively long hours, less likely to receive benefits, and less likely to enjoy any sort of job security.

I also use several economic controls which are available from the IBGE. First is the productivity for each of three broad economic categories in each state or municipality (agriculture, industry, and services labeled *Ln. VAB Agriculture*, *Ln. VAB Industry*, and *Ln. VAB Services* in the results tables). Productivity in these sectors is measured using the log of the Gross Value Added (*Valor Adicional Bruto* or VAB in Portuguese) which is the value that each sector of the economy (agriculture, industry and services) adds to the final value of everything that was produced in a region. The local levels of sectoral productivity should have an impact on the number of hours worked and labor-related outcomes as higher productivity can give greater leverage to workers in their collective agreement negotiations and make companies more lucrative which, at least theoretically, would give them greater resources that they can distribute among their employees. I also include the population (*Ln. Population*) as the local GDP (*Ln. GDP*). Population provides a measurement of one concept of the size of the local labor and product markets and the local Gross Domestic Product measures the size of the local economy and a rough proxy for local development.

The Ministry of Industry, Trade, and Services (MDIC) makes available detailed information on imports and exports for Brazil as a whole or broken down to the state and municipality levels. Moreover, this data includes highly specific product and sector classifications. I use this data to construct a measure of total exports to Europe, the United States, and Canada measured in millions USD per economic sector and either state or municipality (*Ln. Exports to Dev'd*) in order to control for the potential incentives for social sustainability upgrad-

ing that these exports could provide, based on previous research such as Anner (2011) and Greenhill et al. (2009).

According to Feierherd (2017), the rate of audits by labor inspectors can be perversely influenced by whether the Workers' Party (*Partido de Trabalhadores* or PT) holds the local executive office. This is because the PT seeks to not only protect or enhance the rights of one of their main constituencies, formally employed workers with union ties, but also faces incentives to direct labor investigations toward larger, formal employers in order to protect the employment of informal and small or medium enterprises that engage in labor practices prohibited by law. As a result, large and formal enterprises should face greater scrutiny from their local labor inspectorate when the PT holds the local executive office which should lead to fewer violations of workers' individual labor rights and higher incidence of decent work conditions. Therefore, I include a binary indicator measuring whether the PT candidate won the previous mayoral or gubernatorial election in each municipality and state (*PT Gov't*) in order to control for the effect that a PT executive might have on labor related outcomes either through variation in inspection rates or through more direct interventions. The raw data was taken from the *Tribunal Superior Eleitoral* which provides data on party affiliation and platform of candidates as well as their demographic information and the first- and second-round results of elections at various levels in Brazil.

Based on research such as Mosley (2011b) and Greenhill et al. (2009), influxes of inward FDI are a further source of labor upgrading in developing countries. For this reason, it is necessary to control for inward flows of foreign investment when investigating the effects of outward flows of investment on labor rights including individual labor rights such as provision of decent working conditions. Unfortunately, at the subnational level, this data is only available

in sparse formats and at five year intervals. One can choose from state-level data but with no sectoral breakdown; state-level but only from one broad sector (industry) and in even fewer years; with a sector breakdown but aggregated at the national level; or by home-country of investment, also aggregated at the national level (in Brazil). As none of these options is ideal, I opt for the state-level inward investment as it has the most coverage temporally (2000, 2005, 2010, and 2015) but also because the vast majority of inward investment comes from developed countries anyhow. According to the basic intuition of much of the trading up and investing up literature, it is the interaction between relatively high-standard and relatively low-standard countries that drives diffusive social upgrading. Therefore, using the state-level data with no explicit disaggregation by sector or partner-country but with the understanding that the majority of these inward investments come from developed countries, this seems to be the best of multiple poor choices. This variable is also not available at the municipality-level and so it is only included in the state-level regressions. I estimate a separate set of regressions including the variable *Ln. IFDI*, that is, the log value of inward FDI in each state, due to the limited years for which it is available. These results can be found in the Appendix.

The investment linkage, decent work conditions, and export variables are indexed by state or municipality, economic sector, and year. The other controls are indexed only by state or municipality and year in order to avoid problematically high degrees of multicollinearity.

Chapter 3

Unintended Consequences: the spillover of decent work through outward investment linkages between developed and developing countries

3.1 Introduction

In the previous chapter I introduced the theoretical foundations for my first hypothesis, derived from existing research and theory development from a variety of disciplines including political economy, labor economics, international business management, sociology, and political science. I then outlined the data that has been exhaustively collected, cleaned, and converted for use in the following econometric analyses. In this chapter, I test my hypothesis concerning the international diffusion of labor practices via outward investment linkages established by Brazilian multinationals in Europe. I expect that as investment linkages with Europe increase, incidences of decent work outcomes in Brazil will increase. This expectation is tested first at the state-level using the full battery of four decent work condition outcomes using panel data covering all 27 states during the period 2000-2015. The robustness of the state-level results are tested against possible aggregation bias using municipality-level data for two points in time, 2000 and 2010, on a sub-sample of decent work outcomes, omitting the rate of benefits provision, for the reason explained above.

3.2 Methods

I rely on two main econometric approaches in this chapter. I do so with the intent of providing multiple models as well as levels of aggregation to get around data limitations and display complementary results that should help establish the robustness of the findings. The first is multidimensional fixed effects (MDFE) panel regressions at the state and then municipality levels. In a supplementary set of municipality-level MDFE regressions, I use three of the same decent working condition outcomes that can be constructed with the Census data - rate of overworking, long-term employment, and permanent contract provision - and regress these onto the investment linkage measure. These secondary regressions are run in order to test whether the estimated relationship at the state-level is heavily biased by what some might consider an unacceptably high level of aggregation. Arguably, there are omitted variables at work within each state that are not captured by the time-varying or time-invariant controls that drive the results. The drawback of this data, as mentioned above, is that it is only available for two years, 2000 and 2010, and lacks information on the non-mandatory benefits rate outcome included in the state-level regressions. If the results found in the first, state-level MDFE models are the product of aggregation bias, I should find significantly different results in the municipality-level models.

Consequently, my first and second wave of MDFE regressions take the following general form:

$$CONDITION_{ijt} = \beta FDI_{ijt-1} + \gamma X_{it-1} + \delta Z_{it} + \lambda_i + \lambda_j + \lambda_t + \epsilon_{ijt} \quad (3.1)$$

where FDI_{ijt-1} refers to the number of outward investment linkages in sector j in either state or municipality i at time *t-1*; X refers to 1-year lagged time

varying economic variables; Z is time-varying socio-demographic variables; the lambdas are the location, sector, and time fixed effects which capture time-invariant aspects of locations and sector as well as time-specific events that affect all locations or sectors such as national or global recessions or country-wide strikes; and epsilon is the error term. The investment linkage variables are lagged by one year because it is unlikely that these changes would occur immediately and that they would have a diminishing effect over time. All of these models are estimated via OLS with location-sector clustered standard errors.

I also use a difference-in-difference framework with the municipality-level data in order to provide a secondary model specification in order to test whether the MDFE regression results are robust to an alternative specification. I leverage the distribution of Brazilian outward foreign investment over time, which peaked in the years 2006-2008 (Arbix and Caseiro 2012a; de Alcântara et al. 2016), to create a treatment dummy that measures whether a given municipality saw the establishment of an OFDI linkage with Europe by this period. This sorts the municipalities into control and treatment groups and, controlling for the same time-varying and time-invariant factors included in the MDFE regression, I estimate what the average treatment effect is of the OFDI linkages with Europe on the three outcomes that can be measured at the lower level of aggregation, the rate of overworking and of job security.

3.3 Results

3.3.1 State-level Results

Do outward investment linkages with Europe lead to transmission of more decent working conditions to home locations in Brazil? Table 3.1 presents the

estimates from the first, state-level set of MDFE regressions. The dependent and independent variables are indexed by state, sector, and year and the rest, the control variables, are indexed by state and year.

Table 3.1: Multidimensional State-level FE Results

	Overworking	Benefits Rate	Long Term Employ	Permanent Contracts
EU FDI Linkage	-0.104^{**}	0.233^{***}	0.026^{***}	0.015^{**}
	(0.046)	(0.062)	(0.009)	(0.006)
Education Rate	-0.060	0.051	0.091	0.034^{*}
	(0.119)	(0.139)	(0.068)	(0.019)
Female Population	0.005	-0.373	0.107^{*}	-0.082
	(0.344)	(0.383)	(0.060)	(0.067)
Non-White Population	-0.283^{**}	-0.112	0.077^{***}	-0.041^{***}
	(0.124)	(0.084)	(0.024)	(0.013)
Employment Rate	0.169	0.336^{*}	0.044	0.016
	(0.197)	(0.182)	(0.030)	(0.037)
Informality Rate	-0.079	-0.354^{***}	0.017	-0.052^{***}
	(0.118)	(0.117)	(0.016)	(0.017)
PT Gov't	-0.165	0.323	-0.341	0.065
	(0.381)	(0.677)	(0.244)	(0.073)
Ln. VAB Agriculture	0.991	4.226^{**}	0.249	0.014
	(1.451)	(1.956)	(0.232)	(0.283)
Ln. VAB Industry	1.847	6.633^{**}	0.855	-0.272
	(3.277)	(2.842)	(0.620)	(0.384)
Ln. VAB Services	-9.146	-2.402	-0.811	-1.273
	(6.872)	(7.098)	(1.093)	(1.150)
Ln. Exports to Dev'd	-1.419^{***}	0.089	-0.233^{*}	0.083
	(0.462)	(0.553)	(0.118)	(0.067)
Ln. GDP	-1.317	-20.658^{*}	-2.719^{*}	1.956
	(11.421)	(10.785)	(1.458)	(1.637)
Ln. Population	-9.006	-39.767^{***}	-12.078^{***}	6.776^{***}
	(5.614)	(11.277)	(2.796)	(1.972)
State FE	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Observations	7,722	7,722	7,722	7,722
R-squared	0.569	0.686	0.814	0.784
Adjusted R-squared	0.565	0.683	0.812	0.782
Notes:	$^{***}p < .001$; $^{**}p < .01$; $^{*}p < .05$			

Column A shows the estimated effects of FDI linkages and the controls on

the rate of overworking, B the effects on rate of voluntary benefits provision, and C and D on the effects on the two Job Security variables, that is, Long Term Employment and Permanent Contract provision, respectively. Looking at the first line of each column, the estimated effect of increasing outward investment linkages on these decent working conditions appears to be as hypothesized. All four coefficients are statistically significant. An increase by one in the investment linkage measurement is estimated to decrease overworking by 0.10%, increase the rate of non-mandatory benefits provision by 23%, and increase job security by between 1.5% and 2.6% for the permanent contract and long-term employment variables, respectively. Though each is statistically significant, the size of the effect does appear small. Of course, these are adjustments occurring at a relatively high level of aggregation. Because of the larger pool in which these changes are occurring, the coefficients would be expected to be relatively smaller than at a lower level of aggregation, for example, at the level of the municipality or at firm-level. Whether or not the level of aggregation has this expected effect, that is, in reducing the level of aggregation, will be addressed below.

Many of the controls function as one might expect. Higher rates of education are associated with better work outcomes, a well established relationship in labor economics (and elsewhere). More educated workers are better able to effectively organize and, of course, education comes with a premium, which can extend beyond wages into non-wage remuneration including benefits and other decent work conditions. However, the coefficient for the education rate is only significant for the permanent contract dependent variables. The demographic variables also largely conform to expectations, with a few exceptions. Larger female proportions of state populations are associated with slightly higher rates of overworking and lower rates of benefits provision (though these estimates are

not significant), in line with the work of Anner (2011) and others. Moreover, women appear to be less likely to hold permanent contracts, also in line with existing research on abuses in sectors that heavily favor female employment. Unexpectedly, however, higher proportions of female population are also positively correlated with frequency of long-term employment, that is, continuous employment of at least 5 years. This would appear to conflict with the permanent contract results, though may have more to do with familial dynamics.

In the case of overworking, higher population percentages of indigenous or black people in a given state is actually associated with *lower* levels of overworking, which may indicate an interplay between permanent contracts, informality, and hours being worked. Institutional racism in Brazil leads to less job security and higher rates of informality among non-white people compared to white people, which may go some way to explaining this unexpected result. In the case of both benefits rate and permanent contracts, the results are more intuitive in the context of a society that systematically disadvantages black and indigenous persons, both being negatively correlated with the non-white population variable. However, again, the long-term employment variable has an unexpected positive and significant correlation, indicating that an increase in the black and indigenous worker populations by 1% in a given state is correlated with a rate of long term employment that is nearly 8% higher. However non-intuitive as this result may seem, given the abundance of existing research media reports on race-based discrimination and inequality in Brazil, this estimation is conditional on the other variables included in the model, namely informality, employment, and - perhaps, most importantly - education rates. Holding all of these variables constant, the conditional estimated effect of race is positive, which may have to do with the desire for non-white workers to hold on to work for as long as possible given that there is systematic bias against them.[1]

[1]Black, mestizo, and indigenous Brazilians tend to have fewer educational opportunities

The coefficients for the effect of the workers party government variable are not significant at any level, though it is still worth considering the estimates. In general, the results conform to what one might expect from a Workers' Party state government, that is negative correlation with overworking, positive with the benefits rate, and positive with permanent contracts. Again, however, there is an unexpectedly negative correlation with long term employment. This could be the perverse result of PT government that, as the PT works with labor inspectors to increase investigation of formal work places, employers shift more of their employment to the informal sector or even go so far as to shift their locations. While the estimated effect of the permanent contract variable should be similarly negative according to this logic, it is not, though the coefficient is not significant by any standard and the standard error is larger than the estimate itself, indicating that the confidence interval includes and even goes somewhat below zero. It could also be due to increasing formal employment which leads to an influx of newer employment contracts that wouldn't meet the long-term employment measurement. The exports to developed countries control largely conforms to expectations derived from the "trading up" literature. As exports directed to developed countries increases, overworking decreases, benefits provision increases (though this estimate is not significant), and permanent contract provision increases. However, the long term employment variable is again curiously negative, which may be due to new job creation as a result of increasing exports or higher incidences of seasonal work to meet export demands. GDP and population variables coefficients largely show some diminishing decent work condition frequency, such that higher GDP and larger population are associated with lower benefits rates and long-term employment. However, there does appear to be less overworking and more permanent contract provision, so the esti-

that are also of lower quality and are more likely to work informally and suffer from unemployment.

mates for these controls largely appear mixed. The effect of inward FDI can be seen in Table 7.6. As one would expect based on existing literature on the effects of inward foreign investment, especially that coming from developed countries, the effect on overworking is negative and the effect on long-term employment is positive, though only the former is significant. However, unexpectedly, the effect on the benefits rate is negative and significant while that of permanent contracts is also negative though not significant. These latter results are contrary to expectation, however, the accuracy of these results is questionable given that the investment flow amounts are not by sector and the sample size is reduced substantially due to the limited time coverage. In general, though, the main results for the FDI linkage variable are consistent to the addition of the IFDI variable, aside from permanent contracts.

Though the controls provided for in Tables 3.1 and 7.6, along with the FEs, can account for some of the variation in the decent work dependent variables not explained by the investment linkage variable, it is undeniable that there are likely other factors that are either unmeasured or, for various reasons, immeasurable. In order to test whether omission of these types of unobservables may bias the above results, I interact the time dummies with either of the other two fixed effects, state or economic sector (similar to the location-time fixed effects used in Dreher and Lohmann 2015; Gehring et al. 2019). These results are reported in Table 3.2 in which I include year and state and year and sector interacted fixed effects along with the original three state, sector, and year FEs.

Inclusion of these interactive (or dynamic) fixed effects does not diminish the estimated effect of investment linkages with Europe on decent work outcomes. In fact, it appears to strengthen the previous results in all cases, either by reducing the standard errors and increasing the p-value, by increasing the coefficient, or both. The model fit measures, the virtual *R-Squared* and *Adjusted R-Squared*

Table 3.2: Multidimensional State-level FE Results w/Interactive FEs

	Overworking	Benefits Rate	Long Term Employ	Permanent Contracts	Overworking	Benefits Rate	Long Term Employ	Permanent Contracts
EU FDI Linkage	-0.117^{**}	0.214^{***}	0.023^{***}	0.015^{**}	-0.151^{**}	0.253^{***}	0.022^{***}	0.023^{***}
	(0.051)	(0.066)	(0.007)	(0.008)	(0.061)	(0.077)	(0.005)	(0.008)
State x Year FE	✓	✓	✓	✓				
Sector x Year FE					✓	✓	✓	✓
All Controls					✓	✓	✓	✓
All Other FE	✓	✓	✓	✓	✓	✓	✓	✓
Observations	7,722	7,722	7,722	7,722	7,722	7,722	7,722	7,722
R-squared	0.614	0.709	0.845	0.780	0.603	0.713	0.945	0.858
Adjusted R-squared	0.595	0.695	0.838	0.768	0.586	0.701	0.942	0.852

Notes: $^{***}p < .001$; $^{**}p < .01$; $^{*}p < .05$

also indicate an improved model fit when using the dynamic fixed effects, though this is of lesser importance than the robustness of the original results to this alternative specification. These results also likely better control for the influence of IFDI (though without providing an actual estimate for its effect) since they are estimated using the entire sample and allow me to control for all sources of variation in each state in each year and in each sector in each year (though not in each state-sector-year combination).

While the results thus far have focused on average effect, regardless of economic sector, the structure of the data allows for a sectoral disaggregation and existing research (for example Ernst 2005; Anner 2011; Simas et al. 2014; Malesky and Mosley 2018) suggests that forms of economic globalization such as outward foreign investment ought to have sector-specific effects. Moreover, the results reported above may be driven by specific sectors or be masking significant heterogeneity depending on levels of skill specificity, opportunities for mark ups in foreign markets, as well as variation in union activity and strength. Breaking down the estimated effects by economic sector therefore can provide some important added insights. Table 3.3 reports the effect of outward investment linkages with Europe within each of the relevant (i.e. actually having outward investment to Europe) economic sectors. All others would effectively be zero, so they are omitted.

In the case of the rate of overworking, the strongest improvement appears to occur in the Sales sector with a reduction of 76% followed by the Extractive (mining) and Transformative (manufacturing) Industry sectors at 24% and 17%, respectively. There is a very large, though not significant, positive effect in the agricultural sector which is quite striking, though not entirely unexpected. Brazil's agricultural industry, like that in much of the developing world, is notorious for labor abuses and is frequently the subject of scandals of slave-like working conditions. Similarly variegated results can be found after unpacking the regression results for the other three dependent variables, as well.

Table 3.3: Estimated Effect at State-level by Sector

	Overworking	Benefits Rate	Long Term Employ	Permanent Contracts
Agriculture	4.500^{**}	5.680^{**}	0.198	-1.264^{***}
	(1.863)	(2.429)	(0.258)	(0.273)
Extractive Industries	-0.260^{**}	0.235	0.003	0.028^{*}
	(0.112)	(0.146)	(0.015)	(0.016)
Transformative Industries	-0.142^{*}	0.345^{***}	0.033^{***}	0.040^{***}
	(0.075)	(0.098)	(0.012)	(0.011)
Electricity and Gas (Utilities)	0.266	0.886	0.000	-0.089
	(1.671)	(2.178)	(0.000)	(0.244)
Water, Sewage, Etc.	0.039	-0.007	-0.005	0.004
	(0.037)	(0.048)	(0.005)	(0.005)
Construction	0.180	-0.658	0.093	-0.021
	(0.368)	(0.480)	(0.131)	(0.054)
Sales	-0.083	0.142	0.059	0.196^{***}
	(0.428)	(0.558)	(0.078)	(0.063)
Transport, Storage, and Delivery	0.050	0.039	0.013	0.000
	(0.097)	(0.126)	(0.013)	(0.014)
IT and Communication	-0.237	0.623	-0.013	0.099^{*}
	(0.382)	(0.498)	(0.050)	(0.056)
Finance and Insurance Services	0.101	-0.548	0.012	-0.046
	(0.402)	(0.524)	(0.383)	(0.059)
Professional, Scientific, and Technical Activities	-0.309	-1.289	0.017	0.019
	(0.728)	(0.949)	(0.112)	(0.106)
Administrative Activities and Related Services	-0.319	3.430^{*}	0.126	-0.155
	(1.361)	(1.774)	(0.197)	(0.199)

Notes: $^{***}p < .01$; $^{**}p < .05$; $^{*}p < .1$

The benefits rate improves most in the agricultural sector, with an improve-

ment of nearly 5.6% for each additional linkage. This is followed by the industrial sectors and the water and sewage treatment sector, which is entirely made up of the significant within-country investments by Odebrecht in this sector. Improvements in long-term employment, in general, appears to largely be driven by the transformative (i.e. manufacturing) industrial sector while permanent contract provision has a much larger degree of diversity among sectors. Manufacturing remains a sector in which strong and significant improvements occur, joined by extractive industry and service sectors such as sales and IT and communication. For this outcome, agricultural workers suffer most, with a significant steep decline in permanent contract provision, which may be tied to the large increase in benefits provision. As agricultural companies increase the benefits provided to their formal employees, they are decreasing the number they actually employ permanently, relying more on third party, subcontracted and informal workers. This would perhaps be an attempt at signaling improvements while actually worsening conditions.

As expected, the industrial sectors, long the bastion and primary focus of workers' organizations in Brazil and beyond, show generally strong improvements in working conditions following establishment of outward investment linkages with Europe through M&As. The agricultural sector, as would be expected, diverges from this pattern, with what may be a superficial improvement in benefits provision intended to mask declining formal, permanent employment. Decreasing the number of workers that are permanently employed is a common method in Brazil to decrease labor costs and avoid provision of mandatory and voluntary benefits and protections to workers (Nölke 2014). This may indicate that inequality between core and periphery workers actually increases as a result of superficial improvements in certain sectors. These results become even more important as Brazil has shifted back to an economic model focused on the

production and export of agricultural and other primary goods following the China Shock in global markets and the successive conservative governments of Michel Temer and Jair Bolsonaro. The results for the service sectors, namely in sales and IT and communication, were not necessarily expected, as these sectors are frequently ignored in this sort of research. Arguably these sectors are of increasing importance not just in developed but in developing countries, as well, as they are the fastest growing sectors even in Brazil (aside from the agricultural sector), and so are deserving of greater investigation in future work.

3.3.2 Municipality-level Results

As mentioned at the start of the chapter, the state-level regression results might be plagued by aggregation bias, meaning that unmeasured or unobservable factors, obscured by the higher level of aggregation, are driving the observed correlation. Though the dynamic fixed effects may go some way to address these concerns, I ran a complementary set of MDFE panel regressions using the same variables measured at the municipality-level, which are derived from the decennial *Censo Demografico Brasileiro*, elaborated on more fully in the data section of the previous chapter. In addition to testing the robustness of the previous results to a considerably lower level of aggregation, the more fine-grained nature of the municipal data allows for a wider variety of propositions of theoretical interest to be tested, such as post-investment competitive spillovers, as well as opening up the analysis to further econometric methods, namely spatial econometric modeling which is used to test competitive spillovers in the next chapter. The first set of municipality-level results are reported below in Table 3.4.

Even with the much lower level of aggregation and finer level of detail, the results are substantially the same, at least for the three labor outcomes that can be replicated at this level, using the alternative data source. Column A

Table 3.4: Multidimensional City-level FE Results

	Overworking	Long Term Employ	Permanent Contracts
EU FDI Linkage	-0.945^{*}	0.413^{*}	0.566^{**}
	(0.523)	(0.237)	(0.215)
Education Rate	-0.104^{**}	0.066^{***}	0.050^{***}
	(0.037)	(0.008)	(0.008)
Female Population	0.158^{**}	0.051^{***}	0.065^{***}
	(0.061)	(0.012)	(0.013)
Non-white Population	-0.022^{*}	-0.004^{**}	-0.005^{***}
	(0.012)	(0.001)	(0.002)
Informality	-0.009	-0.002	0.000
	(0.041)	(0.002)	(0.002)
Employment Rate	0.176^{***}	0.011^{**}	0.024^{***}
	(0.027)	(0.004)	(0.006)
Ln. VAB Agriculture	0.449^{***}	0.021	0.057
	(0.115)	(0.040)	(0.036)
Ln. VAB Industry	0.875^{***}	0.039	0.229^{***}
	(0.259)	(0.056)	(0.069)
Ln. VAB Services	-1.180^{***}	0.345^{**}	0.382^{**}
	(0.400)	(0.146)	(0.138)
Ln. Exports to North	0.056^{***}	0.012^{***}	0.015^{***}
	(0.020)	(0.003)	(0.003)
PT Gov't	-0.660^{**}	-0.039	-0.039
	(0.239)	(0.024)	(0.023)
Ln. GDP	-1.350^{**}	0.109	-0.156
	(0.543)	(0.125)	(0.143)
Ln. Population	3.513^{***}	0.896^{***}	1.101^{***}
	(0.617)	(0.148)	(0.134)
Microregion FE	✓	✓	✓
Sector FE	✓	✓	✓
Year FE	✓	✓	✓
Observations	240944	240944	240944
R-squared	0.322	0.671	0.670
Adjusted R-squared	0.320	0.670	0.669

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

shows that an increase in one of outward investment linkages with Europe in a given municipality in Brazil in year *t-1* is associated with a 1% decrease in overworking. Column B shows that the same increase in a municipality is associated with an increase of roughly 0.41 log points of long-term employment,

which converts to about 51%[2] in long-term employment and over 76% in usage of permanent contracts, representing substantial increases in job security. These estimated effects are in substance noticeably larger than those for the state-level results, which supports the contention that the smaller coefficients found in the state-level results are the product of the higher level of aggregation, meaning that the changes, though statistically significant, were occurring amid a larger labor pool with higher levels of statistical "noise." I also ran a supplementary set of regressions using 2- and 4-year lags. These are reported in Table 7.9 in the Appendix. While the effect for all outcomes persist into the two year period, they do not for the four-year period, with the coefficient for overworking losing its significance (though nearly maintaining its value). The effect on both measures of job security, however, remain significant in both alternative lag structures, though the coefficients reduce in size indicating a diminishing effect over time, which would be expected. Improvements would have to diminish over time and not increase at a constant rate without end.

Following the approach in the previous subsection, a supplementary set of regressions were run utilizing interactions between the time dummy and the two individual fixed effects in order to try and control for other time-varying unobserved or unobservable variables. As was the case with the state-level results, the statistical significance and magnitude of the coefficients for the measure of investment linkages is not substantially diminished. These results are reported in Table 3.5. Altogether these results provide further evidence for a positive impact of outward investment to Europe on labor outcomes in Brazil where the invested companies have productive locations.

[2]Since this is a log-linear regression, lower coefficients can be interpreted as rough percentage changes, however, with coefficients above 0.15 or so, it is necessary to convert the coefficient to percentage change with

$$(1 - e^{\hat{\beta}})x100$$

Table 3.5: Multidimensional City-level FE Results w/ Interactive FEs

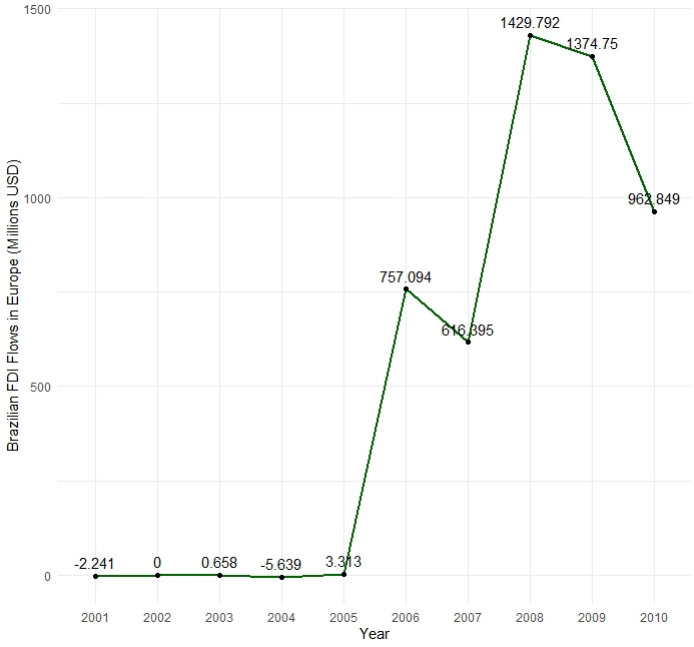
	Overworking	Long Term Employ	Permanent Contracts	Overworking	Long Term Employ	Permanent Contracts
EU FDI Linkage	−1.650***	0.941***	0.938***	−1.135***	0.890***	0.866***
	(0.363)	(0.097)	(0.112)	(0.355)	(0.104)	(0.111)
Microregion x Year FE	✓	✓	✓			
Sector x Year FE				✓	✓	✓
All Controls				✓	✓	✓
All Other FEs	✓	✓	✓	✓	✓	✓
Observations	240944	240944	240944	240944	240944	240944
R-squared	0.318	0.486	0.454	0.330	0.493	0.462
Adjusted R-squared	0.315	0.484	0.452	0.329	0.492	0.461
Notes:	***p < .001; **p < .01; *p < .05					

As a further robustness test, and in order to try and produce a better idea of the actual impact of outward investment on decent working conditions in Brazil, I employed a difference-in-difference estimation strategy using my municipality-level data. According to Tomio and Amal (2015) and de Alcântara et al. (2016) the main wave of Brazilian investment in the period 2000-2010 occurred in the years immediately preceding the Global Financial Crisis, that is 2006 and 2008, with a secondary wave occurring after Brazil's relatively rapid recovery and largely ending with the onset of the currently ongoing recession there (2010-2014). Brazilian outward FDI flows to Europe[3] are illustrated in Figure 3.1, which graphically replicate the claims about the peak of Brazilian investment occurring in 2006 and 2008 during the 2010 period.[4] I therefore take the stance that the assignment of treatment in the DiD approach taken is incidence of outward investment toward Europe between 2006 and 2008, meaning that the treated sample is defined by all those municipalities with an established linkage in this period (and excluding any that had been withdrawn either in Europe or in Brazil).

[3]Excluding the Netherlands and Luxembourg since most investment to these two countries are for purposes of tax avoidance. See Van Dijk et al. (2006) for an academic review of this phenomenon in the Netherlands but also the following media reports:
`https://www.reuters.com/article/us-luxembourg-report-idUSKBN2A81NP`
`https://www.nytimes.com/2018/09/20/business/netherlands-tax-avoidance.html`

[4]I focus on this period only because of the temporal limitations of the Census data.

Figure 3.1: Brazilian OFDI Flows to Europe

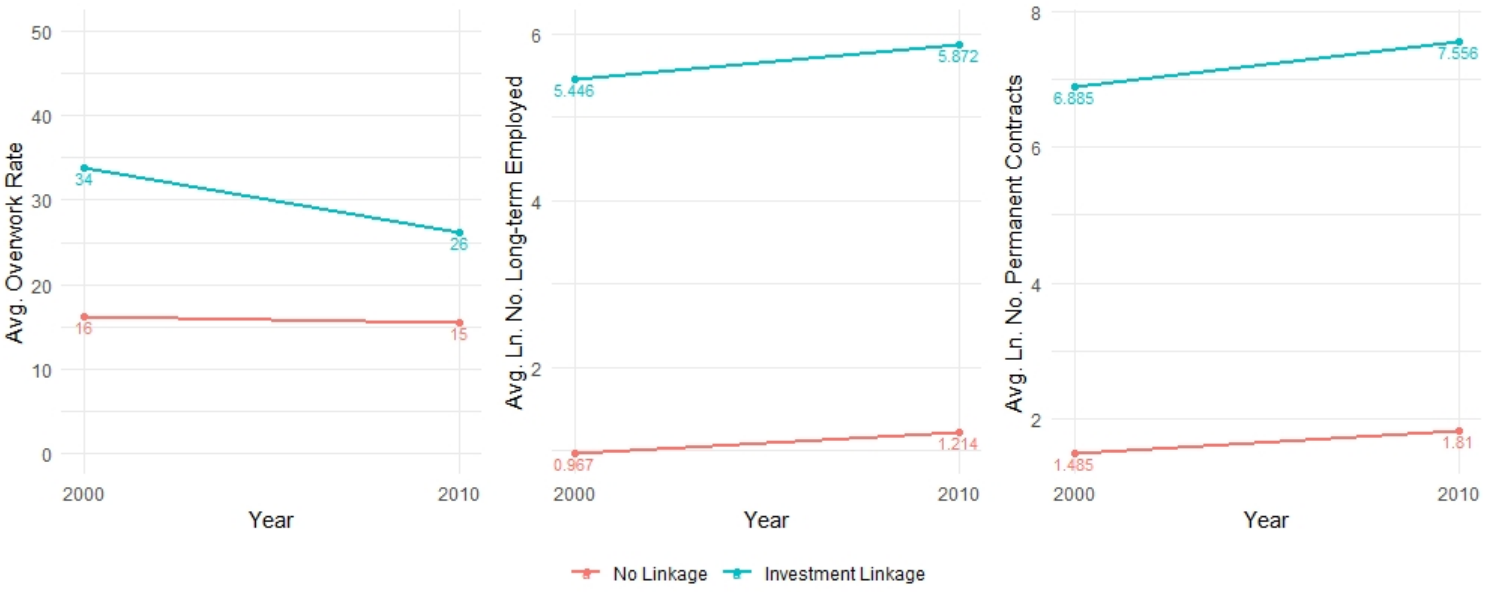


Source: UNCTAD Bilateral FDI Statistics

The difference between municipalities with and without investment linkages is illustrated in 3.2. While the difference between pre- and post-treatment periods for the invested and non-invested municipalities is most clear in the case of the rate of overworking in the left-most panel, the difference between pre- and post-investment values for the natural log of the number of workers with long-term employment and permanent contracts in locations with investment linkages are around double those for non-invested.[5] The treatment indicator is then multiplied by the year dummy and the interaction has the two outcomes regressed on it along with the full battery of controls from the previous regressions. This produces a rough treatment effect estimation, which is presented in Table 3.6 for both labor outcomes.

[5]The increase in log number of long-term employed for invested is 0.426 and for non-invested is 0.247 and the parallel increases for log number of permanent contracts are 0.671 for invested and only 0.325 for non-invested.

Figure 3.2: Difference in Decent Work Outcomes



There is a substantial and statistically significant effect of outward investment linkages with Europe on both the overworking and permanent contracts outcomes in the expected direction. The ATE of establishment of an outward investment linkage with Europe during the period of 2001-2008 is a reduction of 4.5% in the rate of overworking by 2010 and an increase of over 13% in permanent contracts. However, the estimated effect of long-term employment is near zero and not significant. Based on the multiple levels of aggregation and multiple methods employed, there does appear to be evidence of an upgrading effect on work conditions in locations in Brazil where Brazilian multinationals that have acquired European subsidiaries are present.

Table 3.6: Difference-in-Difference Results

	Overworking	Long Term Employ	Permanent Contracts
EU FDI Linkage Treatment	-4.585^{***}	0.001	0.131^{**}
	(0.893)	(0.060)	(0.060)
Microregion FE	✓	✓	✓
Other Controls	✓	✓	✓
Observations	240944	240944	240944
R-squared	0.051	0.312	0.392
Adjusted R-squared	0.051	0.312	0.392
Notes:	***p < .01; **p < .05; *p < .1		

3.4 Conclusion

The results presented here provide a first look at whether investment in Europe by developing country multinationals can lead to provision of decent work conditions in the investing country. As the leading emerging economies like Brazil began to address the worst violations of workers' rights, such as slave or child labor, secondary issues pertaining to decent work conditions gain importance as the next major step in improving workers' lives. While the activities of NGOs, unions, and international organizations contribute explicitly to achieving these goals, there can also be less direct, unintended channels through which improvements can occur. These channels were previously explored in the California and Shanghai Effects and related literature and have been expanded to include South to North investment linkages here.

The statistical results at both the state and municipality levels provide evidence for the proposed investing up effect proposed in Chapter 2. At either level of aggregation, this general effect is consistent and, as might be expected, the absolute value of the coefficients increase as the level of aggregation decreases. Moreover, these results are mostly consistent using alternative modeling approaches, including interacted (or dynamic) fixed effects and use of a difference-in-difference approach. It appears that the channels through which

globalization can have a normatively positive effect on labor rights are not just isolated to the effect of economic flows driven by the Global North nor solely to collective labor rights or to those rights as reflected in the law. Globalization driven by countries from the Global South can also lead to improvements in working conditions, in practice.

However, when disaggregating this general impact, the effects appear to be highly dependent on sector of the economy, based on the results in Table 3.3. In sectors where migrants and the less educated are likely to be hired, such as construction and agriculture, the internationalization of the firms appears to lead to worsening work conditions. Yet, in the majority of other sectors where there are Brazilian MNEs invested in Europe, there are clear improvements. This conditional finding seems to reflect those found by Arbix et al. (2004) and Arbix and Caseiro (2012b) where internationalizing firms characterized by greater innovation and higher levels of education and training provide better wages and investment in their employees. It would also appear that these investment linkages in these sectors have a further positive effect on socially sustainable development, on top of what is to be expected following growth in non-commodity sectors of the economy.

Of course, this research has its drawbacks. As far as data is concerned, there are clear limitations here that would be ameliorated by use of firm-level panel data for the working condition outcomes as well as complete transaction amounts for the outward investments in stocks or flows. Going forward, other data sources should be explored, such as proprietary data from EMNEs or investment and labor inspection data from government sources. Furthermore, the precise causal mechanism is not possible to establish with the available data. In expansions on this research, I will present qualitative evidence establishing the causal mechanism and explore the spatial effects of these investment linkages

at the municipality level as well as spillover of practices between municipalities and potential effects on labor inspection rates.

Chapter 4

Infectious Upgrading? Sub-national spillover of decent working conditions from locations with outward investment linkages.

4.1 Introduction

The previous chapter introduced the idea that investment from developing to developed countries, in the form of mergers and acquisitions, represents a novel linkage through which labor standards can diffuse. Utilizing a novel data set and multilevel, multidimensional panel data analysis, I provided evidence for upgrading of standards in states and cities with more investment linkages to advanced economies with relatively more stringent practices and regulations. Yet, Tobler's law states that: "Everything is related to everything else. But near things are more related than distant things." With this in mind, I turn in this chapter to the potential spillover of decent working conditions into locations neighboring those with European investment linkages. Some limitations in earlier political economic research on the globalization-labor-nexus have been reliance on aggregated data, especially when focusing on *de facto* labor outcomes (Dinopoulos and Zhao 2007; Greenhill et al. 2009; Mosley 2011a; Adolph et al. 2017b), or focus on highly contextual and narrow topics with questionable

[0]This chapter benefited from significant input from Dr. Damian Raess.

generalizability (for example in Amengual et al. 2019). Others in development and labor economics have studied wage and employment outcomes at the sub-national level and their relation to trade liberalization, including labor-related topics such as informality, employment, and migration (Meghir et al. 2015; Dix-Carneiro and Kovak 2017; Dix-Carneiro et al. 2018b; Dix-Carneiro and Kovak 2019). Missing from each of these are the effects of globalization on non-wage, *de facto* labor conditions at a sub-national level and whether economic globalization's immediate effects on labor practices or policies have (positive or negative) externalities. Does integration of a transition economy into global markets lead to isolated effects that bolster national-level measures of labor rights, obscuring increasing inequality, labor dualization, or variegated labor outcomes at the sub-national level? Is there post-integration diffusion, either positive or negative, by way of increasing competition between competitor employers in local labor markets or by way of activist unions holding non-invested firms accountable to newly improved standards in their immediate neighbor-locales?

To address these questions, in this chapter I propose general and sector specific spatial dependencies and test my propositions using spatial econometrics, specifically spatially lagged independent variable (SLX) and spatial Durbin models (SDM) with multidimensional fixed effects to test whether increasing investment linkages with Europe in one municipality influence labor outcomes in surrounding municipalities in the same sector. Moreover, I investigate whether these spatial effects are conditional on the relative skill level of a given sector and how skill level interacts with certain sector-specific characteristics, such as labor informality and mobility, in moderating employer and employee choices.

Existing spatial econometric research has investigated spatial dependence and spillover of income inequality (Pede et al. 2012), regulatory convergence (Mazzanti et al. 2012), wage determination (Buettner 1999), gender inequality

in employment (Grineski et al. 2010), unemployment (Conley and Topa 2002), among others (*for an overview, see* Arbia 2011; Anselin and Florax 2012; Corrado and Fingleton 2012, *the latter of which also warns against the unnecessary use or abuse of spatial econometric techniques*). As yet, the spillover of non-wage-related working conditions has not been tested, and certainly not in a globalization-labor nexus framework. In part, this may have been due to a paucity of data or an ongoing focus on model and measurement refinement that occupies the attention of many spatial econometricians. Political economy researchers have largely ignored spatial dependencies in this area, in part because of the high level of aggregation in much of the data that *is* available, a focus on cross-national studies, focus on alternative research methods (such as case studies), or because they have implied spatial effects in theory without explicitly testing for it in their statistical models.

This chapter also represents a first attempt at filling a gap in research on diffusion of norms and practices identified by Gilardi (2016). Specifically, the contribution in this regard is further unpacking the run-on effects of international diffusion of practices by looking at subsequent intranational diffusion and testing the specific local labor market characteristics that can mediate second-stage diffusion. In particular, in this chapter I unpack whether diffusion of practices or policies leads to isolated 'islands' of improvement or whether the effect is broader, leading to greater dispersion of practices such as (in this case) welfare improvements for workers in the form of decent work conditions. By looking into whether and how diffused practical upgrading has a further effect on neighboring localities, the work presented in this chapter delves further into precisely how labor-standard upgrading functions in globalizing transition economies, at a sub-national level, building on the indispensable work of Mosley and Uno (2007), Greenhill et al. (2009), Mosley (2011a). and Malesky and

Mosley (2018).

4.2 Spatial Dependencies in Working Conditions

The upgrading of working conditions in factories and offices in Brazil as a result of economic globalization are bound to cause new tensions in local labor markets (Hale and Xu 2016). As the local firms with European investments upgrade their practices to include decent working hours, higher pay, increased job security, or expanded non-wage remuneration (e.g. supplementary benefits), they will be better situated to attract the most skilled and capable workers (Van Zon et al. 1998).[1] This could leave competitors within their sector at a disadvantage as they face lower levels of human capital accumulation, lower productivity, and higher rates of turn-over (churning) due to loss of quality employees and an inability to attract replacements. This is particularly true in a country like Brazil plagued by the prevalence of high cost, low productivity, low skill workers in a highly regulated labor market (Gonzaga et al. 2003; ManPowerGroup 2013; Jürgens and Krzywdzinski 2016; Ambrosius 2018).

Affected employers, then, face two choices if they want to remain in the (formal) market. On the one hand, they can further cut employee costs by engaging in exploitative and sometimes illegal labor practices in order to cut down on labor costs in order to remain competitive with outwardly invested firms capable of attracting the best workers in their sector (in effect, stimulating a local race to the bottom) (Malik et al. 2012). On the other, they can try to improve working conditions at their own facilities in order to compete directly for the more skilled, higher productivity workers, attempting to boost

[1] This assertion seems to contrast with the likes of Scheve and Slaughter (2004) and Raess and Burgoon (2006) who focus on outward investment in the context of outsourcing and asset-exploiting FDI. My assertion here about condition upgrading and local labor market effects are based on the results in the preceding chapter and not intended to contradict this earlier work but rather to add to the effects found there, arguing instead that these spillovers are a novel addition to established findings.

their own productivity and product quality (Gardner 2002; Amankwah-Amoah and Debrah 2011). Though pessimists may express disbelief, this aligns with Colovic et al. (2019, p.8), where the authors argue that home-country multinationals may 'act as influential agents of social development..., improving employee rights respect through positive externalities.' Local firms may also look to home-country MNEs as examples of successful firms and try to copy their behavior. Research has shown that compliance by local (in this case, Brazilian) MNEs with what are, in essence, norms that are foreign to the local context can induce mimetic behavior in local firms, leading to less labor rights violations (Meyer and Rowan 1977; DiMaggio and Powell 1983). Zeng and Eastin (2012) argue further that domestic firms will face incentives to upgrade their own practices to pursue profits and adapt to changing local norms influenced by the importation of sustainable practices by changing stakeholder expectations as to what constitutes acceptable corporate behavior. Workers may also feel they are receiving unfair treatment if their remuneration or working conditions are below that of their peers employed elsewhere leading them to pressure their employer to match the better conditions. This is in line with research on the spillover of fair wages from local MNE locations to domestic employers (such as Kosova 2010; Tomohara and Takii 2011). This is an even more salient point in a country like Brazil that has widespread, active unionization across most sectors. Accordingly, I expect a spillover of decent work conditions through diffusion via learning, emulation, and competition as outlined above, which leads to my first hypothesis:

H1: *Due to processes of competition, learning, and emulation, working condition upgrading undertaken by Brazilian MNEs with OFDI linkages to Europe will diffuse to neighboring competitors.*

However, whether improvements in the working conditions of outwardly invested competitors lead to negative or positive spillovers may depend on the nature of the sector in which they operate. So, although there might be a general effect of spillover of social upgrading, individual sectors arguably may exhibit idiosyncratic effects. One relevant characteristic to such a conditioning argument is the relative substitutability of workers in a given sector, which in turn depends on the skill sophistication and specificity needed in their particular sector. In lower skill sectors, such as agriculture or construction, workers are likely more substitutable, as the skill-level and specificity necessary to adequately carry out the job can be relatively low and workers can be replaced quite easily, even between sectors within the low skill-barrier categorization (Mollick 2011; Fernández and Messina 2018). In others, such as R&D or health and social services, the skill barrier to entry can be quite high, making workers less substituable across sectors given the specificity and sophistication of their skill profile which can lead to a more limited pool of available replacement workers and decreased ability for workers to cross sectors in search of new or alternative employment (Jäger and Heining 2019).

What we should expect, then, is that in the former case any ratcheting up of *de facto* workplace-level labor standards should lead to competitive undercutting of working conditions as firms in the same sector attempt to remain competitive while only being able to attract average or below-average employees. In the latter, high-skill sectors, firms will more likely competitively upgrade their own working conditions in order to more effectively compete for the best possible employees and avoid losing them out to the multinationals offering less frequent working hour violations and greater job security. This leads to the conclusion that beneath the overall effect in the first hypothesis, there are the

two following conditional hypotheses:

H2a: *To remain competitive with firms with European FDI linkages and reduce their labor costs, neighboring competitor firms in low-skill sectors will competitively downgrade their working conditions.*

H2b: *To better compete for the best workers and boost their own productivity, neighboring competitor firms in the high-skill sectors will competitively upgrade their own working conditions.*

4.3 Data and Spatial Weights Matrix

4.3.1 Data

The data used in this chapter is an extension of that used in the previous empirical chapter for the municipality-level, non-spatial regressions. The two working conditions measured here, the rates of overworking and job security (for which I provide two alternative measures), are taken from the *Censo Demografico* and *RAIS* micro-data data sets, respectively. The aspatial (i.e. direct) measure of outward FDI linkages and controls are the same as in the previous chapter. The data covers 5,563 municipalities in Brazil across 22 economic sectors and two years: 2000 and 2010. Although full panel data, especially at the firm-level, would have been ideal for this analysis (such as that used by Dix-Carneiro and Kovak (2017), Dix-Carneiro and Kovak (2019), or Feierherd (2017)), I was unable to gain access in large part due to the Brazilian government dismantling the *Ministério do Trabalho e Emprego* and transfer of its responsibilities to the newly engorged *Ministério da Economia*.

To visualize municipal differences in decent working conditions, Figures 4.1,

4.2, and 4.3 present maps of the distribution of average rates of overworking and the two job security measures across Brazilian municipalities in 2000 and 2010.

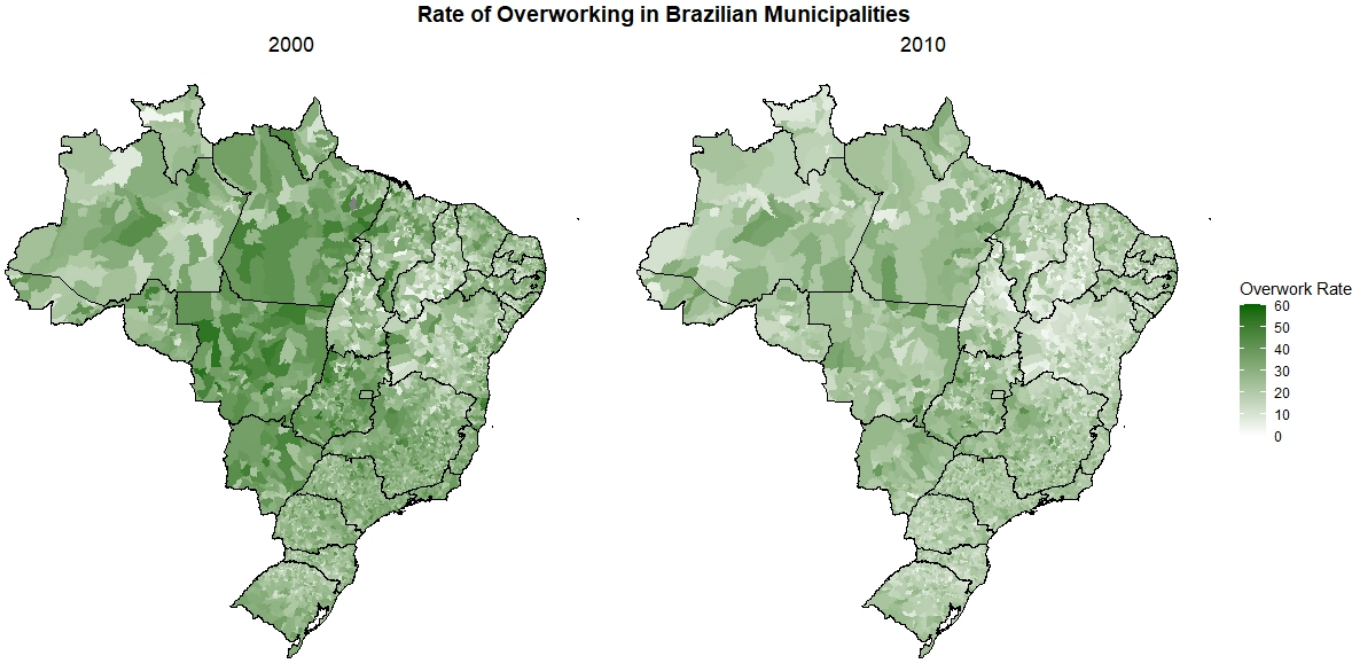


Figure 4.1: Overworking in Brazilian Municipalities 2000 & 2010

By analyzing the three maps we can deduce the following. First, there is substantial variation in the regional distribution of rates of both overworking and job security throughout Brazil. Overworking rates in Brazil's municipalities vary from essentially 0% to nearly 50% and job security (both for the logarithm of number of long term employed and logarithm of number of permanent contracts) ranges with similar variability between municipalities. Second, there is significant variation across the two periods, with a general trend toward improvement in the instance of decent work conditions in the latter period compared to the first.[2] Lastly, there appears to be spatial dependence within regions and

[2]Highlighting the necessity of accounting for time trends in the data, namely through

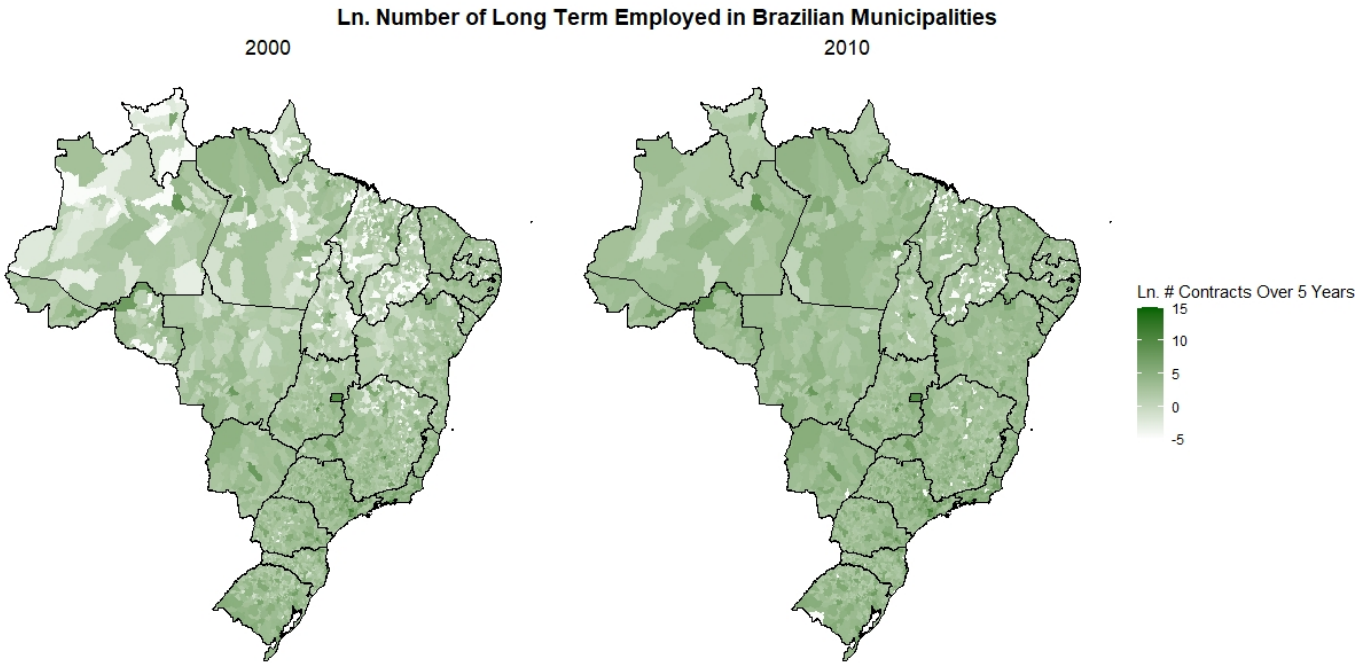


Figure 4.2: Long-term Employment in Brazilian Municipalities 2000 & 2010

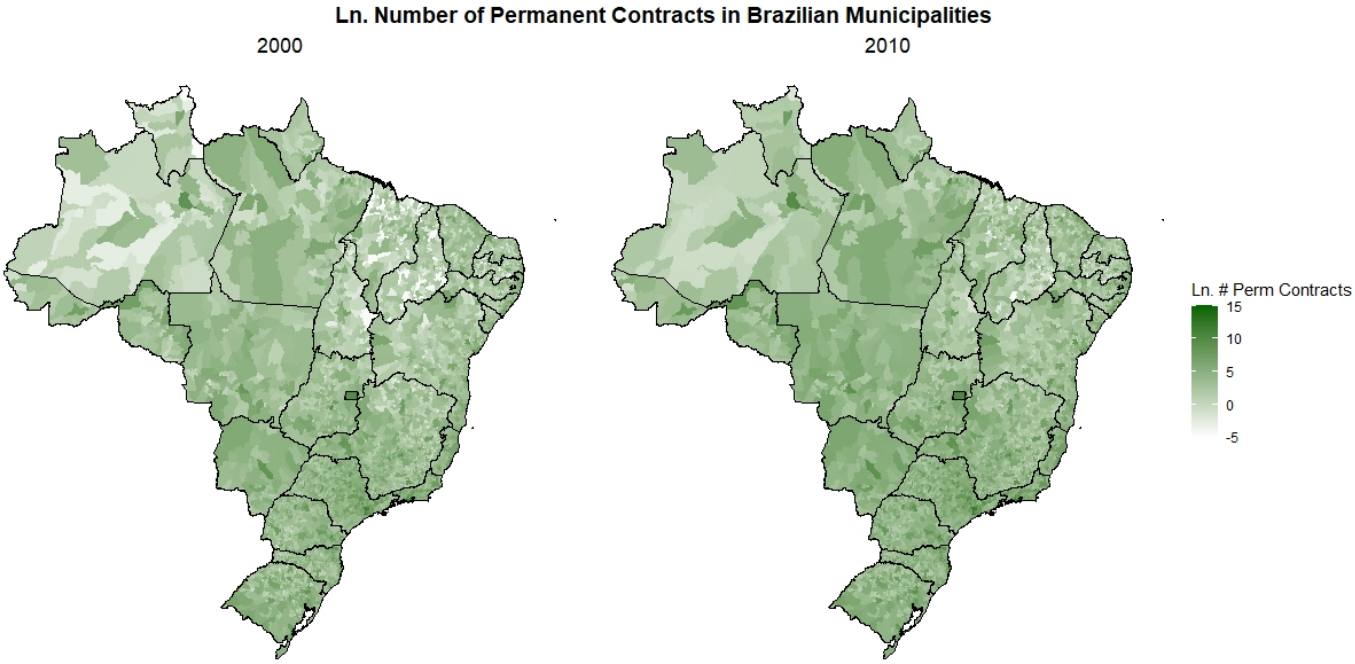


Figure 4.3: Permanent Contracts in Brazilian Municipalities 2000 & 2010

between municipalities. In many areas there appears to be positive clustering, that is, that neighboring municipalities exhibit similar levels of decent working condition incidence. The national variation and apparent spatial dependence between municipalities is encouraging but in order to formally establish spatial dependence and justify the use of spatial econometrics, it is necessary to run spatial econometric diagnostics (Cook 2019; Cook et al. 2019a).

4.3.2 Testing for spatial dependence in labor outcomes between municipalities and constructing spatial weight matrix

An important component of spatial econometric models is the spatial weights matrix (LeSage and Pace 2009). It is a non-random matrix that specifies exogenously the spatial relationship between observations. Hence, the spatial weights matrix W specifies what constitutes a neighborhood and how and whether potential neighbors interact. There are many possible ways to define the spatial weight matrix. There are (queen and rook) contiguity matrices, inverted distance, nearest neighbors, k nearest neighbors, economically interactive, and on. While there is an ongoing discussion as to how best to determine empirically the most accurate matrix form (which has led to some skepticism regarding the use of spatial econometrics in general) I side with a theory-driven approach, as suggested in Corrado and Fingleton (2012) and Cook et al. (2019b). An inappropriately specified W can jeopardize diagnostics, affect the accuracy of the model, and bring into question inferences drawn from the statistical results. As such, care must be taken. In the case of insufficient theoretical priors (especially when dealing with non-geographic spatial relationships) parameterizing W can help avoid misspecification. In the cases tested by Cook et al. (2019b) and the current research, there is sufficient foundation on which to build a theory-driven

including year dummies in all models.

spatial weight matrix.

Geographical distance has frictional effects on labor market activity (Fan 2019). Workers prefer to find jobs in their local environment because commuting and moving entails monetary and psychological costs (Anderson and Stark 1988; Munton 1990). In addition, although modern technology makes interacting across distances relatively painless, the competitive effects hypothesized in this chapter are most likely more geographically anchored in the "economically integrated contiguous municipalities" which have "similar geographic and productive characteristics, closely paralleling an intuitive notion of a local labor market" (Dix-Carneiro and Kovak 2017, p.2914). Moreover, labor and HRM practices arguably diffuse through processes of learning and emulation between locations that are geographically (more) proximate (Colovic et al. 2019). Brazilian unions are also geographically anchored, frequently in municipalities or collections of municipalities, called microregions (Bernardo 1992). As they negotiate for all workers of a given employment class they increasingly try to ensure equal treatment between the firms with which they negotiate. If an employer newly invested in Europe begins to improve working conditions, unions and workers that learn through local union networks will begin to push for improvements in the same way.[3]

For the above reasons, I opt for a row-normalized queen contiguity matrix. Put simply, this means that neighbors are defined solely by whether municipalities share a border and that all of a given municipality's neighbors' effects are normalized to 1 so that each neighbor's effect is considered to be one component of the overall spatial effect to which a given municipality is subjected. I then take the initial contiguity matrix and construct a sparse block diagonal matrix in which the diagonal matrices are the original neighbor matrix surrounded by

[3] *for example, see* `http://www.sindmetalsjc.org.br/imprensa/ultimas-noticias/155/na+sobraer+trabalhadores+param+e+exigem+plr+maior.htm`

zero matrices on the off-diagonal blocks. This allows for relatively easier creation of spatially lagged variables and neighbor lists given the multidimensional (city-sector-year) data being used. This block diagonal neighbor matrix is then used to construct a neighbor list in R to test for spatial dependence with the following tests.

Labor related outcomes and therefore labor related data are expected to exhibit spatial correlation. To test for this spatial dependence, I perform the Moran I test for spatial autocorrelation using first the overwork rate and then the job security rate measures. As this test is not specified for a particular spatial process, it can be applied directly to the data. The null hypothesis of the Moran I test is that there is no spatial autocorrelation. The Moran's I statistic is defined as:

$$I = \frac{\sum_i^n \sum_j^n w_{ij} \left(x_i - \bar{x}\right) \left(x_j - \bar{x}\right)}{\sum_{i=1}^n \left(x_i - \bar{x}\right)^2} \tag{4.1}$$

where x_i and x_j are the regional levels of a given outcome in district i and j. $\bar{x}$ is defined by $\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$ and w_{ij} is the element of the spatial weights matrix indicating the spatial impact of region j on i. I ran the Moran's I test on the overworking rate in each municipality as well as on both job security measures. For all decent work outcomes, the tests indicate that there is significant (p-values well below 0.001) and strong (Moran's I standard deviate of 30.439 and greater) spatial dependence. Yet, according to Anselin (2013) since the p-values from the Moran's I are computed analytically, they may not be the most accurate measure of significance. Two alternatives are the Monte-Carlo simulation MC Moran's I and the LISA test for local Moran's I. The MC Moran's I is a permutation test for Moran's I calculated using n random permutations of an outcome for a

given spatial weighting scheme and defined as:

$$I_i = \frac{x_i - \bar{x}}{S_i^2} \sum_{j=1, j \neq i}^{n} w_{i,j} \left(x_j - \bar{x}\right) \tag{4.2}$$

where x_i is the local level of a given outcome, $bar(x)$ is the mean of the corresponding attribute, w_{ij} is the spatial weight between location i and j, and

$$S_i^2 = \frac{j = \sum_{i,j \neq i}^{n} \left(x_j - \bar{x}\right)^2}{n - 1} \tag{4.3}$$

with n being the total number of locations (here, municipalities). The LISA local Moran's I provides a test for spatial dependence of each individual location, which allows researchers to determine whether spatial dependence is driven by a single or very few locations only.

I ran a MC Moran's I simulation over 1000 iterations for each working condition indicator. The resulting p-values were each just below 0.001, allowing me to again reject the null hypothesis of no spatial dependence in either decent work outcomes. The LISA averages are displayed in Table 4.1.

Table 4.1: LISA Averages

Statistic	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Moran's I	0.572	0.614	0.002	0.184	0.699	1.800
MI Variance	0.121	0.149	0.0002	0.003	0.178	0.408
Z Statistic	1.300	1.240	0.004	0.431	1.830	3.540
P-Value	0.251	0.322	0.001	0.036	0.277	0.930

What the LISA averages detail is that there is a great deal of variation in the value and significance of spatial dependence of labor outcomes between economic sectors and municipalities in Brazil. Nearly a quarter exhibit significant degrees of influence over their neighbors and these are distributed throughout

the country. With these results it is possible to say with confidence that there is not only spatial dependence in labor outcomes between Brazilian municipalities but that the aggregate result is not biased by a few extreme values or shortcoming in how the dependence is estimated.

4.4 Spatial Econometric Models and Results

In order to estimate the spatial dependence of decent work outcomes in municipalities neighboring those with investment linkages to Europe, and whether the effect varies depending on the skill level of the sector, I estimate spatial econometric models with multidimensional fixed effects and clustered and robust standard errors. The analysis proceeds in two steps. First, I test Hypothesis 1, whether there is a general effect of diffusion of practices between firms in the same sector in municipalities neighboring those with outward FDI linkages to Europe. Second, I will test the conditional hypotheses 2a and 2b by estimating models with an interaction between the skill-level and the spatially lagged outward investment linkage variables. This will allow us to explore if and how skill-level influences the diffusion of practices by way of competitive social upgrading or downgrading by employers operating in the same local labor market.

To begin the spatial econometric analysis, I estimate a series of SLX models, which explicitly estimate the impact of the spatio-temporally lagged independent variable (outward investment linkages with Europe) on decent work outcomes. The SLX model is the simplest of the spatial regression models both in estimation and theory and has recently received a great deal of support and attention in the somewhat niche realm of spatial econometrics (Halleck Vega and Elhorst 2015; Ward and Gleditsch 2018). Moreover, the SLX (and its extensions in the Spatial Durbin and Spatial Durbin Error models) explicitly

model local, as opposed to just global, spillovers, making it superior to general spillover models such as the Spatial Autoregressive (SAR) or Spatial Error models (SEM) (LeSage and Pace 2014). The SLX model therefore focuses precisely on the spatial processes I propose and will allow me to unpack whether international economic integration has isolated or diffuse sub-national effects. The results from the SLX model will help with understanding whether the *de facto* national-level effects found by the likes of Mosley (2011a) or Greenhill et al. (2009) are the result of increasing variation (or dualization or inequality) within country due to isolated improvements or whether these types of effects diffuse sub-nationally, leading to a more equitable ratcheting up labor practices such as decent work outcomes.

The general form of the cross-sectional SLX model can be written as:

$$\begin{aligned} \mathrm{y} =& \mathrm{X}\beta + \mathrm{wX}\theta + \varepsilon \\ \varepsilon \sim& N\left(\mathbf{0}, \sigma^2 \mathrm{I}\right) \end{aligned} \tag{4.4}$$

where w is the weight matrix, y is the dependent variable, X is the independent variable, and ε is the error term which follows the familiar normal distribution. If we were to restrict $\theta = 0$, this becomes the familiar, aspatial linear regression model.

The cross-sectional SLX model can easily be extended to a fixed-effects panel data model:

$$\begin{aligned} \mathbf{y} &= \mathbf{X}\beta + \mathbf{WX}\theta + \Psi\mu + \varepsilon \\ \varepsilon &\sim N\left(\mathbf{0}, \sigma^2 \mathbf{\Omega}\right) \\ \Omega &= \mathbf{\Sigma}_N \otimes \boldsymbol{\omega}_T \end{aligned} \tag{4.5}$$

where the uni- or multidimensional fixed effects are collected in Ψ. The weight matrix w is expanded by taking the Kronecker product of the cross-sectional weight matrix and an identity matrix I_{TJ} where T is the number time periods

and J is an optional third dimensional fixed effect (in this case, economic sector), producing the sparse, block-diagonal weight matrix W. When estimating these models in R, an AR(1) process and heteroskedasticity are assumed and accounted for during estimation of the variance-covariance matrix Ω's component matrices, Σ_N and ω_T.

To estimate the positive or negative spillover of FDI linkage effects on neighboring municipalities, I employ the following baseline SLX specification:

$$Y_{ijt} = \text{FDI}_{\text{ijt}-1}\beta + \text{WFDI}_{\text{ijt}-2}\theta + X_{it-1}\gamma + Z_{it}\delta + \lambda_i + \lambda_j + \lambda_t + \varepsilon \qquad (4.6)$$

where FDI_{ijt-1} refers to the number of outward investment linkages in sector j in municipality i at time *t-1*; $WFDI_{ijt-2}$ is the spatially lagged independent variable, also lagged by an additional year assuming that employers in surrounding municipalities will not respond immediately to the effect of OFDI linkages in a neighbor; X refers to 1-year lagged time varying economic variables; Z is time-varying sociodemographic variables; the lambdas are the location, sector, and time fixed effects; and epsilon is the error term. All SLX models are estimated via OLS with robust standard errors clustered by the microregion, sector, and year.

4.4.1 SLX Results

Table 4.2 presents the main SLX results. Looking at columns one through three, we can see that there is a statistically and substantively significant spillover effect of outward FDI linkages with Europe in the years following investment activity. All three coefficients show an effect of competitive upgrading, that is, rates of overworking decrease while both the incidence of long term employment and permanent contracts increase indicating increasing job security. In fact, the indirect effect of outward FDI linkages with high standard host coun-

tries appears to be larger than that of the direct effect, with coefficients that are substantially larger than those reported for the EU FDI Linkage variable.

This might reflect the larger intra-sector response from the outwardly invested company's competitors in surrounding municipalities. While the direct effect in a municipality would be estimating the immediate impact on the invested companies, which would be one or relatively few, the proposed spillover would theoretically affect many competitors within the same broad economic sector. It also likely reflects the cycle of direct and indirect effects. As municipality a affects neighbor b, so too does b affect a, leading to an amplified spatial effect containing both b's immediate effect on a but also feedback from a's effect on b. This can be thought differently as "I am my neighbor's neighbor," leading to a feedback loop of spatial effects and, moreover, is illustrated in Figure 7.2. These absolute value of these estimates might also be biased upwards because they are capturing other spatial dependencies that have not yet been included, but this will be addressed in the following section. Looking again to the results table, I find that an increase of one outward investment linkage in municipality i is associated with an 6.5% decrease in the rate of overworking, an increase in long term employment of nearly 1.5 times (150%), and increase in permanent contracts of nearly 95% in neighboring municipalities. The direct effect (*EU FDI Linkage*) estimates do not stray much from the values reported in the previous chapter, aside from very small increases in the coefficient size. Moreover, the controls continue to function much in the same way as before, and the measures of model fit are nearly identical.

As expected, the presence of outward investment linkages has a clear impact on the provision of decent work conditions in surrounding cities. Moreover, this effect appears to be positive in a normative sense and stronger than the direct impact of investment linkages. This can be interpreted as, in aggregate,

Table 4.2: SLX Models

	Overworking	Long Term Employ	Permanent Contracts
W*EU FDI Linkage	-6.479^{***}	0.893^{***}	0.679^{***}
	(1.852)	(0.214)	(0.222)
EU FDI Linkage	-0.953^{*}	0.414^{*}	0.567^{**}
	(0.528)	(0.236)	(0.215)
Education Rate	-0.103^{**}	0.066^{***}	0.050^{***}
	(0.037)	(0.008)	(0.008)
Female Population	0.158^{**}	0.051^{***}	0.065^{***}
	(0.061)	(0.012)	(0.013)
Non-white Population	-0.022^{*}	-0.004^{**}	-0.005^{***}
	(0.012)	(0.001)	(0.002)
Informality	-0.009	-0.002	0.000
	(0.041)	(0.002)	(0.002)
Employment Rate	0.175^{***}	0.011^{**}	0.024^{***}
	(0.027)	(0.004)	(0.006)
Ln. VAB Agriculture	0.450^{***}	0.021	0.057
	(0.115)	(0.040)	(0.036)
Ln. VAB Industry	0.874^{***}	0.039	0.229^{***}
	(0.259)	(0.056)	(0.069)
Ln. VAB Services	-1.174^{***}	0.344^{**}	0.381^{**}
	(0.399)	(0.146)	(0.138)
Ln. Exports to North	0.056^{***}	0.012^{***}	0.015^{***}
	(0.020)	(0.003)	(0.003)
PT Gov't	-0.661^{**}	-0.038	-0.039
	(0.239)	(0.024)	(0.023)
Ln. Population	2.157^{***}	1.006^{***}	0.946^{***}
	(0.586)	(0.187)	(0.178)
Microregion FE	✓	✓	✓
Sector FE	✓	✓	✓
Year FE	✓	✓	✓
Observations	240944	240944	240944
R-Squared	0.322	0.671	0.671
Adjusted R-Squared	0.320	0.670	0.670

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

the spillover effect of the establishment of outward investment linkages with European markets diffuses to surrounding municipalities, leading to a second wave of improvements as managers in firms near to outwardly invested firms competitively ratchet up standards. However, there is also the aforementioned possibility that the estimated effect of *W*EU FDI Linkage* is biased by omitted sources of spatial dependence, such as the spatial correlation found in the Moran's I and LISA tests of the decent work outcomes. Those tests indicated that there was significant spatial dependence in the outcomes between municipalities and, while some of that dependence may be explained by economic factors such as the proposed effect of investment linkages, it is certainly not entirely explained by this. In order to control for potentially omitted sources of spatial dependence, alternative model specifications are needed.

4.4.2 SDM Results

As I've argued in this chapter, labor (and many other) outcomes are spatially dependent (Chomitz et al. 2005; Quintanar 2019). How this dependence takes form can vary, in the form of spatially dependent unmeasureables (spatially dependent errors) or spatial autoregression (spatially lagged independent variables). The former is an indirect form of spatial dependence in which unchanging or immeasurable characteristics of geographic locations influence entire regions in which clusters of neighbors are nested. The latter is a more direct form of dependence where the outcomes in one location influence those in its neighbors. Here, I focus on direct dependence by including a spatial autoregressive term to the previous models. By doing so, I can control for the potential confounding influence of the spillovers of working conditions which may be biasing the SLX results in the previous subsection. If the SDM results do not deviate significantly from the SLX results, the estimated secondary diffusion effect of

outward investment linkages on working condition upgrades can be considered robust in the face of alternative sources of spatial dependence.

The spatial Durbin model with fixed effects that is used has the general form of:

$$Y_{ijt} = \rho W Y_{ijt} + \text{FDI}_{\text{ijt}-1}\beta + \text{WFDI}_{\text{ijt}-2}\theta + X_{it-1}\gamma + Z_{it}\delta + \lambda_i + \lambda_j + \lambda_t + \varepsilon \quad (4.7)$$

which closely resembles the SLX model apart from the addition of the spatially lagged dependent variable WY_{ijt}. Each SDM is estimated by maximum likelihood with standard errors clustered at the microregion and year, like before.

Table 4.3: Spatial Durbin Models

	Overworking	Long Term Employ	Permanent Contracts
W EU FDI Linkage	-5.3136^{***}	0.8884^{***}	0.394^{***}
	(1.6445)	(0.1864)	(0.1019)
W Labor Outcome	0.3567^{***}	0.0833^{***}	0.2322^{***}
	(0.004)	(0.002)	(0.0019)
EU FDI Linkage	-1.1986^{***}	0.2846^{***}	0.3587^{***}
	(0.7215)	(0.0364)	(0.044)
All Controls	✓	✓	✓
Microregion FE	✓	✓	✓
Sector FE	✓	✓	✓
Year FE	✓	✓	✓
Observations	240,944	240,944	240,944
Squared-Correlation	0.344	0.687	0.690
Adj-pseudo R2	0.04502	0.28726	0.26418
Log-Likelihood	$-1,064,124.04$	$-344,708.08$	$-390,348.95$

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

From the results displayed in Table 4.3, we can see that, in general, the original SLX results for the secondary impact of European OFDI linkages on neighboring municipalities is consistent with the inclusion of this alternative source of spatial dependence. The coefficients for the spatially lagged independent variables are slightly diminished, confirming the upward bias introduced by omission of the spatial autoregressive variable, but they remain highly signif-

icant with p-values well below 0.01. The coefficients for the direct effect are also highly significant and the estimated impact of the direct effect on overworking is larger than in the SLX models above, growing in magnitude to a decrease in the rate of overworking of 1.2%. The spatially lagged labor outcomes are also positively and significant, indicating positive spatial autoregression, such that improving (worsening) labor outcomes in one municipality are associated with improvements (degradation) in neighboring municipalities, within the same sector.

4.4.3 High- and Low-skill Sector Results

When considered as a whole, the results indicate that there is a process of competitive upgrading in municipalities around those with outward investment linkages. However, as pointed out earlier, the way in which competitor firms respond to upgrading in local multinationals and their ability to attract higher quality workers from the local labor market will depend on the options available to them. In the case of lower skill sectors where labor can be substituted more easily, employers can choose to competitively upgrade, which the aggregate results seem to confirm, or to competitively pursue a low-cost business model, downgrading their labor practices and working conditions without concern for retention of workers, *rotatividade*, or (lack of) human capital accumulation. In higher skill sectors, conversely, the ability to substitute workers is much lower, as the knowledge base of employees is more highly specialized and difficult to replace. Therefore, we would expect a positive correlation between the skill-level in a given sector and the rate of upgrading in that sector. While skill-level cannot be measured directly, one can proxy for it using the average educational attainment in each sector (Van Zon et al. 1998; Fernández and Messina 2018; Eggenberger et al. 2019). I do this by taking the percentage of high-school equiv-

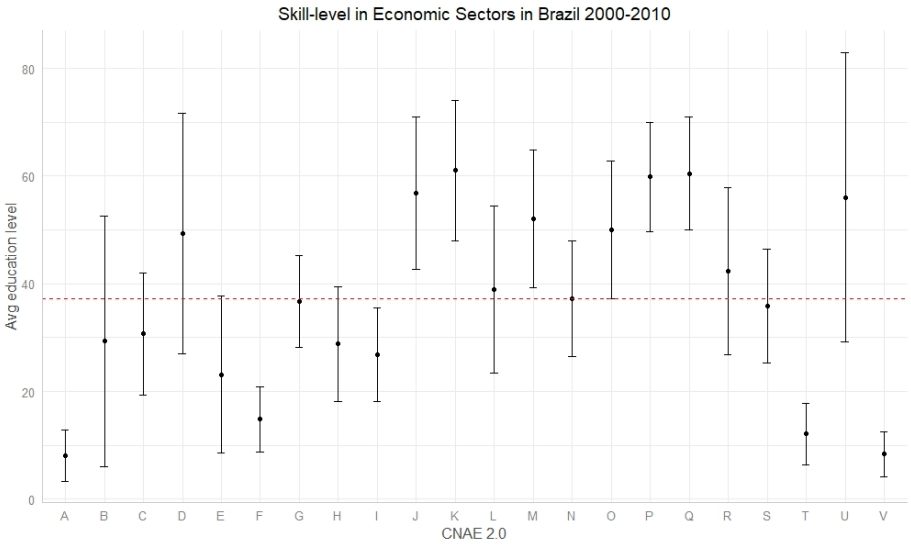


Figure 4.4: Skill level in Economic Sectors (CNAE 2.0) in Brazil

alent completion in each sector and year according to individual responses to questions regarding educational attainment in the Brazilian Census for the years 2000 and 2010. The average values across these years is illustrated in Figure 4.4, where we can see that there is significant variation between sectors which are defined according to the Brazilian government's CNAE 2.0 classification.[4] As we might expect, sectors such as agriculture (A), mining (B), construction (F), and hospitality services (I) exhibit the lowest levels of average education and can be classified as relatively low-skill sectors. Yet other sectors such as IT (J), finance and securities (K), and professional and scientific services (M) should be included in the high-skill sectors due to their relatively higher average educational attainment and associated specificity.

In order to test the impact of skill level, I include a dummy variable which is 1 for each sector with average educational attainment below the national average (the red line in Figure 4.4) and zero otherwise and interact this dummy with

[4] *for more information, visit* https://cnae.ibge.gov.br/?view=estrutura *or check the relevant key included in the appendix*

*W*FDI Linkage* in SDM regressions estimated by maximum likelihood.[5] The results for the sector-skill SDMs are reported in Table 4.4 below. Unpacking the estimates from the previous section somewhat, I find that the earlier aggregate effect is highly contextual, depending on the average skill-level in a given sector, as expected. However, the results for overworking, long term employment, and permanent contracts are all entirely contrary to expectations. Low-skill sectors show a strong and consistent ratcheting up of standards in these two areas (overworking and job security, the latter of which having two constituent measures) whereas high-skill sectors show a strong and significant competitive undermining of standards, such that these aspects of decent work appear to be competitively undercut in response to their improvement in similarly high-skill sectors in neighboring municipalities.

Why is this? Although these results certainly are vexing, there may be further sector specific characteristics that can explain them. In low-skill sectors in Brazil, informality is an ongoing problem. In high-skill sectors, employees frequently enjoy relatively high wages which, in turn, affords them the luxury of personal vehicles and higher degrees of personal mobility, meaning that they can go where the best jobs are. I argue that these two characteristics can explain at least some of these confounding results.

[5] According to Brambor et al. (2006), it is rarely the case that researchers can justifiably omit constituent terms from a regression. Doing so can lead to model mispecification and incorrect, biased estimates to say nothing of inferences drawn from such results. However, they do allow for certain circumstances in which a researcher can omit a constituent term in a model with interactions. As Sachs and Schleer (2013) point out, omitting a constituent term is acceptable when the effect of the constituent term outside of the interaction in the Generalized Unrestricted Model (GUM) is zero (or effectively so) and when there are theoretical justifications for the omission. In this case, the low-skill sector dummy is perfectly colinear with the sector dummies or, in terms of demeaning variables in a FEs estimator, the low-skill dummy becomes zero for all observations, making it a constant of zero, effectively having no estimable impact in the GUM. Furthermore, as a time unvarying attribute of each sector in the period of study, the skill profile of a given sector is absorbed by the sector FEs (or sector dummies) meaning that it is implicitly included. The obvious alternative would be to exclude the sector FEs and include only the skill dummy but this would fail to control for all other time unvarying characteristics of the economic sectors leading to a more serious case of omitted variable bias. The skill dummy is therefore omitted in its explicit form, with the understanding that its effects are controlled for in the sector FEs.

Table 4.4: Sector Skill Level Models

	Overworking	Long Term Employ	Permanent Contracts
W FDI Linkage*Low Skill Sector	-7.760^{***}	1.576^{**}	1.6639^{***}
	(0.911)	(0.641)	(0.3568)
W FDI Linkage	1.783	-1.5588^{***}	-1.1706^{***}
	(0.417)	(0.5143)	(0.862)
EU FDI Linkage	-1.109^{***}	0.341^{**}	0.470^{***}
	(0.355)	(0.207)	(0.175)
W Labor Outcome	0.344^{***}	0.190^{***}	0.222^{***}
	(0.063)	(0.040)	(0.045)
All Controls	✓	✓	✓
Microregion FE	✓	✓	✓
Year FE	✓	✓	✓
Sector FE	✓	✓	✓
Observations	240944	240944	240944
Squared-Correlation	0.354	0.638	0.644
Adj. Pseudo R^2	0.047	0.184	0.180
Log-Likelihood	$-1,062,333.19$	$-538,447.51$	$-562,241.10$

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

4.4.4 The Role of Informality and Mobility in Low- and Highskill Sectors

4.4.4.1 The Role of Informality in Low-skill Sectors

In relatively lower skill sectors such as domestic service, (some) manufacturing, and agriculture, informal workers can make up as much as 50% (or more) of the workforce in Brazil, making informality a serious and prescient issue (Meghir et al. 2015; Dix-Carneiro and Kovak 2017; Ulyssea 2018). What this means for the present research is that employers in low-skill sectors can pursue a low-cost business model by employing off-the-books workers who typically earn less and work more, providing greater leeway for employers and bearing the brunt of their low-cost business models, potentially biasing the low-skill estimates in Table 4.4. Employers facing stiffer competition for the best employees from internationalized firms complying with higher standards may lean on the flexibility provided by informal workers in order to cut costs in their production

or service provision in order to remain competitive (Ponczek and Ulyssea 2017).

These informal employees also do not have any real sense of job security as their employment is not subject to any sort of regulation. Therefore, in low-skill sectors with high degrees of informality, statistics such as the rate of overworking or long-term employment may appear to increase but only for those with an official contract, contributing to the dualization of labor (*see, for example* Emmenegger et al. 2012; Feierherd 2017). In order to test whether the confounding results in Table 4.4 were at all influenced by the role of labor informality in low-skill sectors I include the level of informality, which was previously used just as a control[6], to the earlier *W FDI*-Skill interaction, leading to a three way interaction between informality, skill-level, and spatially-lagged outward FDI linkages with Europe. These results are displayed in Table 4.5 and the marginal effect of *W FDI Linkage* on overworking conditional on the degree of informality and skill-level in a given sector is illustrated in Figure 4.5.

Indeed, as expected, the level of labor informality in low-skill sectors profoundly conditions the relationship between outward investment linkages with Europe in neighboring municipalities and the subsequent adjustments made by employers in a given sector and municipality pair. While initially the results in Table 4.4 lead us to conclude that improvements in labor conditions resulting from outward investment linkages spillover into the low-skill sectors in neighboring municipalities (while high-skill sectors experience the opposite), totally contrary to expectations and intuition, when interacting the average skill-level proxy with the extant informality level in each sector, we find instead that as informality increases *alongside* outward investment linkages in neighboring locales, the rates of overworking and job security in low-skill sectors actually worsen. The coefficients for the effect of spatially lagged FDI linkages on overworking

[6] And is operationalized according to the explanation in Chapter 2.

Table 4.5: Sector Skill Level and Informality Models

	Overworking	Long Term Employ	Permanent Contracts
W FDI Linkage x Low Skill x Informality	0.233^{***}	-0.083^{***}	-0.050^{***}
	(0.020)	(0.003)	(0.003)
W FDI Linkage x Low Skill	-9.085^{***}	2.617^{***}	2.202^{***}
	(1.609)	(0.100)	(0.147)
W FDI Linkage	-2.904	-0.078^{***}	-1.805^{***}
	(2.168)	(0.031)	(0.168)
EU FDI Linkage	-0.433^{***}	0.632^{***}	0.812^{***}
	(0.074)	(0.006)	(0.008)
W Labor Outcome	0.340^{***}	0.195^{***}	0.229^{***}
	(0.002)	(0.011)	(0.011)
All Controls	✓	✓	✓
Microregion FE	✓	✓	✓
Sector FE	✓	✓	✓
Year FE	✓	✓	✓
Observations	240944	240944	240944
Squared Correlation	0.473	0.338	0.502
Adj-pseudo R^2	0.142	0.043	0.170
Log-Likelihood	$-454,115.11$	$-1,065,225.79$	$-400,604.91$

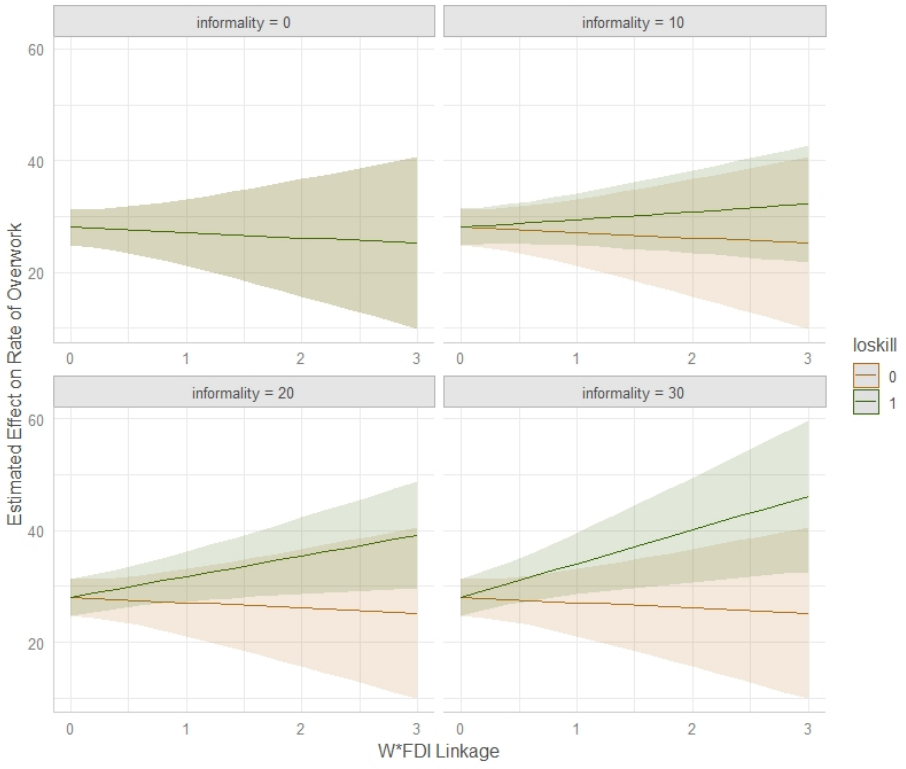
$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

in low-skill sectors with low (or null) levels of informality (*W FDI Linkage x Low Skill*) and high-skill sectors (*W FDI Linkage*), moreover, are now in the direction one would expect given the theoretical priors. This highly conditional and significant effect is most noticeable as illustrated in the bottom two panels of Figure 4.5, as the predicted marginal spillover effect of outward investment linkages on the rate of overworking deviates dramatically between high-skill and low-skill sectors as the level of informality reaches a little over half its upper bound in the Brazilian data.

Turning back to Table 4.5, this conditional effect of informality in low-skill sectors also holds in the case of the two measures for job security, with increasing informality contributing to a negative conditional correlation between *W FDI Linkage* and either long-term employment or permanent contracts. In effect, what the results and the plotted marginal effects indicate is that in low-skill sectors with higher (lower) rates of informal employment, the rate of overworking

increases (decreases) while the frequency of job security measured in two forms decreases (increases) when they have to compete with upgrading, outwardly invested Brazilian companies. To put it more directly, informality conditions the relationship between the spillover of decent working conditions which, in the context of competition for labor, makes intuitive sense. Where the informal sector is larger, employers can depend more on what Almeida et al. (2015) calls the intensive margin of informality, nominally remaining in the formal sector but relying more on short-term, expendable, informal workers who are more susceptible to all types of abusive employment practices.

Figure 4.5: Conditional Marginal Effect of W*FDI Linkage on Overworking



Looking to the coefficients for the estimated effect of the constituent variable

W FDI Linkage on the two job security measures alone, however, we find that the main effect of the spillovers on the job security measures within high-skill sectors (as that is what the non-interacted, constituent *W*FDI Linkage* variable measures when controlling for the interactions above it) remain negative, indicating declining incidence of decent work conditions, in high-skill sectors. This result remains puzzling and, given the mediating effect of informality in low-skill sectors on decent work spillovers, it is worth considering whether there isn't a similarly conditional effect in high-skill sectors which is biasing these results. In order to test whether these confounding results stand-up to closer scrutiny or whether there is a mediating variable, similar to informality, we turn to the next section.

4.4.4.2 The Role of Mobility in High-skill sectors

While the above helps to explain the unexpected results in low-skill sectors, it does not explain those in the high skill sectors. In the results from the previous subsection, there was the an unexpectedly negative spillover effect for the two measures of job security in high-skill sectors. So, while much of the counter-intuitive results for overworking seemed to be accounted for, there appears to still be some unexplained phenomenon influencing the job security results. I argue here that mobility plays a similar mitigating role in the spillover of job security in high-skill sectors as informality did for all three decent work measures in the low-skill sectors, though for different reasons. Workers that are more mobile are likely going to pursue better jobs being made available at firms experiencing early upgrading, such as the Brazilian multinationals with European subsidiaries (Eriksson et al. 2018; Cappelli et al. 2019). Moreover, relatively higher-skill sectors will, on average, pay more due to skill premia and higher wages arguably improve a worker's mobility as they are better able to afford transport costs,

especially in a developing country context. As these resource-endowed, high-skill workers move across municipality lines, their contract-related measures of job security will move while their resident demographic and mobility measures will not, as these data are reported by employers and compiled in the RAIS database, kept by the Brazilian government. This will lead to the appearance of downgrading in location i and upgrading in neighboring j. Thus, by including an interaction with a measure of worker mobility (proxied by whether a census respondent indicated that they work in a neighboring municipality from the one in which they live) we can see if the earlier 'backward' results were actually due to omitted variable bias.

Table 4.6: Sector Skill Level and Mobtiliy Models

	Long Term Employ	Permanent Contracts
W FDI Linkage x High Skill x Mobility	-0.047^{***}	-0.031^{***}
	(0.000)	(0.001)
W FDI Linkage x High Skill	1.704^{***}	1.978^{***}
	(0.235)	(0.201)
W FDI Linkage	1.201^{***}	1.165^{***}
	(0.089)	(0.142)
EU FDI Linkage	0.631^{***}	0.812^{***}
	(0.026)	(0.031)
W Labor Outcome	0.196^{***}	0.229^{***}
	(0.036)	(0.036)
All Controls	✓	✓
Microregion FE	✓	✓
Sector FE	✓	✓
Year FE	✓	✓
Observations	240944	240944
Squared Correlation	0.501	0.473
Adj-psuedo R^2	0.169	0.142
Log-Likelihood	$-400,658.31$	$-454,126.03$

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

The results for the inclusion of mobility and its conditional marginal effect on the job security measures are displayed in Table 4.6. One key difference here that differentiates this set of models from those including the informality interactions

is that the skill dummy identifies high- rather than low-skill sectors. Though this essentially provides the same identification, using a high-skill rather than low-skill identifier makes the results easier to read in light of the focus on high-skill sectors in this section. From the table, we can see that, indeed, as mobility increases along with outward investment linkages in neighboring municipalities, there is the effect of a decrease in job security with a parallel increase in job security in the hypothetical absence of mobility. As outward investment linkages with Europe increase in neighboring municipalities, allowing for the backward diffusion of decent working conditions, more highly mobile workers in high-skill sectors will pursue these better positions, using the resources at their disposal.

These results taken together support the argument that, for high-skill sector workers with greater access to resources, increasing mobility enables high-skill workers to pursue optimal employment in the outwardly invested firms near to where they live. The positive, and relatively larger, coefficients for those sector-location-year combinations in which there is no mobility, however, indicate that the originally hypothesized positive externality proposed in hypothesis 2.b does, in fact, hold so long as we control for mediating role of mobility. We can even see from the larger coefficient in 4.6 that this effect occurs much more with the long-term employment measure than with the permanent contract measure, indicating that while the rate of permanent contracts is not so highly conditioned by higher degrees of mobility in high skill sectors than is long-term employment measure. This can arguably be interpreted as movement of workers towards better jobs and not decrease in the offer of those same, more secure jobs with decent work conditions. Taking into account the conditionalities introduced by informality in low-skill sectors and mobility in high-skill sectors, I find that, in fact, the results do conform with the conditional hypotheses 2a and 2b, when controlling for sector-specific labor characteristics beyond just skill-level.

4.5 Conclusion

In this chapter, I analyzed whether upgrading of working conditions due to outward investment linkages with Europe leads to positive (or negative) social externalities in the form of diffusion of practices to neighboring competitor firms. While the initial results supported this hypothesis, the decomposition of effect by sector skill-level produced unexpected results. While intuition might dictate that neighboring, low-skill competitor firms might attempt to maintain their cost competitiveness by accepting lower quality workers, engaging in unethical or even illegal activities, the results showed otherwise. In fact, the sectoral disaggregation produced results that indicate that high-skill sector competitor firms were engaging in competitive downgrading while low-skill sectors sought to compete through social upgrading leading to increased incidence of decent working conditions. However, when introducing mediating factors, informality and mobility, to the relevant sectoral skill grouping, the results largely conformed with the original hypotheses while at the same time introducing sector-specific labor characteristics that play an important role in determining the precise way in which practices diffuse between locations.

One of the main contributions of this chapter is to the study of how globalization affects *de facto* labor rights in developing countries, at the sub-national level. Previous research has largely considered national-level outcomes, without considering whether the improvements or degradation found were occurring in isolated points, either pulling up or dragging down national averages, or whether the effects were more diffuse leading to equitable up- or downgrading of labor standards. The evidence provided here seems to indicate that, in fact, globalization can have a diffuse effect over time, whereby firms engaging in international economic activity influence the decision of their peers. Although the precise mechanisms driving these effects cannot be determined quantitatively,

in the following chapter, I will present exploratory text and content analysis evidence, unpacking the causal mechanisms behind the relationships that were quantitatively established in this and the previous chapter.

Chapter 5

Substantiating the Symptoms: Content and Sentiment Analysis for Supplemental Analysis and Mechanism Exploration

5.1 Introduction

In my first two empirical chapters, using various econometric methods I explored how outward investment linkages with high-standard host countries can lead to the inter- and intra-national diffusion of *de facto* individual labor rights in the form of decent working conditions, as defined by the ILO. Driving the statistical analysis were multiple proposed theoretical mechanisms which focused on the parallel phenomena of regulatory compliance paired with intra-firm standardization of practices, international union networking, learning/emulation, and socialization. Though the statistical results appear to confirm the existence of the proposed relationship between outward foreign direct investment (in the form of M&As) in Europe and improving labor standards in the home country of Brazil, the actual mechanism(s) through which this apparent diffusion is occurring cannot be teased out with the previous data and methods. Moreover, it is also possible that these results are not generalizable beyond the specific work-related outcomes that are available in the PNAD and Censo Demografico microdata. That is, it may be the case that the results cannot be substantiated

using alternative data and methods, especially those measuring perceptions of the types of changes that appear to be going on. As Pegler (2009) argues, work and the concept of decent work are both objective and subjective experiences.

This chapter attempts to address both issues by looking first at how worker and union attitudes toward outwardly invested companies change over time, in the periods before and after investment in Europe, followed by exploration of the potential causal mechanisms driving the investing up effects found in the previous two chapters. I investigate the first issue through automated text mining of over 9,000 press articles published online by unions and union federations and confederations in Brazil. Specifically, I utilize text and sentiment analysis in both pre- and post-investment periods to investigate worker attitudes toward Brazilian multinationals with investment linkages to Europe as well as automated topic modeling. I find that there is a small improvement on average in sentiment in the period following a Brazilian multinational's initial investment in Europe. This effect is considerably more dramatic when looking at coverage of specific sectors, such as chemical manufacturing, food processing, and IT services. Moreover, I find that the topics under discussion change, as well, depending on the sector.

To address the second question of what mechanism might be driving the econometric results, I explore a well-defined sub-sample of articles from not only labor unions (*sindicais trabalhistas*) but Brazilian employer associations (*sindicais patronais*), as well. From the employer association articles, I find evidence of deep integration of Brazilian multinationals into European institutions, in particular universities and employer associations and conferences, as well as frequent interactions between Brazilian employers and their European counterparts characterized by recognition of superior managerial knowledge for the latter. Unfortunately, some of this evidence is circumstantial in that it pro-

vides the necessary opportunities for socialization or coercive forms of diffusion without confirming what effects it might have had. From the workers' union articles, however, I do find evidence of Brazilian unions establishing intra-firm networks with their counterparts in host countries in Europe with specific mention of ensuring the same level of decent working conditions in both the host and home countries as well as between home country locations. While in the case of the employers the evidence is not conclusive, the union-side evidence clearly establishes at least one of the mechanisms through the proposed relationship occurs, i.e. through firm-specific international unionism.

5.2 Text and Sentiment Analysis in Political Science

A key component of text in modern political life is expression of opinion and exposition of occurrences. While researchers in political science and political economy have always cared about text and words, the internet and social media have contributed to a renaissance in text analytical research by providing a monumental amount of new and detailed data sources (*see* Cardie and Wilkerson 2008; de Marchi and Page 2016). For example, Project Gutenberg offers free access to millions of complete books, news organizations are making archives available, social media companies are actively encouraging researchers to use their data, governments now regularly publish reports and data on official websites, and NGOs and other stakeholders have followed suit by publishing proprietary reports, data, and articles on their respective sites.

In order to take advantage of this growth in data sources, there is a surfeit of new and updated tools for mining text in a systematic (though not always simple) manner. In particular, Selenium and its adaptations in Python and R make automated web navigation and the scraping or mining of data from publicly available sites feasible for the first time for many researchers (Aydin

2018). In order to make these new tools as widely available as possible, social science methodologists and programmers have been fastidiously adapting text mining and web scraping tools to all major statistical software suites. R, Python, and Stata all now have computational text, content, and sentiment analysis libraries available (Williams and Williams 2014; Bengfort et al. 2018; Benoit et al. 2018; Jockers and Thalken 2020).

The combination of increased data supply and tools for its extraction and analysis are unprecedented and have made text mining a very popular tool in modern research in political science and political economy (Wilkerson and Casas 2017). At its simplest, text analysis allows us to analyze and compare how different words are used in corpora containing huge amounts of unstructured data (Younis 2015). Of greater interest, however, is the opportunity to use trained algorithms to tell whether the sentiment of a text or corpus of texts is positive or negative or even represents a discrete emotion or compilation of emotions, what is now commonly known as sentiment analysis (Casas et al. 2016; Silge and Robinson 2017; Xu and Guo 2018). Sentiment analysis has proven to be a reliable means of text mining/analysis especially in order to study news reports, blogs, and opinions on the internet (Pang and Lee 2009; Asur and Huberman 2010; Dodds and Danforth 2010; Zhou et al. 2013; Mostafa 2013).

For example, Dür and Lechner (2018) uses news articles mined from LexisNexis to construct independent variables measuring positive or negative sentiment towards trade agreement negotiations. The authors then used these variables to determine which companies gain and lose from the passing of such agreements. Matura (2018) studies the evolution of media coverage of the Belt and Road Initiative (BRI) in the Central and Eastern European (CEE) region and how sentiment toward the BRI varies across space and time in the CEE

while Wang and Reagan (2020) similarly studies sentiment towards Chinese investment in Malaysia. Liao et al. (2019) uses an unique expert-coded sentiment dictionary to measure the media optimism about a company and how media sentiment varies between companies that do and do not undertake mergers and acquisitions. Soroka et al. (2015) explore how media sentiment towards the future of the economy is related to public perceptions of economic prospects in the United States during the Great Recession. Finally, Roulet (2019) constructed a sentiment dictionary to measure media opinions toward conduct of financial firms during the Global Financial Crisis and how these opinions are linked to increasing business for some firms.

5.3 Retrieving, Cleaning, and Preparing Data

According to Wilkerson and Casas (2017), these and any projects utilizing text-as-data must proceed through at least three steps. These are: obtaining text, conversion of text to data, and analysis of text-as-data. Each step is elaborated further in the following sections.

5.3.1 Obtaining the Text

Although for some projects, the initial collection of texts "is now a fairly minor [first] step" (Wilkerson and Casas 2017, p.530), for my own project this was not the case. For many text analysis projects, a simple application use interface (API) allows prospective researchers to easily request the content they desire, such as when using content maintained by *The New York Times*, LexisNexus, or social media sites (e.g. Twitter or Facebook). However, for the present research, the desired content was held in many different websites of varying qualities and formats and, in addition, which organizations' websites even needed to be accessed was a topic that itself required investigation. There

is no central repository listing which unions are associated with workers at the nearly 5 dozen Brazilian multinationals with European subsidiaries for which I have information.

Using media reports at the city, state, and national level in Brazil as well as articles from major union federations and confederations I went through each of the Brazilian multinationals' home-country locations in order to identify the relevant *sindicatos trabalhistas* and *sindicatos patronais*. Then, where information was available, I identified the *federações* and *confederações* (federations and confederations) that each *sindicato* was associated with. Having compiled this list of relevant institutions I checked whether each *sindicato*, *federação*, and *confederação* maintained a website with a news page with content that included multiple years in the period of my analysis, that is, 2000-2017. Unions and the federations and confederations of which they are constituents use their web portals as megaphones, highlighting cases of abuse by employers; rallying members to strikes, protests, or social functions; and to disseminate relevant news pertaining to organizational activities and local, national and international occurences.

Using this list of worker and employer union sites, I constructed unique web scraping functions in R utilizing the Rvest (Wickham and Wickham 2016), Rselenium (Harrison and Harrison 2020), and tidyverse (Wickham 2017) packages to iteratively search out articles with mentions of each company, compile these articles into a list of URLs, access each article at its unique URL, and scrape the content (that is, the headline, date, and body) of each. Since content included in the Federation or Confederation sites may be reprints of news reported at lower levels of the union hierarchy, I also cleaned the article data of duplicates. This ultimately left me with 9,951 relevant and unique workers' union articles and 1,685 employer union articles.[1]

[1]The large discrepancy appears to stem from how much more numerous are the workers'

5.3.2 From Text to Data

Having compiled the text, it then becomes necessary to convert it to analyzable data. The most common analytical unit in sentiment analysis (or any text mining research project, for that matter) is the monogram, that is, single words (Silge and Robinson 2017). However, monograms (or other low frequency n-grams) introduce noise in the form of stop-words (here defined as articles such as *a/o*, *um/a*, or *e/ou*), punctuation, sparse words, and (in the case of web content) inclusion of web script as a result of errors in the coding of a web page. Following common practice, I broke down each article into individual words and removed stop-words, numbers, punctuation, and coding terms that were included as a result of errors in the script of some web pages.

Having compiled the 'bag of words' for each article, the next step was to assign sentiment to each. This can proceed in one of a number of ways. The first is to manually code certain sentiments for individual words and generate a unique sentiment dictionary for use in the analysis. Problematically, most projects pursuing this path for sentiment assignment rely on teams of coders that can check inter-coder reliability and involve experts either in linguistics or with specialized knowledge about the area of interest. These are beyond the resource limitations of this project. Alternatively, there are specialized sentiment dictionaries that have been generated using source materials such as literature, news, and/or social media postings (especially Twitter) that are freely available for use in text mining research. The most common are NRC, Bing, and Afinn though only the former has a freely accessible Portuguese sentiment dictionary that can be loaded into and used in R.

The NRC Emotion Lexicon categorizes words into either positive or nega-

unions relative to employers' unions, which likely is derived from a relative absence in collective action problems for the latter as compared to the former. For a discussion of this phenomenon, see Wilmers (2019).

tive orientations as well as to eight basic discrete emotions: anger, anticipation, disgust, fear, joy, sadness, surprise, and trust (Mohammad and Turney 2010). It is also available in at least 15 common languages including Portuguese and is one of the most commonly used (and most highly lauded) sentiment dictionaries (Rosenthal et al. 2017). One drawback of the lexicon, however, is that it does not allow for neutral terms and its sentiments are often trained on social media. This can be problematic because, for example, some occupations such as lawyers receive a negative sentiment categorization. This is most likely due to the training data used, namely social media posts, such as from Twitter. As much as everyone can enjoy a good lawyer joke, for the purposes of analyses, assignment of something like an occupational category can be highly problematic and bias an analysis of pre- and post-investment press articles written by unions concerning their transnational, corporate employers. In the specific case of the noun 'lawyer,' an article about an employer like JBS conceding to demands made by relevant unions in the *Tribunal Superior do Trabalho* (Superior Labor Court, or TST) would receive a more negative sentiment score than it might deserve. Or, in another case, during international meetings between unions within a corporate network where a labor law specialist is involved in consultations, what would have been a positive case would be scored negatively.

This apparent subjectivity in the scoring is likely very useful when analyzing social media posts where opinion is heavy and the association of an occupational category or other noun is appropriate, but when trying to objectively analyze press releases and posts in order to ascertain organizations' perspectives as objectively as possible, it is arguably less so. I therefore decided to keep the NRC as a secondary test for the core sentiment analysis and instead opted for the alternative SentiLex-PT lexicon developed by Silva et al. (2010). The authors "determine the positive, negative, and neutral polarity of human adjectives

(adjectives that co-occur with a human subject)... from a seed set of adjectives manually classified" which is then used to automatically assign polarity to non-manually-assigned adjectives based on the computed distance from the original seed set of adjectives. The main advantage to using this lexicon over others - such as NRC or Souza and Vieira's (2011) OpLexicon - is its focus on human and human organization subjects, so that assignment of adjectives to a positive, neutral, or negative sentiment category is arguably less prone to inherent bias due to its domain-specificity (Paulo-Santos et al. 2011; Machado et al. 2018). For this reason, I choose the SentiLex-PT lexicon for my sentiment analysis though I use the NRC lexicon to test the consistence of the analysis to alternatives.

5.3.3 Text Analysis of Union Articles: First Stage

5.3.3.1 Frequency and Correlation in Pre- and Post-Investment Periods

The initial corpus of labor union articles included a total of 6,632,182 words. These were divided into pre- and post-investment corpora[2], with the majority of words occurring in the post-investment (6,587,411) versus pre-investment (44,771) period. For this reason, simple statistics like word count are not by themselves sufficient for the current research.[3] I opt to focus primarily on sentiment as a measurement of proportion, that is, the proportion of words that are

[2]Each article is linked to each of the multinationals in my data set and the data for each article includes the date of its publication. In order to allocate each article to the pre- or post-investment period, I coded a binary variable that is 0 for any year prior to the initial establishment of outward investment linkages with Europe and 1 for every article that occurs 1 or more years afterward. This binary variable is firm-dependent so that, for example, the post-investment period for Alpargatas starts in 2009 while that of WEG starts in 2001.

[3]When the focus *is* on term frequency, this is used primarily as a means for illustrating the frequency of a given term relative to other terms, so it is measuring where terms fit on the hierarchy of term frequency. If the pre- and post-investment corpora were of equal size, comparison of frequency of individual terms in each period would be a useful exercise. However, here, given the disparity in corpus size between the two periods, it is more useful to focus on what are the most frequent terms rather than precisely how frequent those terms are from period to period.

positive, neutral, or negative according to the SentiLex-PT lexicon. Since SentiLex focuses only on adjectives with application to human entities, this reduces the sample size to a total of 3,448,243 for the sentiment analysis with over 90% of words occurring in the post-investment period and a total of 5,623 unique terms with frequency varying between over 2,000 down to 5. However, though term frequency is not a sufficient method it can be enlightening. Therefore, I begin this section exploring the most frequent terms in the periods before and after establishment of outward investment linkages with Europe as well as which terms co-occur with key terms in each period.

The most common (that is, occurring with greatest relative frequency) 500 terms in each of the pre- and post-investment periods are illustrated in the word clouds in Figure 5.1. Clearly, there are multiple terms that occur in both periods with similar frequency. *Trabalhadores* (workers), *sindicato* (union), and *empresa* (company) are examples of common terms that are central to the basic concept and functions of unions vis-a-vis outwardly invested employers and so figure prominently both before and after Brazilian multinationals acquire subsidiaries in Europe.

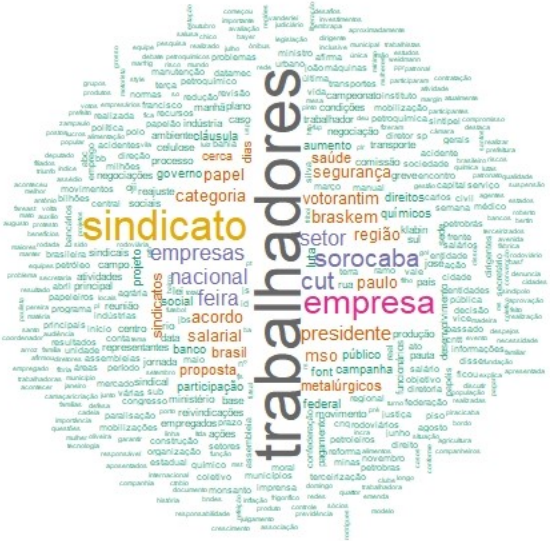
In both periods, we can also see key terms which are relevant to the actual work of unions including salary (*salarial*, *reajuste*), health and safety (*saúde* and *segurança*), collective agreements (*acordo*), strike (*greve*) and job category (*categoria*). We also see prominent company names, such as Vale, Braskem, Votorantim, and Klabin along with some of the more active worker categories such as metal (*metalurgicos*) and chemical (*quimicos*) workers.

In order to get a clearer idea of the frequency of individual terms, Figure 5.2 shows the top 50 terms based on frequency after removing geographic and national-level political terms.[4] One of the key takeaways from this figure is the

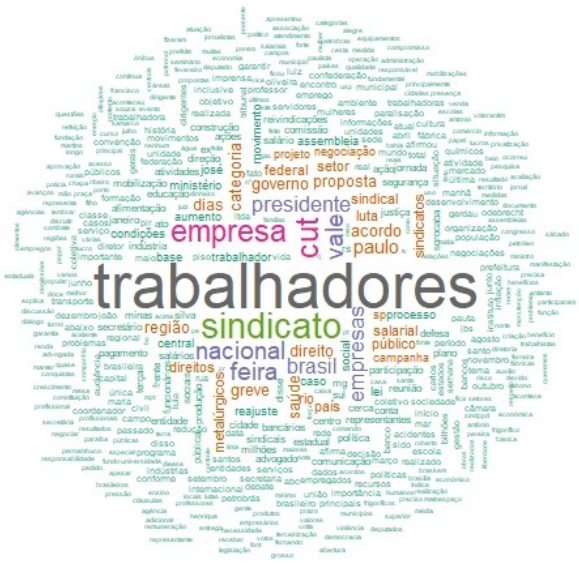
[4]The post-investment period especially includes articles that regularly report on opposition to the Temer government and responses to the Global Financial Crisis and Brazilian recession that began in 2014.

Figure 5.1: Wordclouds of Top 500 Terms Pre- and Post-investment

Pre-investment



Post-investment

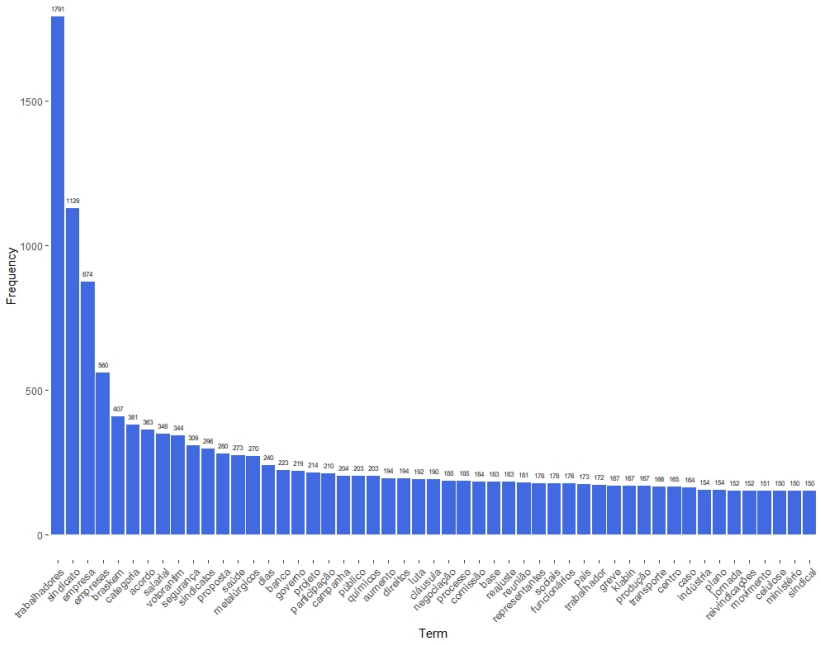


much higher frequencies in the post-investment period than the pre-investment period. Otherwise, however, there appears to be little difference between the two periods. In both the pre- and post-investment periods, the top terms refer to workers, employers, and unions followed by collective agreements (*acordo*) and job category (*categoria*). In the pre-investment period articles, campaigns (*proposta*, *campanha*) related to salary (*salarial*, *reajuste*) and health and safety (*saúde* and *segurança*) occur very frequently with common mention of specific companies (Braskem, Votorantim, Klabin) and job categories (metalurgicos, quimicos), as well. Of relevance to this thesis, work hours (*jornada*) is included in the top terms before investment and does not appear in the top terms after investment.

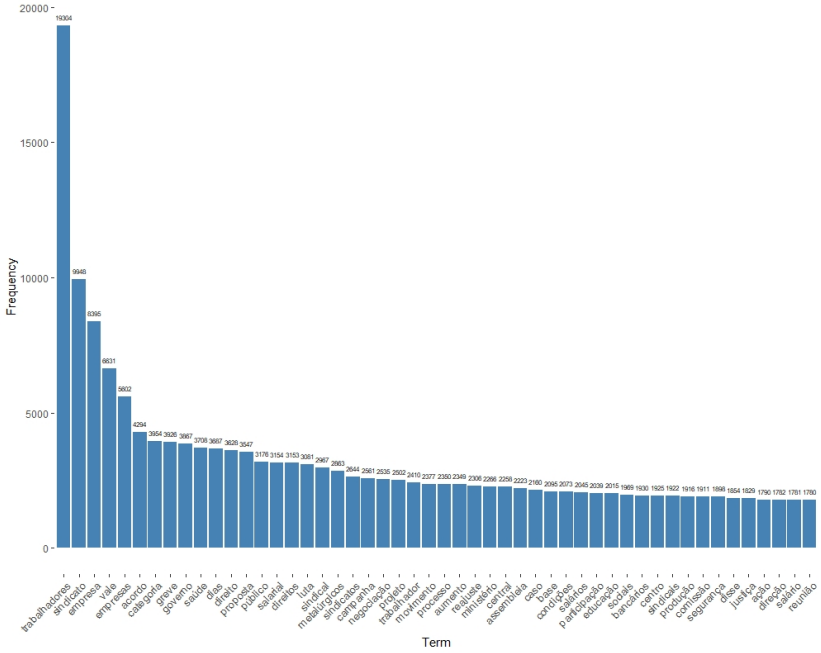
In the post-investment period, in addition to the terms that are most frequent in both periods, the terms for strike (*greve*) and fight (*luta*) are much more frequent (neither appears as high in the frequency distribution in the pre-investment period). References to the rights of workers also appear to be relatively more frequent, as the singular and plural form of the Portuguese word for rights (that is, *direito* and *direitos*) occur much higher in the frequency hierarchy. Terms related to negotiation and communication (such as *negociação*, *proposta*, and *processo*) also occur with relatively greater frequency in the post-investment period than in the pre-investment period. Although the increased frequency of terms belying a more combative relationship between unions and outwardly invested Brazilian firms (such "strike" and "fight") could be troubling for the hypothesis that conditions ought to be improving in the post-investment period, the increased relative frequency of the communicative terms (like "negotiation" and "proposal") might suggest that this is indicative of more active unions pressuring the outwardly invested employers for better conditions. This possibility is investigated later in this chapter.

Figure 5.2: Frequency of Terms from Cleaned Text Data

Pre-investment



Post-investment



Beyond frequencies, we can also investigate what terms tend to co-occur in articles in each of the periods. In text mining, this is frequently done either through n-grams (for example, bigrams, that is, pairs of words) or word correlation. N-grams can be useful, but are limited to words that occur adjacent to each other. Of arguably more utility here are correlations, that is, words that tend to co-occur within a document. A common measure for binary correlation in text analysis is the phi coefficient which is the equivalent of the Pearson correlation (Silge and Robinson 2017). The phi coefficient is defined as:

$$\phi = \frac{n_{11}n_{00} - n_{10}n_{01}}{\sqrt{n_1 \cdot n_0 \cdot n \cdot 0n \cdot 1}} \tag{5.1}$$

which, simply put, estimates how much more likely two words are to co-occur or for neither to occur than for only one of the two terms to occur.

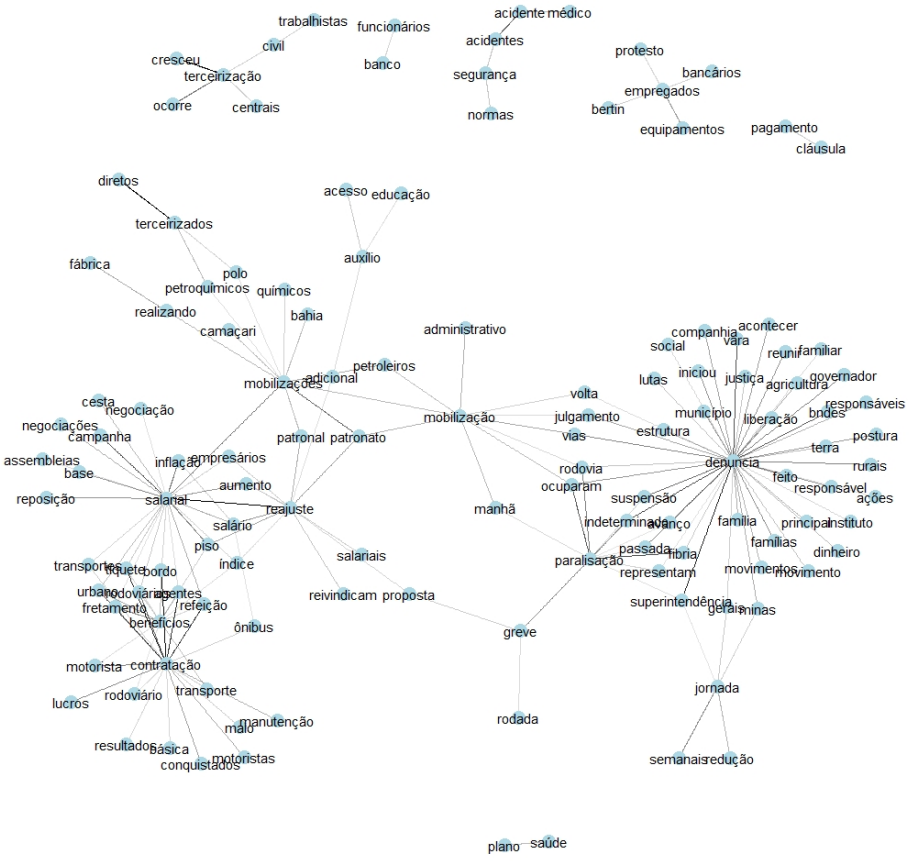
For this analysis, I chose terms from the 100 most frequent terms in each period that related directly to labor and working conditions.[5] All other terms that co-occur with these key terms within articles in each period with a correlation of at least 0.25 are illustrated in Figure 5.3.

First it is important to note that, as with the frequencies, the larger post-investment corpus has led to a noticeable difference in the two plots. The larger sample of articles leads to more precise and fewer correlations in the post-investment period than in the pre-investment period. However, it is still instructive to study differences in the types of terms associated with key terms that occur in both periods. For instance, the term *terceirização*, which typically refers to indirectly employed, temporary workers, has different contexts in each period. In the pre-investment period, articles on temps (to use the Anglo-

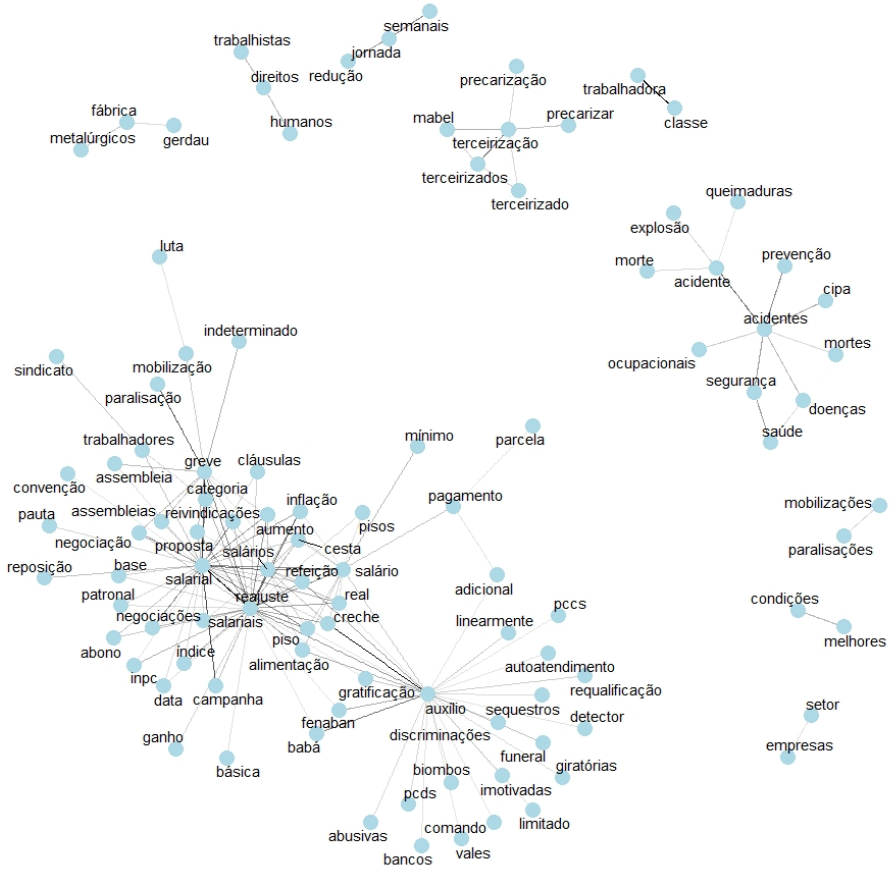
[5]These are: *acidente*, *acidentes*, *auxílio*, *benefícios*, *condições*, *contratação*, *denuncia*, *direito*, *direitos*, *empregado*, *empregados*, *empregadas*, *empregada*, *empresa*, *empresas*, *fábrica*, *funcionários*, *greve*, *jornada*, *mobilização*, *mobilizações*, *pagamento*, *paralisação*, *reajuste*, *salarial*, *salário*, *salários*, *saúde*, *segurança*, *terceirização*, *terceirizados*, *trabalhador*, *trabalhadores*, *trabalhadores*, *trabalhadora*, and *trabalhistas*.

American colloquialism) most commonly are reporting on the growing (*cresceu*) occurrence (*ocorre*) of use of non-permanent, indirectly employed workers. But this is also associated with complaints about working conditions (*condições*) and efforts by the unions and confederations (*centrais*) to address degarading conditions as a result of the *terceirização* of employment. Denunciation (*denuncia*) is associated with a wide range of other terms including sectors (*agricultura*, *rurais*), social identifiers (*familias*,*trabalhadoras*, *coordenador*), and terms related to labor, employers, and working contiions (*responsaveis*, *movimento*, *lutas*, *justica*, and *liberação*).

Figure 5.3: Correlations with Key Terms



Pre-Investment



Post-Investment

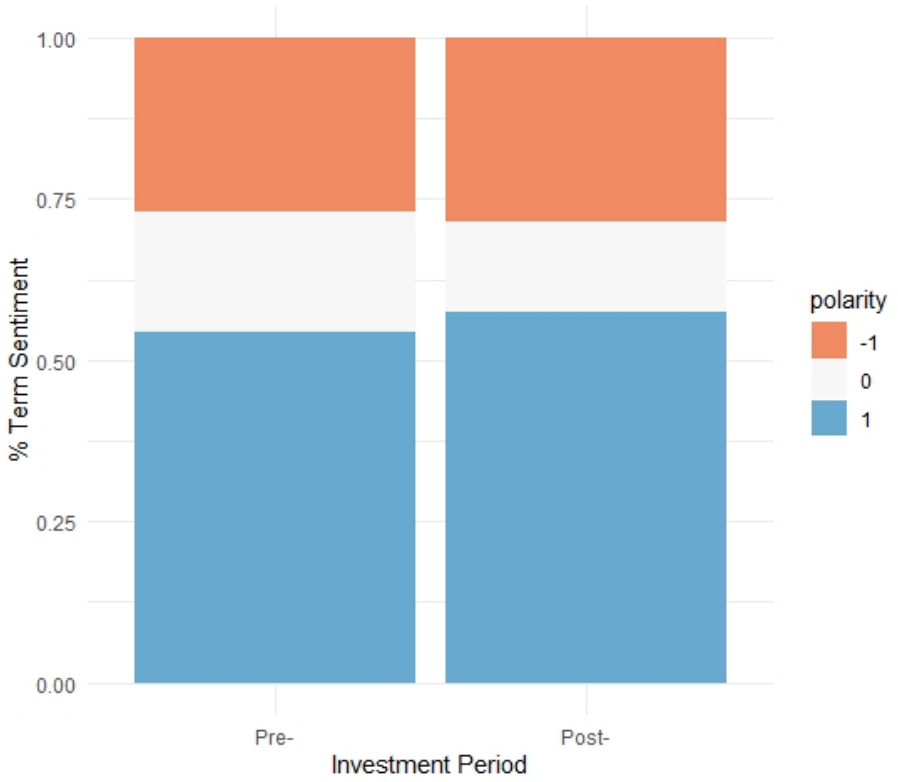
In the post-investment period, *terceirização* occurs more frequently in contexts about increasingly precarious work (*precarização* and *precarizar*), with a notable omission of topics concerning growth of temporarization of work, which were relatively highly correlated in the pre-investment period. Another notable change is the omission of denunciations as a common topic and its replacement by *auxilio* which typically refers to aid or benefits. The correlation between *auxilio*, *adicional*, and *pagamento* in the post-investment period, which did not exist in the pre-investment period, appears to be about bonuses and other remuneration paid to workers by employers. On the normatively negative side, the correlation with *funeral* has to do with funerary costs being deferred either by the union or the employer while *discriminações* and *abusivas* are likely linked to union aid or legal payments being paid in response to abusive and discriminatory practices by employers. However, promisingly, correlation with *requalificação* (requalification) and *gratificação* suggest an increasing occurrence of occupational education subsidized by Brazilian multinationals as well as payment of salary bonuses and the high correlation with *creche* appears to suggest higher incidences of childcare subsidization, all of which are arguably associated with the increasing benefits provision found in the previous empirical chapters.

5.3.3.2 Sentiment Analysis in Pre- and Post-Investment Periods

Of course, illustrations of the relative frequency or correlation of terms does not necessarily illustrate changes in sentiment toward the multinationals before and after investment. They are both useful methods for defining changes in topics over time or in sub-samples but fail to capture changes in aggregate sentiment directed toward multinationals by unions in their press activities. In order to systematically conduct an analysis, we can also use the sentiments assigned by the SentiLex lexicon to measure overall average sentiment in each

period in news articles written by the unions about the outwardly invested Brazilian multinationals. Figure 5.4 displays the proportion of terms in articles that are positive, neutral, and negative in both the pre- and post-investment periods, according to this primary lexicon.

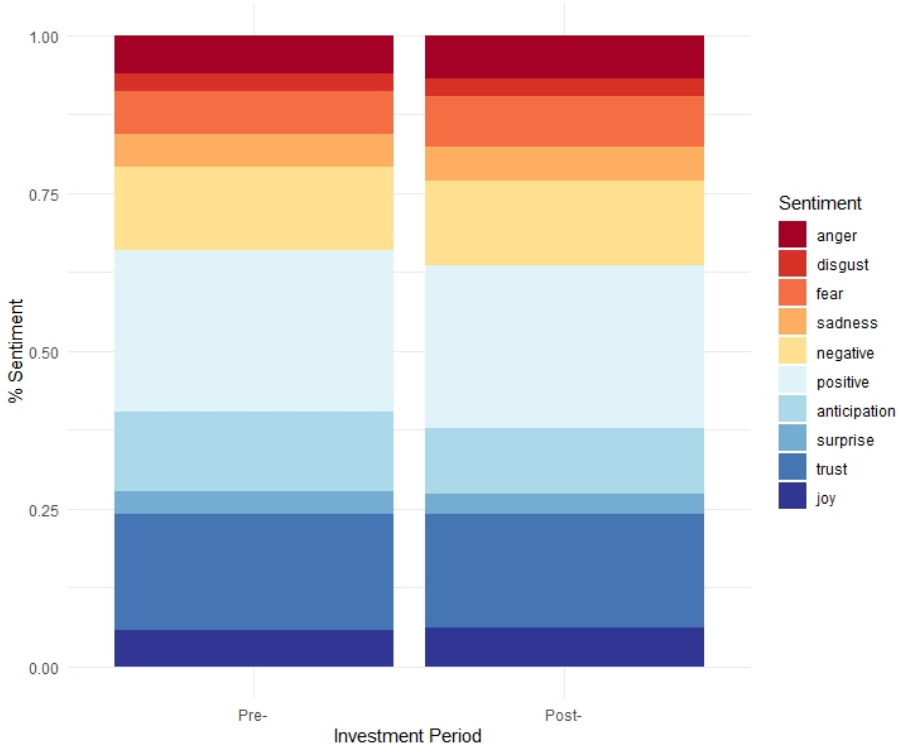
Figure 5.4: Sentiment Analysis in Pre- and Post-investment Periods



Although the change is minor, there is a clear increase in proportion of sentiment that is positive aimed towards the outwardly invested Brazilian multinationals in the years after purchase of subsidiaries in Europe. However, this increase appears to be more at the expense of neutral sentiment terms than negative, indicating that while overall coverage became more positive, negative sentiment as a proportion was either continuous or may have even increased

slightly, as well. Using the alternative NRC lexicon, which allows for identification of a wider range of distinct emotions, though may be prone to a negative bias, we can construct a similar plot in Figure 5.5. Expressions of anticipation

Figure 5.5: Sentiment Analysis in Pre- and Post-investment Periods



(construed positively) decrease while fear increases, likely due to coverage pertaining to the Brumadinho disaster, the presidency of Michel Temer, and the labor and pension law reforms that were being proposed in this period. Otherwise, we do not see significant change in sentiment using the NRC lexicon. The increase in diversified negative sentiment compared to the simpler SentiLex sentiment category can be attributed to the subjective categorization of terms in NRC as its sentiment lexicon is trained at least in part on social media posts whereas SentiLex is trained on more professional sources such as literature and

mainstream media outlets. However, this is not a testable proposition using this data. It is instead an assumption based on comparative analyses of the lexicons such as Paulo-Santos et al. (2011) and Machado et al. (2018).

Considering these results and the econometric results from the first two empirical chapters, as well, it is likely that considering effects across all sectors in aggregate likely obscures important variation in effects between sectors. As we have seen in Chapters 3 & 4, in low-skill sectors or sectors prone to abuse , working conditions worsened while in other sectors they saw dramatic improvements. These contrary effects can average out to a null effect when considering all sectors together, both in quantitative as well as in qualitative and descriptive analytics, such as sentiment analyses. Therefore, I chose three sectors to analyze more deeply. These are: chemical manufacturing, food production, and mining of metallic and non-metallic minerals.

The selection of sectors was driven by two considerations. The first is practical: ensuring sufficient data for the sake of comparison between pre- and post-investment periods. Chemical manufacturing has 555 articles, agriculture/food processing has 487 (57 pre-investment/430 post), and mining has 4041 (303 pre-investment/3,738 post). Although article coverage obviously favors the post-investment period, the sentiment analysis will primarily focus on proportion of sentiment that is positive, negative, or neutral with supplementary disaggregated analysis using the alternative lexicon with more detailed sentiment categorizations. Second, I want to ensure sufficient variation between sectors for a meaningful comparison. Chemical manufacturing in Brazil is a relatively high-skill sector with some of the most active and well-organized unions and union federations in the country. For these reasons, I expect that in the post-investment articles, union sentiment toward Brazilian multinationals will improve. Food processing and agriculture[6] is a relatively low-skill sector that is

[6]These sectors are combined here because the food processing multinationals from Brazil

prone to labor abuses.[7] It is also a sector that depends heavily on temporary, subcontracted, and/or seasonal work making it difficult to organize effectively. For these reasons, I expect union sentiment to either remain constant or worsen over time, in spite of outward investments. Finally, mining combines high- and low-skill workers but is a historical bastion of social and environmental sustainability violations. Increasing media attention on this sector arguably has had some positive effect but it is still a sector plagued by scandal. Expectations regarding this sector are more ambiguous, as increasing competition may drive them to degrade conditions while increased exposure to high-standard European markets may drive them to improve conditions in order to avoid scandal. These three sectors had the necessary overlap between data availability and differentiation and so are the focus of the specific analyses in the next section.

The pre- and post-investment sentiment analyses for each of these three sectors can also be unpacked further by modeling the actual topics in each of the two periods. Latent Dirichlet Allocation (LDA) is a common algorithm for fitting topic models (Silge and Robinson 2017). Each document is treated as a mixture of topics which are in turn treated as mixtures of key words. The LDA finds the mixture of words associated with each topic while also determining the mixture of topics that describes each document. In this way, LDA can determine the topics that are mentioned across multiple articles (or documents, books, etc.) in a given corpus, blurring the lines between articles and allowing me to identify the dominant topics in the pre- and post-investment periods. These topics can be inferred from the word combinations that make up each topic and verified from the source corpus, as described in Silge and Robinson (2017, Chapter 6). R can be used to illustrate graphically the top n-terms that make up the most common topics in the articles that make up the pre- and post-

frequently also act directly or indirectly in the agricultural sector, such as through cattle rearing or sugar cane production.

[7] For example: `https://www.equaltimes.org/brazil-where-multinationals?lang=en`

investment periods. This way, it becomes possible identify the most common topics in the articles in each of the pre- and post-investment periods.

5.3.4 Analysis: Second Stage

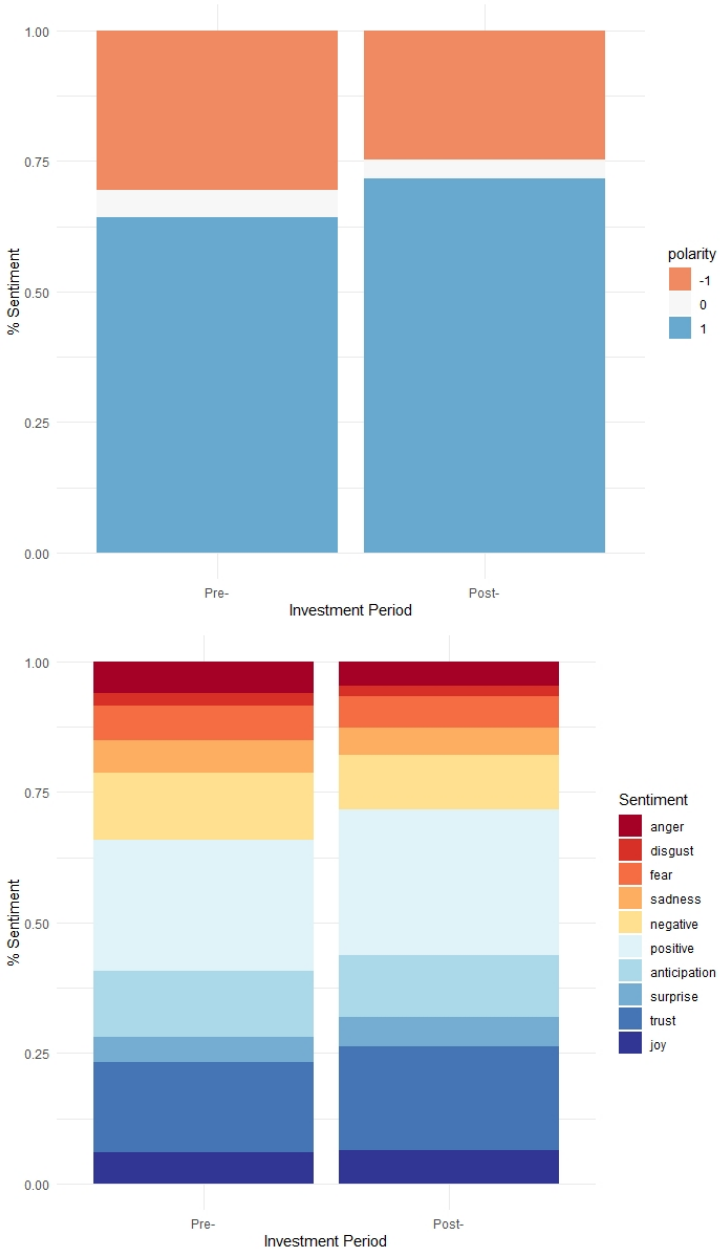
5.3.4.1 Chemical Manufacturing

The first sector for sentiment analysis is chemical manufacturing. In Brazil, this sector includes Braskem, one of the largest petrochecmial companies in the world, as well as Inpal SA, Oxiteno, and WEG. Brazilian chemical companies are recipients of numerous rewards for environmental and social sustainability in their post-investment periods and regularly considered to be some of the best employers in Brazil.[8] Brazilian multinationals operating in the chemical manufacturing sectors have a long history of internationalization when compared to some other sectors. WEG, one of the most well-known Brazilian MNCs which operates primarily in the manufacture of electric motors (but also diversified into production of paints, varnishes, enamels and lacquers in the early to mid-2000s) had its first European acquisition in 2000. Inpal SA first moved into European markets in 2005 and Braskem began their European production activities in 2011 with the purchase of DOW Chemical's polypropylene production facilities in Cologne and Leipzig.

After subsetting the data for union articles reporting on the chemical sector, there are 555 unique articles with 140 in the pre-investment period and 415 in the post-investment period. The progression of sentiment from the pre- to post-investment period is in Figure 5.6. Looking to the first plot, there is a clear

[8] https://plasticovirtual.com.br/lista-de-melhores-empresas-do-mundo-inclui-a-braskem/
https://www.akatu.org.br/noticia/mais-uma-vez-braskem-integra-o-indice-de-sustentabilidade-da-b3/
https://m.pandape.com.br/braskem-sa/availacoes?ps=20&pn=32&po=EvaluationDate%20desc&idce=159854&dft=1
https://tribunapaulinia.com.br/braskem-e-eleita-uma-das-empresas-mais-bem-avaliadas-no-mercado-de-trabalho-pelas-mulheres/

Figure 5.6: Sentiment Analysis of Union Articles About Chemical Manufacturing in Pre- and Post-Investment Periods



shift away from negative sentiment to an increased majority positive sentiment from the pre- to post-investment period, according to the main sentiment lexicon. The overall increase (decrease) in positive (negative) sentiment is roughly 10 percentage points. Moreover, using the alternative NRC lexicon, positive mentions increase at the expense of negative and, more specifically, there is a noticeable increase in expressions of trust and a parallel decrease in expressions of fear and even more so in anger.

Turning to the LDA topic modeling, graphical representations of the top 10 words associated with the 5 most common pre- and post-investment topics for the chemical manufacturing sector can be found in the appendix in Figures 7.3 and 7.4. In sum, it appears that the prevalence of negative topics actually pertaining to poor labor conditions in Braskem and other firms' Brazilian locations decreases following establishment of European investment linkages. However, it is necessary to look more deeply into these topics to substantiate this claim.

In the pre-investment period, topics 1, 2, 4, and 5 concern aspects of firms' behavior, most of which appear to be negative. The topics themselves can be determined as outlined above from certain key terms beyond those that are naturally dominant in a collection of articles written about large, internationalized firms by workers and their representatives.[9] These terms can then be used to filter the pre-investment articles using a filtering function in R to select the articles that mention these terms (either individually or jointly) and the resulting articles can be analyzed in order to determine exactly what the topic is about.

The first topic concerns poor working conditions including safety violations (*segurança*) and sometimes deadly accidents (*acidentes*), mass firings, and closing of retirement plans and other benefits (Sindipolo 2012; Sindiquímica-BA 2012). Similarly, the second topic covers worker and union protests against mass

[9] These include the Portuguese words for businesses (*empresas*) and specific classes of workers, such as those for chemical workers (*químicos* and *químicas*) but also including the names of the largest companies in the sectors, such as Braskem or Oxiteno.

layoffs (*demissões*) by some of the Brazilian multinationals operating in this sector in Rio Grande do Sul (*RS*) in 2007, 2009, and 2010 (CUT 2007; Agência Chasque 2009; Sindipolo 2010b). The third topic appears just to concern developments in the sector with particular regard to the growth of the multinationals but the fourth topic concerns protests conducted against the Brazilian multinationals operating in the chemical production sector to pressure them to adhere to the 'Fourth Clause' salary re-adjustments in 2009 and 2010 (Federação Única de Petroleiros 2009d).[10] The fifth topic is the only one that arguably contains some positive mentions of employers in this sector, with regard to workers. In this case, it appears that chemical workers employed by Braskem received an updated and improved retirement and insurance plan, marking improvements in their benefits package (Federação Única de Petroleiros 2009b,a). However, this topic also contains mentions of degrading conditions as Braskem removed funding from the aforementioned updated plan (Federação Única de Petroleiros 2010) and the chemical workers' unions expressed their anger through protests and strikes (Sindipolo 2010a).

In the post-investment period, the topics appear to be less negative. The top terms in the first topic refer to the relationship between employers, workers, and unions, the general topic one would expect to pervade all articles. The second, however, still contains mention of accidents (*acidente*) but now also makes reference to national campaigns (*nacional* and *fiera*). One such national campaign is that sponsored by CUT and Instituto Bildungswerk to promote formation of union networks in Brazilian and foreign multinationals, including WEG and Braskem (CUT-SP 2015). These networks work to ensure equal treatment and

[10] The 'Fourth Clause' (*Cláusula 4ª*) was first ratified as part of the 1989 Chemical Workers' Collective Agreement and determines that "in the absence of law that controls salary readjustments, companies must correct workers' salaries by a percentage corresponding to 90% of the Consumer Price Index of the preceding month" or similar alternative index (Federação Única de Petroleiros 2009c, author's translation). This clause has been in effect since its initial ratification.

conditions between facilities internationally as well as nationally, which includes addressing health risks and accidents (Confederação Nacional do Ramo Químico 2013). These networks are also the subject of the fifth topic, illustrating the importance of this topic in the post-investment period.[11] Another health related campaign that contributes to this topic is the annual World Day for Safety and Health at Work, which is, for example, mentioned in the article "Em memória das vítimas de acidentes e doenças do trabalho" (Imprensa da FUP 2010). Every year this day is marked by demonstrations by the unions, federations, and confederations in Brazil who make a point of mentioning it in their press, along with stories memorializing workers that have lost their lives at work. This article in particular mentions a worker that lost their life in a work-related accident at Oxiteno, in Bahia. The third topic addresses a relatively common subject in union articles, the annual salary negotiations (*salarial*, *proposta*, and *negociação*) including cost of living adjustments *reajuste*). The final fourth topic is about the health (*saúde*) of workers and contamination (*contaminação*) by the chemicals (*químico*) with which they work. This topic was central to a book released by the Químicos do ABC union in the ABC region of São Paulo (Sindicato dos Químicos do ABC 2015, 2016).

While the top topics identified by LDA in the post-investment period are not entirely positive, they are more positive than in the pre-investment period. Of particular significance, are the two topics which, when searching for the associated key words, brings up articles mentioning union networks and their role in securing equal treatment of workers across locations both within Brazil and between Brazil and other countries (specifically, European countries where the companies also operate), in the context of workplace safety and more generally. It would appear that the pre- and post-investment corpuses differ in ways that

[11] The broader importance of these networks will be explored further in the section on Causal Mechanisms.

conform at least somewhat with the general premise of my first hypothesis (that outward investment linkages with Europe serve to diffuse better working conditions to Brazil). This effect, however, is likely dependent on the sector, which is reflected in the quantitative results from the earlier chapters. I turn now to a sector that has, in the past, been plagued by abusive labor practices, in order to test whether the subjective experience of workers actually improves or worsens in the periods before and after outward investment linkages with Europe.

5.3.4.2 Agriculture/Food Processing

Agriculture and food processing are once again becoming one of the largest contributors to the Brazilian economy as it undergoes premature de-industrialization and re-primarization (Trindade et al. 2016). According to the official statistics bureau of the Brazilian government, agriculture and food production made up 3-4% of GDP between 2010 and 2015 and, with the focus of the Temer and Bolsonaro governments, only seems set to grow further as a percentage of the economy.

Some of Brazil's largest multinationals operate in this sector. JBS is the world's largest meat processor and Citrosuco is one of the largest producers of orange juice globally.[12,13] Until 2017, Bertin was also one of the largest meat producers in the world. All three of these companies operate in the food production sector in Brazil and all three pursued aggressive growth strategies since at least the early 2000s. Each has also developed a reputation for poor working conditions and outright violations of labor laws in Brazil and elsewhere. In recent years, JBS has been investgitated for having connections to the Lavo Jato

[12] https://www.cdp.net/en/articles/forests/case-study-jbs

[13] https://www.idhsustainabletrade.com/news/citrosuco-a-significant-player-in-the-global-juice-sector-commits-to-100-sustainable-sourcing/

corruption ring[14], illegal cattle cultivating practices in the Amazon [15], fraudulent market activities[16], and of allowing suppliers to keep workers in conditions analogous to slavery[17], among other issues. But, JBS is not alone here. Citrosuco and Bertin have both found themselves included over multiple years on the Brazilian government's *lista suja da escravidão* ("dirty list of slavery") as well as being targeted by numerous NGOs for violations of workers' rights.[18,19,20]

With the exception of Bertin (which filed for bankruptcy in 2017), most of the companies in this sector have begun pursuing programs of corporate social responsibility (CSR) ostensibly aimed at tackling unsustainable practices in its direct subsidiaries and supply chain.[21,22] JBS has even included a daily updated, geo-referenced monitoring system that they claim allows the company to monitor its 70,000 ranchers across Brazil, cross-referencing them and other parts of the supply chain against lists of employers fined for violations of labor and environmental standards.[23] Marfrig, another of Brazil's large meat producers, has followed suit, promising to monitor their facilities and suppliers to the extent possible, even by incorporating blockchain technologies.[24] These changes appear to be due to, in part, reactions from consumers and monitoring groups in the developed countries in which these companies have investments. For example, JBS has seen its equity valuation decline by over $2 Billion and had its credit ratings downgraded, all in large part due to legal troubles and severe

[14] https://economia.uol.com.br/noticias/redacao/2017/05/19/jbs-e-investigada-em-varias-operacoes-entenda-suspeitas-contra-a-empresa.htm
[15] https://www.reuters.com/article/us-brazil-environment-cattle-idUSKBN1722O1
[16] https://www.valuewalk.com/2017/12/jbs-corporate-scandals/
[17] https://reporterbrasil.org.br/2017/06/jbs-comprou-de-fazendas-flagradas-com-trabalho-escravo-e-desmatamento-ilegal/
[18] https://reporterbrasil.org.br/2013/12/herdeiro-do-grupo-bertin-entra-na-lista-suja-da-escravidao/
[19] https://www.equaltimes.org/brazil-where-multinationals
[20] https://www.somo.nl/wp-content/uploads/2017/08/Juice-with-a-bitter-aftertaste.pdf
[21] https://www.cdp.net/en/articles/forests/case-study-jbs
[22] https://shorturl.at/bwFVX
[23] https://jbs.com.br/en/sustainability/product-integrity/cattle-responsible-purchase/
[24] https://reporterbrasil.org.br/2020/03/integra-das-respostas-sobre-acusado-por-chacina-fornecer-gado-a-jbs-e-a-marfrig/

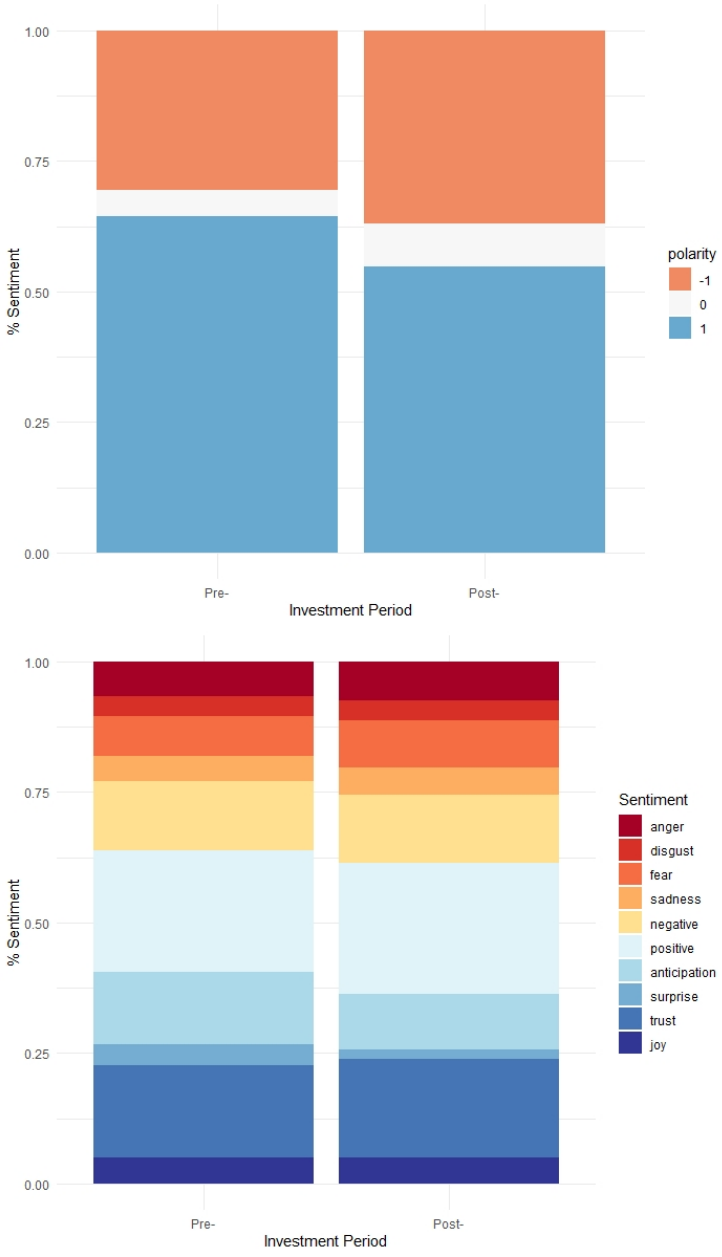
reputational damage as a result of the company's frequent violations of social and environmental regulations.[25] The CSR programs of these companies may be little more than virtue signaling from beleaguered firms trying to improve their reputation in outside markets and, even in the case of legitimate attempts at improving practices, CSR policies have long been criticized in the literature for their limitations and lack of enforceability (Locke et al. 2007; Locke 2013; Distelhorst and Locke 2018).

Figure 5.7 illustrates how union sentiment towards companies in this sector has evolved from the pre- to post-investment periods. According to the preferred lexicon, there is a sharp drop in positive sentiment in union articles written concerning invested multinationals in the food production sector, of around 12 percentage points. Some of this loss was due to growth in neutral sentiment but also growth in negative sentiment. Looking to the bottom panel of Figure 5.7, the increase (decrease) in negative (positive) sentiment appears less dramatic, though it does allow for a more nuanced view of the change. There is a clear decrease in anticipation and surprise with parallel, though smaller, increases in fear, sadness, and general negativity. According to these visual representations of sentiment, the post-investment period is marked by greater negativity indicating a degrading subjective experience for workers when compared with the pre-investment period.

In order to explore the topics dominating the periods before and after European investments, I apply the same LDA algorithm as with the previous sector examination. The illustrations of the key words associated with the topics found in each period are reported in Figures 7.5 and 7.6. The first topic is not immediately apparent, as it includes key words for pressure (*pressão*), Mato Grosso do Sul, and Campo Grande. Looking further into which articles cover this topic by

[25] Supermarkets in the UK and Sweden have removed JBS products from their shelves: https://www.theguardian.com/global-development/2017/jun/06/waitrose-pulls-its-corned-beef-off-shelves-after-guardian-reveals-alleged-slavery-links-brazil

Figure 5.7: Sentiment Analysis of Union Articles About Food Processing/Agriculture in Pre- and Post-Investment Periods



using a function to filter articles in the pre-investment corpus, I find that this topic is about how management of some of the multinationals in this sector, such as JBS, were pressuring workers to enter dangerous conditions in parts of the slaughterhouses in which they worked to carry out functions for which they were not equipped or trained, jeopardizing their well-being (CUT-MS 2011; CUT 2011b). The second topic, characterized by the keywords *produção* (production), *condições* (conditions), and *avícola* (poultry), is about the sector as a whole in Brazil and its growth internationally. This growth has largely been built on worker exploitation in the form of low wages, high labor productivity, worker outsourcing and precarity, and high-rates of work-related illnesses (IHU 2011) and outright slavery (Repórter Brasil 2010). Topic three refers to a series of serious labor violations uncovered following an inspection by labor inspectors at a Marfrig facility in Mato Grosso do Sul following the abrupt death of a worker there. These violations included excessive work days (beyond 15 hours per day), lack of safety protocols, inadequate safety and health personnel, and illegal contract practices (Repórter Brasil 2008). The fourth topic is actually not apparent from the key words and required filtering the articles by the key words *amorim*, *curtumes*, and *campo*. This resulted in multiple articles on sudden, mass layoffs at the Curtumes JBS plant in Campo Grande, with the abrupt dismissal of between 250 to 400 workers being proposed due, according to the company, to decreasing sales and meat prices (points disputed as untrue by the unions) (CUT 2011a). The fifth topic is also not immediately clear and required filtering. After filtering by the keywords illustrated in the fifth panel of Figure 7.5, the resulting articles report anti-union practices by internationalized employers in which they were trying to force their employees to align with unions outside of their area with which management felt they had an easier time extracting concessions (Contracs 2010).

Turning to the post-investment period, the first topic in Figure 7.6 can succinctly be described as conclusion of negotiations. The keywords refer to various aspects of Collective Agreements closed between the unions and their employer counterparts after extended campaigns including strikes and threats of legal action against the firms as well as a judicial ruling against Marfrig for mistreatment of workers (Valor Econômico 2013; Benedet 2015a). Topic 2 is not entirely clear from its keywords but, after using a filtering function with the keywords *saúde* (health), *empregados* (employees), *ambiente* (environment), and *Ministério* (minister/ministry), the articles all report judgments made against Marfrig and JBS by the labor courts in 2012, 2013, and 2014, for unpaid salaries, violation of working hour restrictions, and violation of health and safety regulations (CUT-MT 2012; Sintiacr 2013a; CUT 2014). Topic number three is about efforts by Célio Elias, president of the Sindicato dos Trabalhadores nas Indústrias da Alimentação de Criciúma e região (Sintiacr), in 2013-2015 to coordinate collective agreement negotiations nationally and internationally to confront poverty wages and abusive working conditions at multiple facilities of the Brazilian agriculture/food processing multinationals(Benedet 2013; Sintiacr 2014a; Benedet 2015b). The fourth topic pertains to labor abuses by JBS and Marfrig and the responses by the unions and labor courts in the form of strikes and pauses and judgments, though this topic is not immediately apparent despite the key term MPT, the acronym for the ministry responsible for enforcing labor regulations (the *Ministério Público do Trabalho* or Public Labor Ministry) (MPT 2012; CUT-RO 2013b; CUT 2013b; Sintiacr 2011a,b, 2013b, 2012). Topic five can be ascertained from the key terms *paralisação* (standstill - essentially, a strike), *JBS*, *acordo* (agreement), and *MPT*. This topic appears to be about further violations by JBS regarding collective agreement violations and the worker and regulator responses (CUT-RO 2013a; Sintiacr 2014b; SINDICOMERCIÁRIOS

2014).

Judging by the topics in the periods before and after investment, it would appear that workers' experiences have been consistently poor in this sector, regardless of the investment activities of the companies. This would suggest that, at least by the end of 2017, that the CSR activities undertaken by multinationals in this sector have had little real impact on curtailing abusive labor conditions and on ensuring provision of decent work conditions throughout Brazil. This stands in stark contrast to the chemical manufacturing sector in the previous section which experienced improvements in sentiment and topic in the post- versus pre-investment period. It also conforms with the statistical results from Chapters 3 and 4 and the expectations laid out at the beginning of this and the previous section.

5.3.4.3 Metallic and Non-Metallic Mineral Mining

The final sector subjected to the closer sentiment analysis is the metallic and non-metallic mineral mining sector. This sector is undeniably important for the Brazilian economy. In 2017, 21% of exports came from extractive industry and in 2015 metallic minerals accounted for over 75% of these exports (DNPM 2017). This sector includes in its population the Brazilian multinationals CSN and its affiliate ERSA, Vale, and Magnesita SA. Moreover, Brazil is one of the largest producers of some of the key components of aluminum in the world and, as of 2017, Vale was the largest producer of iron ore and nickel in the world.[26] While the success of the sector is notable, so are some of its more negative characteristics. Extractive industries in general have been under intense scrutiny after catastrophic dam collapses in Mariana in 2015 and Brumadinho in 2019

[26] http://www.vale.com/en/aboutvale/pages/default.aspx

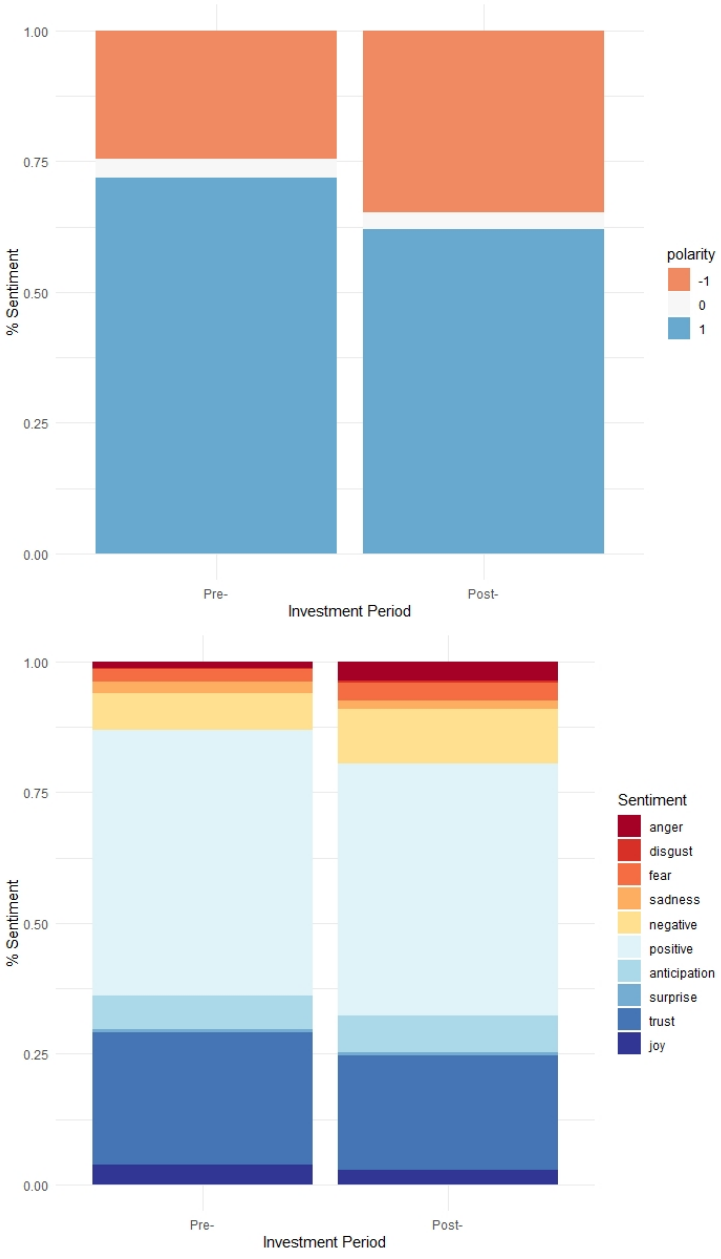
that left hundreds dead in the state of Minas Gerais, in Brazil's South East.[27,28] This has led to the closing of 47 dams across Brazil for failing to comply with environmental and worker safety standards.[29] Brazil's mining industry has also been a bastion of serious labor abuses up to and including slavery on a scale comparable to the agricultural sector (Dias et al. 2011). Many of Brazil's largest mining companies have implemented CSR policies, much like their counterparts in agriculture and food processing, though they appear to have done so with greater success than the likes of JBS and Marfrig (Cornejo et al. 2010).

Many of Brazil's mining multinationals began their internationalization processes earlier than those in other sectors. CSN and Vale both began to invest in North and South America in the late 1990s and early 2000s. CSN's first European acquisition occurred six years later in 2006 when CSN purchased 100% of Lusosider in Portugal, following 3 years of incremental share purchasing. After this initial investment, CSN purchased the StahlwerkThüringen steelworks in Unterwellenborn, Germany in 2012.[30] Vale began its European operations in 2003 through purchase of manganese mines and processing facilities in France and Norway. It has since expanded to the UK with Vale's purchase of Inco, which had facilities there. Votorantim, which operates in mining as well as other sectors, began its European operations after its acquisition of the mills and plants of Corporación Noroeste, located in Spain, situating their regional headquarters in Madrid and their office in charge of global investments in Luxembourg.[31]

To see how sentiment towards these companies has evolved in the post-investment period, we turn to Figure 5.8. While sentiment regarding companies

[27] https://www.solidaritycenter.org/brazil-unions-challenge-attacks-on-worker-human-rights/
[28] https://webdoc.france24.com/brazil-dam-mining-disaster-mariana/
[29] http://www.industriall-union.org/brazil-closes-47-unsafe-mining-dams
[30] https://www.csn.com.br/conteudo_pti.asp?idioma=0&conta=45&tipo=60023
[31] http://www.votorantimcimentos.com/en-US/global-presence/Pages/SubHome.aspx

Figure 5.8: Sentiment Analysis of Union Articles About Metallic Ore Mining in Pre- and Post-Investment Periods



in either period is unexpectedly high in either period, there is a marked decrease in positive sentiment whether using the sentilex or NPC lexicons. The increase (decrease) in negative (positive) sentiment is nearly 10%, with little discernible change in the proportion made up by the neutral sentiment. Unpacking the sentiment categories somewhat using the more detailed NPC lexicon, this change appears to be due to an increase in anger and disgust with parallel decreases in trust and general positivity. This might be due, to some degree, to reactions to the multiple dam disasters that occurred even prior to the well-known Brumadinho disaster though, to know for certain, it is necessary to delve into the topics captured by the LDA.

The firs topic, characterized by keywords for union (*sindicato*, company (*empresa*), workers (*trabalhadores*), and strike (*greve*) as well as the name of one of the companies in this sector, Votorantim. This topic is about intransigence on the part of employers, refusing to negotiate over things like salary readjustments, and the worker/union responses. The second pre-investment topic is less apparent, as it includes the Portuguese word for goal (*gol*), job category (*categoria*, the way that job classes and unions are categorized in Brazil), road and address (*rua* and *endereco*). After filtering the articles for mentions of these terms, this topic concerns an aspect of the social function of unions in Brazil. Brazilian unions do not just represent their constituents in negotiations or organize strikes but they also serve a social support function by providing leisure-activity centers and organizing events, like football games (Imprensa SMetal 2013a,b). In the case of these unions, their affiliation with certain companies and areas can be included in articles leading to the inclusion of light-hearted articles such as these. This could be construed as an indication of a more positive pre-investment period marked by lower prevalence of serious topics related to degrading work conditions and outright abuse. The third topic is about elec-

tions within the unions where workers from Votorantim won positions and the fourth is about the at-the-time pending sale of Vale which was obstructed by the government because of complications and possible illegalities due to intertwined investments by the national development bank, BNDES, CSN, all of which was supported by the unions who broadly oppose privatization of public companies (CUT-CNTE 2007).

In the post-investment period, the mix of predominant topics is not clearly more negative, possibly in contradiction with the sentiment analysis. The first topic has to do with the failure of these companies regarding the communities in which they operate. For example, Votorantim runs a hydroelectric plant in Sorocaba. During a storm that caused floods they failed to account for potential water levels which led to power outages. Following the disaster, Votorantim finally started to put in place measures for any future floods (Jornal Cruzeiro do Sul 2016). In another example, new technologies and investments are identified as drivers of the mining sector but raise concerns about whether these investment will harm workers and surrounding ecosystems and communities (InfoMet 2008). The second and third topics are less directly associated, as they are mainly a topic of remembrance which appears to be focused on the loss of CSN workers assassinated by the military during the dictatorship and the loss of a beloved journal in the areas where Votorantim has facilities. The fourth topic unfortunately encapsulates a number of disparate articles with a general commonality of change, whether that's creation of jobs, union election campaigns, and weakening national economy. The fifth and final topic concerns health violations and collective agreements including health and safety clauses.

In general, the topic modeling appears to substantiate the sentiment analysis, with a few exceptions. What is clear looking at the above sentiment analyses is that, depending on the economic sector, the evolution of sentiment toward the

invested companies can either improve or worsen. These results are generally consistent with the statistical results in Chapters 3 & 4 though in that they illustrate movements in similar directions, as well as make clear the necessity of sectoral disaggregation in such analyses. However, these sentiment and topic analyses have not clearly addressed the remaining piece in this puzzle, that is, some determination of one or many causal mechanisms. It is well and good to *observe* changes but cannot be considered sufficient without some evidence for the *underlying cause*.

5.4 Search for Mechanisms

Beyond this sentiment analysis, the text data I have compiled can be used to supplement the main quantitative analyses conducted in the statistical empirical chapters. One of the major drawbacks of statistical and descriptive analyses like those reported thus far is their reliance on assumptions about causal mechanisms. Because the outward investment linkages that my thesis investigates present multiple channels through which practices and standards may diffuse and because it is always possible that the econometrics are capturing some uncontrolled for alternative explanation, a qualitative analysis can help uncover precise mechanisms which can complement the earlier evidence. The qualitative descriptive statistics illustrating changing subjective views of employer behavior in home-country locations captured by the sentiment analysis in the previous sections helps to shore up the econometric results and illustrate their robustness. However, the mechanisms are still untested. In this section of this chapter, I will present evidence from the worker and employer union articles which help to elaborate (at least one of) the mechanisms through which the EU effect can occur.

To begin this documentary analysis, I filtered the employer and worker union

articles covering the Brazilian multinationals in my data according to those that included mentions of any of the countries in the EU28 and EFTA. This resulted in 727 unique workers' union articles and 249 employer union articles. I read through each and noted evidence for potential mechanisms, which was then supplemented with evidence from other news and journal articles, books, and theses. I start here with the worker union articles.

5.4.1 Worker Networks in Brazilian Multinationals

A recurring topic in the employer union articles is the efforts taken by Brazilian unions and their counterparts in European host-countries to establish internal workers' networks. These networks work to ensure that the same conditions and standards enjoyed by employees in host-countries exist in the home-country locations, as well. The existence of such union networks is by no means new in Brazil[32] and their existence has drawn back considerable attention among scholars and workers' organizations alike to labor internationalism. This is especially true concerning "the possibility of new alliances... [and] new union strategies in" multinational corporations from developing countries (Framil Filho and e Silva 2019, p.192). The expansion of MNCs into new markets, which once referred solely to expansion from the Global North into Brazil and other developing countries, gives "far-flung workers common targets [and] their corporate organizational structures provide road maps for the spread of global campaigns" (Evans 2010, p.352).

In the past, Global Union Federations (GFUs) were the primary form of transnational union activities and the primary focus of research on this topic (Framil Filho and e Silva 2019). GFUs like IndustriALL and the Interna-

[32]The first union network in Brazil was the South American Network of BASF Workers in 1999 which was soon followed by similar networks being established in Bayer and Akxo Nobel (Da Costa 2016).

tional Trade Union Confederation (ITUC) sought ratification of Global Framework Agreements (GFAs) within internationalized European firms such as ThyssenKrupp and Daimler to try and ensure equal treatment between home and host country locations, as well between different locations within host countries (Stevis and Creation 2009). However, GFAs frequently lack enforceability and some unionists in host countries like Brazil question their efficacy and applicability in the host country's institutional context. Moreover, GUFs have a vertical link to the constituent unions with which they work, lacking a mandate to act and represent workers internationally (Framil Filho and e Silva 2019). Some of these problems appear to be related to the directionality of influence, that is, with the initiative being taken by the Northern, frequently European, unions. GFAs and other accords are written and agreed upon in the home (usually European) countries far from the host countries and the host-country unions.

In this new phase of globalization, where countries like Brazil, India, and China have become more mature and active participants in international economic integration, the directionality has changed and the initiative in international unionism is being taken by workers in developing countries. As companies like WEG, CBC, Braskem, CSN, and Banco do Brasil invest abroad, unionists in Brazil "are becoming the protagonists and constructing networks," by reaching out to their peers in host countries (FUP 2014). They then use these networks to pressure employers through coordinated campaigns to provide equal and decent working conditions wherever the company has facilities (da Costa 2013; Selwyn 2013; FUP 2014). This can be done through actual or threat of collaborative work stoppage or through threat of "naming and shaming" campaigns in developed host countries (Mello e Silva et al. 2015). For example, when Dutch workers came to know about slave-like working conditions being used by

Brazilian multinationals that were operating in the Netherlands, they organized a pressure campaign against the involved companies (Madarazo 2011).[33]

Coordinating the campaigns and actions of these networks requires regular meetings between the partner entities and these meetings are a common topic in the articles. Leaders in the movement frequently stress the necessity and efficacy of the networks, highlighting their importance. For example, the primary purpose of union networks (*redes sindicais* in Portuguese), is outlined as "finding a form of union/alliance of entities and organization in order to pursue common objectives" and "defend the rights and interests of workers," according to Alexandre Bento[34] in an interview conducted at the Second International Meeting of Workers in the WEG Network in 2012, a meeting that counted among its attendees representatives from German, Swedish, and Dutch unions (CUT 2013a; CNQ-CUT 2013). Alexandre continues , stating these *redes* (or networks) must "be maintained so that they can *continue* the work of unifying the rights of workers in all the plants" in Brazil and the rest of the world (CUT 2013a; CNQ-CUT 2013, emphasis added).

Paulo Cayres elaborates further, speaking about the union network within Companhia Siderúrgica Nacional (CSN), "[w]ith the *Redes*, our fight against accidents and for better working conditions in every location of a single company becomes that much stronger" and "the workers can guarantee common rights" where before, they could not (Instituto Observatório Social 2013). This point is reiterated again by João Cayres and Fábio Lins, Secretaries-General of International Relations at CNM-CUT[35] and CNQ-CUT[36] (respectively), in another

[33] Unfortunately, Fábio Lins, when describing the occurrence in an interview in the publication did not identify the companies involved.

[34] Advisor to the CUT Secretariat for International Relations

[35] Confederação Nacional dos Metalúrgicos da CUT, one of the largest and most active worker union confederations in Brazil.

[36] Confederação Nacional do Ramo Químico da CUT (CNQ-CUT), which unifies chemical and petrochemical workers' unions throughout Brazil.

article about the *redes* within Companhia Brasileira de Cartuchos (CBC)[37] as well as WEG. Both emphasize the importance of these networks "to achieve equal rights and remuneration in Brazil... as well as to strengthen solidarity to promote decent work in partnership with unions and workers... in other countries", a relationship that has already "made possible the defense of employment and the rights of workers" within Brazilian multinationals (Instituto Observatório Social 2013). Ricardo Jacques of CONTRAF/CUT explains that "it is necessary to join forces between workers in Jaraguá do Sul and other WEG facilities in Brazil and in the world," to confront internationalized employers like WEG who justify differentiated treatment based on prevailing practices in each location (Sindicato dos Metalúrgicos de Blumenau 2013). Ricardo continues, "WEG products are always sold for the same price, therefore, workers have the right to sell their labor for the same price" (Sindicato dos Metalúrgicos de Blumenau 2013).

José Drummond, a representative of CUT participating in courses on international organizing at a meeting of international union networks, made clear the specific linkage between European and Brazilian facilities and discrepancies between the conditions in each when he pointed out that "the objective... is to achieve a level of 'good practices' based on international standards... and take into account the German experience" asking "why can't [these practices] be practiced here as in Germany?" (Grabert 2012). Drummond goes on to say that what they in networks and unions in Brazil want is to incorporate the rules pertaining to labor relations in "declarations of the ILO and Germany, in addition to the EU" (Grabert 2012). In the case of Gerdau, this has even led to surveying workers at each of the company's locations in order to make specific demands concerning conditions and remuneration, lightning stoppages

[37] A Brazilian multinational with subsidiaries in Germany and the Czech Republic and one of the largest manufacturers of ammunition in the world.

to prevent plant closures, and mass mobilization to prevent mistreatment of third-party or temporary workers (Stevis and Creation 2009; Mello e Silva et al. 2015).[38]

According to these accounts, the establishment of investment linkages with European host countries presents a novel opportunity for workers in the Global South and North to work together to press their common employer to apply decent working conditions in their host-country (that is, Brazilian) locations. Without the acquisition of these subsidiaries in countries such as the Netherlands, Germany, or Sweden this novel source of leverage would not exist in these corporate networks.

5.4.2 Employer Union Articles

5.4.2.1 Market pressures, learning, socialization

Although the evidence from the employer union articles may be less conclusive, there is nonetheless some evidence for the other mechanisms proposed before in the theory and previous empirical chapters.

In the case of socialization, investments provide numerous novel opportunities for socialization between host- and home-country location representatives which can lead to diffusion of practices (*for example, in* Decreton et al. 2019). In the specific case of Brazilian multinationals investing in Europe, these opportunities abound and vary considerably. Embraer participated in meetings with the European Commission as investments in Brazil reached 13.2 billion Euros, the fifth largest investor in the EU (CNI 2013). Following CSN's investments in Germany, the German ambassador visited CSN's headquarters in Brazil to discuss the institutional differences between the countries and exigencies that

[38]The Gerdau network, among others, has also been used to protect the rights of workers in the US and Europe, much in the same way.

Brazilian companies will need to undertake and the necessity of standardizing practices throughout the corporate network (FIESP 2013). In addition to the ambassador and CSN's representatives, the meetings counted the participation of numerous representatives of sectoral and economic institutions, meaning that these exposures can allow diffusion even beyond the invested company.

Investments also give Brazilian multinationals opportunities for learning about European management styles and consumer preferences, the latter of which may limit access to European markets. Companies such as Embraer and WEG began sending their executives and managers to seminars and certification courses in France where they learn about modern European management styles and how the internationalizing Brazilian economy can better integrate into the markets with which the multinationals are bringing them in contact (CNI 2014).

Employer unions and associations from Brazil and the host countries also conduct conferences and symposiums to exchange knowledge. Without ties like the outward investment linkages I focus on, these events and participation in them would not be possible for most Brazilian companies. One such conference occurred in 2014, the *Symposium on Patterns in Global Sustainability* which focused on the topic of "Global Patterns in Sustainability" (FIESP 2015a). Although the primary topic at the symposium appears to have been environmental sustainability, it also involved speakers such as Indranil Chakrabarti, from the UK Department for International Development (DFID), who "emphasized the role of the private sector in economic development and combating misery" as well as "the eradication of poverty" citing as an example efforts made in Rio to encourage better labor practices. Christian Robin, program manager from SECO, also spoke at this conference about the importance given in Switzerland to products produced in a sustainable manner according to Fair Trade initia-

tives. Robin emphasized the importance of all forms of sustainability "in the management of global value chains" stressing that it "is of great importance in the long-term survival of companies" in Swiss markets. Mathias Azeredo de Almeida, executive at Marfrig - a Brazilian multinational that first invested in Europe in 2008 - confirmed the necessity of sustainable practices in order to maintain economic activity in European countries, characterized by conscious consumers. Later in the conference, the necessity of social along with environmental sustainability was emphasized by successive speakers as it is driven more and more by conscious consumers who demand further innovation in sustainability.

The *Second International Conference on Responsible Business Conduct: Best Practices in Brazil and the European Union* brought together representatives of over 40 multinationals from both the EU and and Brazil, including Votorantim, who shared their experiences in the areas of social and environmental sustainability, stressing the importance of "sustainable enterprises, that generate quality employment" (FIESP 2015b). One speaker highlighted how meetings like this help to "disseminate new actions and pioneer projects... [by] brining experiences and testimony of companies and human rights." João Gomes Cravinho, the EU ambassador, instructed the Brazilian participants that "sustainability of all kinds is a vital theme for the EU which is promoted in numerous ways... [s]upply chain transparency and information for the consumer are of great importance and growth must be sustainable and inclusive" He continued, stating that Europe ""wishes to spread [these concepts] as widely as possible" and that "European companies are leaders in sustainable technology which gives them competitive advantages."

The points stressed both by European representatives in their instruction to their Brazilian counterparts as well as recounted by representatives of com-

panies such as Marfrig are identical to those hypothesized before, namely, that OFDI into high standard markets exposes Brazilian multinationals to diffusion of practices through coercive market pressures (i.e. consumer preferences and avoiding reputational damage) and opportunities for learning from and socialization with European styles of socially sustainable management, labor relations, and working conditions. Of course, there is no "smoking gun" here, so there is no conclusive evidence pointing from cause to effect, as there seems to be with the *redes sindicais*. Yet, arguably, linkages such as those created by outward investment present new opportunities for the diffusion of practice precisely through the channels identified in the documentary evidence covered in this section. In the European context, Martin and Swank (2012) outline precisely one such avenue for the diffusion of a European social model of business management between firms through learning and socialization within European employer associations. How the socio-political preferences of already embedded firms affects new arrivals, such as multinationals from the Global South, is an important future area of inquiry.

5.5 Conclusion

This chapter accomplishes two things. The first is substantiating the conclusions derived from the econometric results presented in Chapter 3 and, to a lesser extent, Chapter 4. Considering whether workers find the conditions of their employment to be decent or improving (or worsening) is a subjective as well as objective matter, sentiment analysis and topic modeling was used to ascertain whether the way in which workers perceive their conditions (as reflected in the blog posts, stories, and news articles published by the unions representing them) changed between the pre- and post-investment periods. In the aggregate, the results suggest that worker and union perceptions improve

after establishment of outward investment linkages. However, this effect does not appear to be monotonic as it does vary from sector to sector. In sectors more characterized by higher levels of unionization, higher average skill-level, and higher markups, there does appear to be a clear improvement, whereas in sectors with the converse set of characteristics, sentiment expressed by workers and their representatives toward employers is either stagnant or even worsens considerably.

The second contribution of this chapter is, using the worker and employer union corpora, investigating whether there is any evidence of the causal mechanisms proposed in Chapter 2. Indeed, evidence is found of Brazilian workers establishing union networks with host-country unions within Brazilian multinationals that have acquired subsidiaries in high-standard European countries. While mention of specific accomplishments of these networks is sparse, there is frequent mention of the use to which these networks are put, that is, pressuring employers to improve conditions in Brazil, based on prevailing practices in some European countries (such as Germany). Ensuring equal provision of decent working conditions (as well as equal pay) throughout the Brazilian facilities of the multinationals also is commonly mentioned, presenting another form of sub-national diffusion beyond those explored in Chapter 4. It appears that these networks would not exist within these companies were it not for their tangible participation in European markets, marking an important contribution of Brazilian M&As in Europe to provision of decent work in Brazil.

The importance of host-country consumer and stakeholder preferences is also emphasized in some of the employer union articles. The heads of some of these Brazilian multinationals are aware of the necessity of adhering to the higher standards of their host countries, to the degree possible. Moreover, representatives of Embraer, CSN, and other companies appear to be regularly partic-

ipating in meetings, conferences, and other opportunities to learn more about host-country norms and practices. Topics can include up to the role of the private sector in development and poverty alleviation as well as the importance of social sustainability for the survival of firms and their continued presence in Europe. These findings conform with the theoretical mechanisms described in Chapter 2. Of course, the conclusions that can be drawn from this evidence are limited. There is no statement that investment causes improvements in working conditions. Yet, there is recognition on the part of both workers and employers that the investments made by these Brazilian multinationals open them to new opportunities and new pressures which incentivize provision of better and decent work conditions.

Chapter 6

Conclusion and Future Research

6.1 Concluding Remarks

This study differs from its predecessors in that it makes a first attempt to investigate how the latest period of globalization driven by the Global South is affecting labor practices in the developing world. It also deviates from most globalization-labor nexus research by focusing on *de facto*, individual labor rights in the form of decent working conditions in one of these developing countries, Brazil. It further contributes to this literature as well as to political economy research on diffusion of practices and standards by unpacking the distributional after-effects of the international diffusion of labor practices. This last contribution is moreover attenuated by sector-specific characteristics which, to the author's knowledge, have not been considered before in this context.

The ongoing question about whether the growing role of developing countries in the global economy portends poorly or favorably for workers in those (developing) countries has found (conditional) support for the latter in this thesis. Conditional on growing interactions between the Global North and South, this latest phase of globalization could bring with it at least one avenue for improvements in the lives of many. According to the results presented here, however, this positive effect is highly dependent on the sector. This sectoral dependence

also influences how post-investment upgrading diffuses within the local labor market, spilling over into neighboring municipalities, specifically with regard to skill-level and its interactions with informality (in low-skill sectors), and worker mobility (in high-skill sectors). This sectoral dependence is true whether considering the effects objectively, as in the statistical results presented in Chapters 3 and 4, or subjectively, as in Chapter 5. This last contribution is of great importance as Brazil and other developing countries decide on their developmental models. In the specific case of Brazil, this has meant a recent shift away from industry and toward primarization, with a particular emphasis on growth in the agricultural and food processing sectors. Given the positive spatial autoregression found in this thesis, such a decision could lead to an infectious and steady cycle of worsening working conditions in Brazil or other globalizing low- and middle-income countries.

On the more optimistic side, as companies from these same countries internationalize, it appears they may be facing novel pressures that were likely absent before. The importance of consumer preferences and activist networks both in and outside the corporate networks of these EMNEs should not be understated as an important mechanism in the pursuit and maintenance of decent work. Equally important is the agency of the workers themselves in home-country facilities. Further integration with developed markets opens a novel pathway that before seems to have depended entirely on the decisions of multinationals from the developed North. Now, with new generations of EMNEs that may arise after the current pandemic, workers and their representatives in developing countries, including Brazil, may continue to find new opportunities to pressure their employers to upgrade their facilities and improve conditions in partnership with worker representatives in intangible-asset rich developed markets.

This is also important for policy makers considering plans to provide support

for nascent multinationals much as the Brazilian government did under Lula. They used the national development bank (BNDES) to help fund many of the acquisitions made by CSN, Oxiteno, TOTVS, and others in Europe with the hope of improving the knowledge base and prestige of Brazilian multinationals which inadvertently provided the impetus for improvements in worker welfare, as well. Although the effects sometimes appear modest in the econometric results, their is no denying the attraction of economic empowerment and worker welfare improvements to governments in developing countries looking to curry favor and see their nations progress.

Of course, many problems may stand in the way of progress. Most prominently, the ongoing pandemic rages on in many developing countries, Brazil principal among them. Brazil has also slid from being one of the most powerful or influential developing countries, continuing a slow decline in growth and prestige since the onset of the ongoing financial crisis in 2014. This has only worsened through successive conservative administrations dead-set on abandoning the policies of their predecessors and charting a new (and somehow also old) course favoring export of primary goods, especially from the agriculture and food processing sectors. These sectors appear least susceptible to upgrading effects through investment, as found in this thesis, but also to any potential gains to be had from other forms of globalization. While Brazil's progress in these areas seems on hold, it is not necessarily a permanent change. Other countries, too, may find similar success, growing their national champions and, simultaneously, achieving social upgrading, as appears to have been the case in Brazil's high-tide period from 2000-2012.

6.2 Avenues for Future Research

Although great effort was made in this thesis to overcome the problem of missing FDI data and to ensure that the investment proxy was thorough and free from measurement error, it is undeniable that the optimal research design would utilize official FDI flow and/or stock data. One potential avenue for future research would be to test the conclusions found in this thesis against official investment data. This could come from public or private sector sources. For public sources, bilateral FDI data at the sub-national level cross-referenced by economic sector would allow for a direct reproduction of the study while private sector data from the multinationals themselves could allow for an even more fine grained analysis, assuming the investment data could be paired with data on working conditions.

In addition, this study is limited to a single, large, democratic country with active unions and significant outward FDI activity (at least during the period under study). The generalizability of the results therefore may be questioned. It can be argued that the conclusions of this thesis could be applied to similar countries in Latin America, such as Argentina, Chile, or Uruguay. However, their applicability to countries outside of the region or with other regime-types and civil society profiles, require confirmation through further research. The experience of Brazil may be instructive when considering the effects of developing country-driven globalization, especially when it leads to increasing interaction between countries from different levels of development, but its broader applicability should be tested against countries from other regions and with different political systems. Fast growing developing countries like Vietnam or India, the former of which has made large amounts of disaggregated economic and social data available, would be promising cases for further study. Some companies are also making available to researchers proprietary data on internal labor auditing

as well as internal financial data which, if it could be gathered and standardized across companies, would also make for a promising microeconometric research project.

Finally, this study has focused on diffusion of labor outcomes from Europe to developing countries through linkages established through investment in the form of mergers and acquisitions. The comparative effect of investments elsewhere in the developed could be instructive. Based on the relatively lower regulatory and normative floor in the United States as well as its culture focusing on individualism , liberty of corporate actors, and shareholder capitalism, it would be worth comparing EMNEs that entirely or primarily invest in one or the other locations to see if the outcomes differ substantially. It is also worth highlighting the importance to developed countries of measuring the effect of labor standards and practices *in* developed host countries receiving large amounts of investments from developing countries. It would be interesting (and concerning) to see if, while there is some improvement in conditions in developing countries with substantial investment linkages to developed countries, there isn't also a degrading effect in conditions in the host countries, driving a convergence in standards globally.

Chapter 7

Appendix

7.1 Summary Statistics and Correlation Tables

Table 7.1: State-level Summary Statistics

Variable	n	mean	sd	medin	min	max	range	se
Overworking	8910	22.18	1.792000e+01	20.17	0.00	1.000000e+02	1.000000e+02	0.19
Benefits Rate	8910	36.86	2.692000e+01	34.75	0.00	1.000000e+02	1.000000e+02	0.28
Long-term Employ	8910	7594.10	3.491540e+04	37.00	0.00	8.446350e+05	8.446350e+05	369.90
Perm. Contracts	7909	11820.26	7.150860e+04	55.46	0.00	2.006666e+06	2.006666e+06	804.08
EU FDI Linkage	8910	0.25	2.520000e+00	0.00	0.00	8.400000e+01	8.400000e+01	0.03
Female Population	8316	51.34	1.060000e+00	51.38	47.68	5.436000e+01	6.680000e+00	0.01
Education Rate	8316	27.50	5.410000e+00	27.91	11.43	4.525000e+01	3.382000e+01	0.06
Informality	8910	58.70	1.219000e+01	59.10	32.65	8.645000e+01	5.379000e+01	0.13
Employment	8316	61.80	4.340000e+00	61.99	43.67	7.004000e+01	2.637000e+01	0.05
Non-white Population	8316	37.96	1.859000e+01	34.01	91.75	1.427000e+01	7.748000e+01	0.20
VAB Agriculture	8910	5636410.28	6.647195e+06	2929836.00	39603.00	3.127150e+07	3.123190e+07	70420.58
VAB Industry	8910	27489035.57	5.151792e+07	8955950.00	195928.00	3.566525e+08	3.564566e+08	545782.33
VAB Services	8910	55681763.35	1.250772e+08	17887558.00	600916.00	1.078986e+09	1.078385e+09	1325071.31
Exports to Dev'd	8910	3043560234.92	4.885507e+09	625346492.00	768030.00	2.655792e+10	2.655715e+10	51757206.08
PT Gov't	8910	0.16	3.600000e-01	0.00	0.00	1.000000e+00	1.000000e+00	0.00
GDP per capita	8910	6448.90	4.970890e+03	5221.18	694.27	3.389800e+04	3.320373e+04	52.66
Population	7722	6985852.90	8.248965e+06	3538387.00	337237.00	4.439648e+07	4.405925e+07	93871.68
IFDI	1782	8942.82	2.459605e+04	1693.42	0.26	1.905669e+05	1.905666e+05	582.66

Table 7.2: State-level Correlation Matrix

Variable	EUFDL	PrcnF	EdctR	Infrm	Emply	Nn-wP	VABAg	VABIn	VABSr	EtDv'	PTGv'	GDPpc	Ppltn	IFDI
EU FDI Linkage	1													
Percent Female	0.029	1												
Education Rate	0.044	0.06	1											
Informality	-0.074	-0.113	-0.587	1										
Employment	0.028	-0.243	0.086	-0.397	1									
Non-white Population	-0.078	-0.134	-0.213	0.654	-0.484	1								
VAB Ag	0.081	-0.001	0.315	-0.476	0.412	-0.496	1							
VAB Industry	0.116	0.175	0.398	-0.529	0.203	-0.433	0.653	1						
VAB Services	0.099	0.172	0.369	-0.476	0.176	-0.37	0.609	0.969	1					
Exports to Dev'd	0.131	0.115	0.379	-0.533	0.304	-0.472	0.725	0.911	0.826	1				
PT Gov't	-0.017	0.075	-0.091	0.08	0.125	0.123	-0.019	-0.099	-0.071	-0.088	1			
GDP per capita	0.046	0.178	0.509	-0.756	0.361	-0.33	0.317	0.415	0.406	0.391	0.002	1		
Population	0.141	0.258	0.324	-0.394	0.132	-0.426	0.637	0.891	0.844	0.865	-0.088	0.221	1	
IFDI	0.073	0.111	0.266	-0.377	0.072	-0.214	0.463	0.81	0.768	0.709	-0.066	0.403	0.663	1

Table 7.3: Municipality-level Summary Statistics

Variable	n	mean	sd	medin	min	max	range	se
Overworking	240944	22.74	24.74	16.67	0.00	1.000000e+02	1.000000e+02	0.05
Long-term Employ	240944	86.07	2521.77	0.00	0.00	5.686850e+05	5.686850e+05	5.14
Perm. Contracts	240944	226.52	3963.20	1.00	0.00	8.557910e+05	8.557910e+05	8.07
EU FDI Linkage	240944	0.00	0.06	0.00	0.00	5.000000e+00	5.000000e+00	0.00
W EU FDI Linkage	240944	0.00	0.03	0.00	0.00	3.000000e+00	3.000000e+00	0.00
W Overworking	240944	23.19	17.13	21.37	0.00	1.000000e+02	1.000000e+02	0.04
W Long-term Employ	240944	142.23	2104.49	3.15	0.00	2.877865e+05	2.877865e+05	4.29
W Perm Contracts	240944	374.06	3788.46	13.71	0.00	4.485485e+05	4.485485e+05	7.72
Female Population	240944	49.36	1.70	49.49	18.15	5.663000e+01	3.848000e+01	0.00
Education Rate	240944	12.09	5.37	11.32	0.50	3.745000e+01	3.695000e+01	0.01
Informality	240944	12.17	22.06	0.00	0.00	1.000000e+02	1.000000e+02	0.04
Employment	240944	33.34	10.48	33.84	4.30	7.778000e+01	7.347000e+01	0.02
VAB Agriculture	240944	474712.75	779824.03	238593.77	0.00	1.350570e+07	1.350570e+07	1588.69
VAB Industry	240944	2642190.96	21576641.25	104477.22	162.67	1.273385e+09	1.273385e+09	43956.77
VAB Services	240944	4488683.83	69878302.39	382196.76	19099.98	6.168433e+09	6.168414e+09	142358.79
Exports to Dev'd	240944	30064352.85	800790448.63	0.00	0.00	5.347187e+10	5.347187e+10	1631401.38
PT Gov't	240944	0.06	0.24	0.00	0.00	1.000000e+00	1.000000e+00	0.00
GDP per capita	240944	8459.80	11832.96	5276.15	513.48	3.122207e+05	3.117072e+05	24.11
Population	240944	727181.04	4328568.14	238843.00	17556.00	2.473761e+08	2.473586e+08	8818.33

Table 7.4: Municipality-level Correlation Matrix

Variable	EUFDL	WEUFL	WOvrw	WLn-E	WPr.C	PrcnF	EdctR	Infrm	Emply	VABAg	VABIn	VABSr	EtDv'	PTGv'	GDPpc	Ppltn
EU FDI Linkage	1															
W EU FDI Linkage	0.003	1														
W Overworking	0.007	0.019	1													
W Long-term Employ	0.001	0.091	0.009	1												
W Perm. Contracts	0.003	0.196	0.05	0.396	1											
Percent Female	0.013	0.011	-0.045	0.044	0.061	1										
Education Rate	0.024	0.043	-0.021	0.076	0.12	0.333	1									
Informality	-0.002	0.011	-0.022	-0.01	-0.009	0.025	0.093	1								
Employment	0.01	0.026	0.013	0.031	0.059	0.112	0.65	0.036	1							
VAB Ag	0.011	0.016	0	-0.016	-0.017	0.018	0.239	0.073	0.276	1						
VAB Industry	0.042	0.03	0.008	0.064	0.101	0.125	0.229	-0.006	0.102	0.071	1					
VAB Services	0.04	0.016	-0.001	0.035	0.058	0.084	0.139	-0.001	0.06	0.043	0.827	1				
Exports to Dev'd	0.033	0.006	0.005	0.004	0.003	0.018	0.043	0.01	0.002	0.037	0.11	0.025	1			
PT Gov't	0.007	0.018	-0.035	0.019	0.033	0.014	0.102	0.077	0.071	0.037	0.053	0.021	0.025	1		
GDP per capita	0.035	0.048	-0.032	0.05	0.085	0.065	0.439	0.089	0.426	0.281	0.254	0.104	0.063	0.077	1	
Population	0.031	0.016	0.016	0.05	0.074	0.151	0.202	-0.012	0.067	0.068	0.871	0.846	0.057	0.032	0.075	1

7.2 Investment Linkage Descriptive Maps, Plots, and Tables

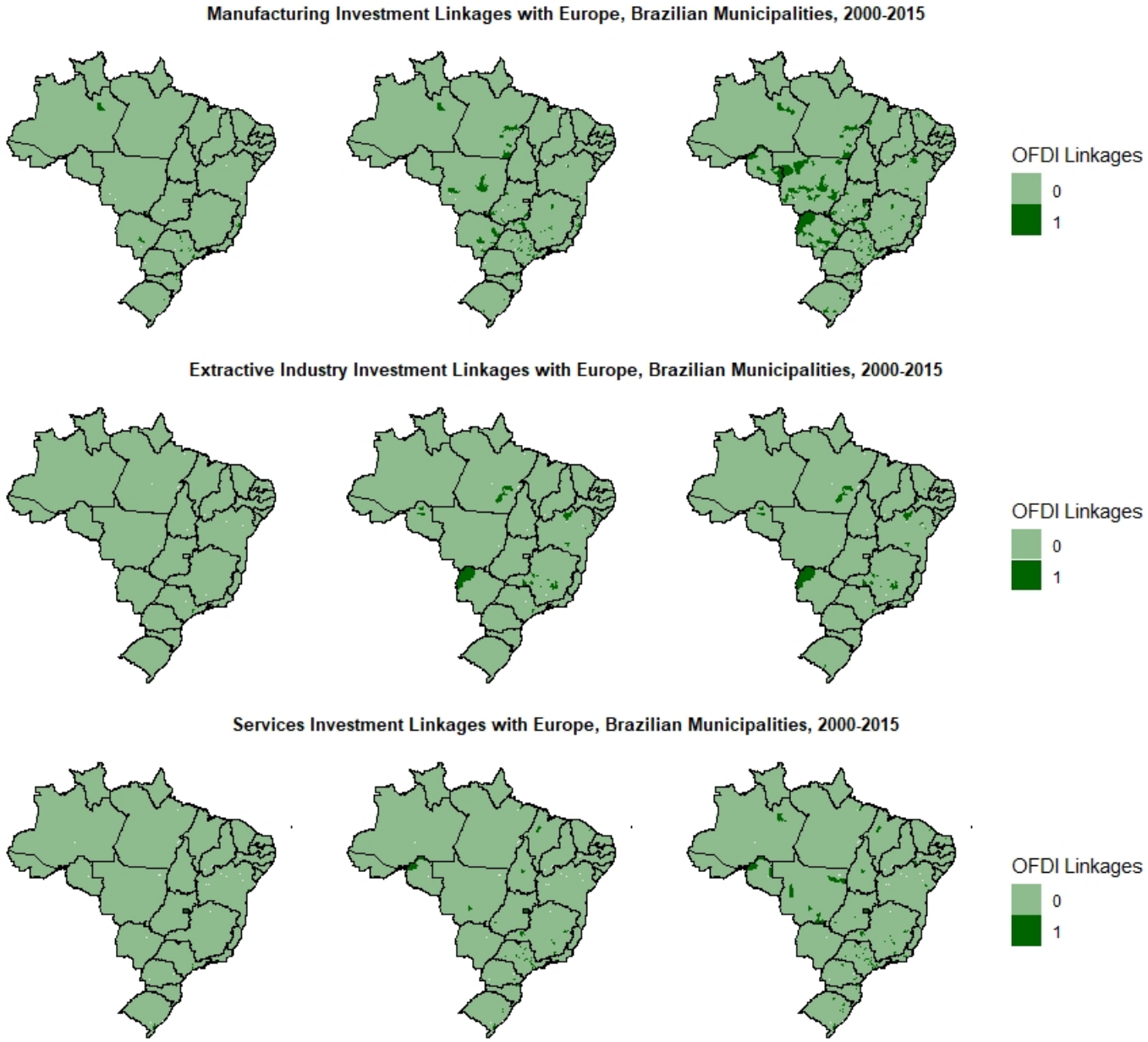


Figure 7.1: European Outward Investment Linkages in Brazilian Municipalities in Manufacturing, Extraction, and Service Sectors in 2000, 2008, and 2015

Table 7.5: Outwardly Invested Brazilian MNE Facilities by City and Economic Sector

Company	IBGE City Code	CNAE Divisão	CNAE Seção
CSN - ERSA	1100023	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Bertin	1100049	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	1100049	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	1100064	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	1100122	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
JBS	1100189	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	1100205	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Amaggi	1100205	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Odebrecht (Energia)	1100205	ELETRICIDADE, GÁS E OUTRAS UTILIDADES	ELETRICIDADE E GÁS
JBS	1100205	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (Energia)	1100205	OBRAS DE INFRAESTRUTURA	CONSTRUÇÃO
JBS	1100304	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	1100320	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
CSN - ERSA	1101104	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Amaggi	1301902	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Stefanini	1302603	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	1302603	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Klabin	1302603	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	1302603	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO

Votorantim Cimentos	1501303	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Stefanini	1501402	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	1501402	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Votorantim Cimentos	1501402	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Natura	1501501	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	1502152	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Odebrecht (BRK Ambiental)	1502772	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1502954	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Bertin	1504208	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	1504208	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Magnesita	1504208	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	1505437	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale	1505536	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Votorantim Cimentos	1506104	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	1506138	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
JBS	1506138	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Bertin	1506138	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	1506708	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Bertin	1506708	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	1506708	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	1507151	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO

Odebrecht (BRK Ambiental)	1507458	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1507508	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1508084	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Bertin	1508084	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	1508084	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	1508407	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1700301	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1700350	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1700400	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1702000	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1702109	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1702158	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1702307	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1702406	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1702554	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1703008	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1703107	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO

Odebrecht (BRK Ambiental)	1703800	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1703842	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1703891	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1705508	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1705557	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1706100	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1707009	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1707652	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1707702	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1708205	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1709005	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1709302	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1711902	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1712157	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1713205	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1713304	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO

Odebrecht (BRK Ambiental)	1713809	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1714203	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1714302	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1714880	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1715754	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1716109	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1716208	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1716604	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1716703	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1718204	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1718758	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1720200	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1720309	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1720903	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
TOTVS	1721000	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Odebrecht (BRK Ambiental)	1721000	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO

Odebrecht (BRK Ambiental)	1721208	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1722081	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	1722107	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Votorantim Cimentos	1722107	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	2100055	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	2105302	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
TOTVS	2105302	REPARAÇÃO E MANUTENÇÃO DE EQUIPAMENTOS DE INFORMÁTICA E COMUNICAÇÃO E DE OBJETOS PESSOAIS E DOMÉSTICOS	OUTRAS ATIVIDADES DE SERVIÇOS
Odebrecht (BRK Ambiental)	2107506	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Vale	2110005	PESQUISA E DESENVOLVIMENTO CIENTÍFICO	ATIVIDADES PROFISSIONAIS, CIENTÍFICAS E TÉCNICAS
Alpargatas	2110203	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	2111201	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Vale	2111300	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale	2111300	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
InterCement	2207959	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	2211001	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
TOTVS	2211001	NA	NA
TOTVS	2303501	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
JBS	2303501	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO

Votorantim Cimentos	2303709	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Stefanini	2304400	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	2304400	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Votorantim Cimentos	2304400	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Klabin	2304400	SERVIÇOS DE ESCRITÓRIO, DE APOIO ADMINISTRATIVO E OUTROS SERVIÇOS PRESTADOS ÀS EMPRESAS	ATIVIDADES ADMINISTRATIVAS E SERVIÇOS COMPLEMENTARES
Votorantim Cimentos	2304400	SERVIÇOS ESPECIALIZADOS PARA CONSTRUÇÃO	CONSTRUÇÃO
Magnesita	2305506	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vicunha	2307650	FABRICAÇÃO DE PRODUTOS TÊXTEIS	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	2307650	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Vicunha	2309607	FABRICAÇÃO DE PRODUTOS TÊXTEIS	INDÚSTRIAS DE TRANSFORMAÇÃO
Magnesita	2312403	OBRAS DE INFRAESTRUTURA	CONSTRUÇÃO
Votorantim Cimentos	2312908	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	2408102	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Votorantim Cimentos	2408102	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Vicunha	2408102	FABRICAÇÃO DE PRODUTOS TÊXTEIS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	2408508	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Gerdau	2408508	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Magnesita	2408508	SERVIÇOS DE ESCRITÓRIO, DE APOIO ADMINISTRATIVO E OUTROS SERVIÇOS PRESTADOS ÀS EMPRESAS	ATIVIDADES ADMINISTRATIVAS E SERVIÇOS COMPLEMENTARES
Vale - MRS (com CSN e Gerdau)	2408508	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
JBS	2409605	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
JBS	2409605	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Inpal SA	2412906	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO

Alpargatas	2504009	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	2507507	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
InterCement	2507507	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Alpargatas	2507507	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	2510907	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	2513851	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Marfrig	2513851	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Braskem	2513851	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	2515930	FABRICAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Braskem	2516805	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Oxiteno	2516805	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
InterCement	2602902	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	2602902	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Alpargatas	2604007	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	2604106	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Klabin	2606200	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	2607901	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
CSN - CSN/Prada Distribuição	2607901	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
CSN - CSN/Prada Distribuição	2607901	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	2609907	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS

Votorantim Cimentos	2611101	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Klabin	2611101	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Stefanini	2611606	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	2611606	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Odebrecht (BRK Ambiental)	2611606	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Klabin	2611606	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	2611606	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	2611606	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (CNO)	2611606	OBRAS DE INFRAESTRUTURA	CONSTRUÇÃO
Odebrecht (BRK Ambiental)	2615607	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Metalfrio	2616407	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	2701506	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Votorantim Cimentos	2701506	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
Bertin	2701506	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	2701506	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	2704302	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Braskem	2704302	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
Braskem	2704708	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
InterCement	2708600	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Stefanini	2800308	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	2800308	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Votorantim Cimentos	2800308	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS

Votorantim Cimentos	2803609	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	2806107	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
Magnesita	2904605	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
InterCement	2904605	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Braskem	2905701	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Oxiteno	2905701	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
CSN - CSN/Prada Distribuição	2905701	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
InterCement	2906006	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Magnesita	2906501	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Fibria	2910727	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	2910800	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Klabin	2910800	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Bertin	2916401	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	2916401	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Fibria	2923001	PRODUÇÃO FLORESTAL	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
Odebrecht	2927408	ATIVIDADES DE SERVIÇOS FINANCEIROS	ATIVIDADES FINANCEIRAS, DE SEGUROS E SERVIÇOS RELACIONADOS
Stefanini	2927408	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	2927408	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Indústrias Romi	2927408	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Odebrecht (BRK Ambiental)	2927408	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht	2927408	OBRAS DE INFRA-ESTRUTURA	CONSTRUÇÃO
Votorantim Cimentos	2927408	SERVIÇOS ESPECIALIZADOS PARA CONSTRUÇÃO	CONSTRUÇÃO
Vale	2927507	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Magnesita	2928000	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS

Marfrig	2929255	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Magnesita	2930204	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
Gerdau	2930709	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	2930709	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	2930774	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (Agroindustrial)	2931400	AGRICULTURA, PECUÁRIA E SERVIÇOS RELACIONADOS	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
JBS	3100609	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	3104007	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
CSN	3104205	COLETA, TRATAMENTO E DISPOSIÇÃO DE RESÍDUOS; RECUPERAÇÃO DE MATERIAIS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
CSN	3104205	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
CSN	3104205	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	3105400	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Gerdau	3105400	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	3105608	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3105608	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
CI&T	3106200	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Stefanini	3106200	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	3106200	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Odebrecht (BRK Ambiental)	3106200	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Vale	3106200	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Magnesita	3106200	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
Indústrias Romi	3106200	FABRICAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Embraer	3106200	FABRICAÇÃO DE OUTROS EQUIPAMENTOS DE TRANSPORTE, EXCETO VEÍCULOS AUTOMOTORES	INDÚSTRIAS DE TRANSFORMAÇÃO
Bertin	3106200	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO

Vale - MRS (com CSN e Gerdau)	3106200	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Klabin	3106705	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3107505	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Vale	3109006	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale - MRS (com CSN e Gerdau)	3109006	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Votorantim Cimentos	3112059	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
Votorantim Cimentos	3112059	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3113206	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Vale	3115359	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale	3118007	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale - MRS (com CSN e Gerdau)	3118007	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Vale	3118304	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale - MRS (com CSN e Gerdau)	3118304	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
CSN - CSN/Prada Distribuição	3118601	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Magnesita	3118601	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	3122306	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	3122306	REPARAÇÃO E MANUTENÇÃO DE EQUIPAMENTOS DE INFORMÁTICA E COMUNICAÇÃO E DE OBJETOS PESSOAIS E DOMÉSTICOS	OUTRAS ATIVIDADES DE SERVIÇOS
Magnesita	3124104	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	3127701	ATIVIDADES DE PRESTAÇÃO DE SERVIÇOS DE INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Vale - MRS (com CSN e Gerdau)	3129806	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
InterCement	3130408	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Magnesita	3131307	OBRAS DE INFRAESTRUTURA	CONSTRUÇÃO
Vale	3131703	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale	3131901	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Votorantim Cimentos	3133758	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO

Bertin	3134202	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	3134202	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	3134400	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3134509	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Magnesita	3135407	MANUTENÇÃO, REPARAÇÃO E INSTALAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3135407	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Magnesita	3136207	FABRICAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Stefanini	3136702	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	3136702	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Vale - MRS (com CSN e Gerdau)	3136702	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Vale	3140001	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Magnesita	3141108	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Alpargatas	3143302	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Instituto Aquila de Gestão	3144805	ATIVIDADES DE SEDES DE EMPRESAS E DE CONSULTORIA EM GESTÃO EMPRESARIAL	ATIVIDADES PROFISSIONAIS, CIENTÍFICAS E TÉCNICAS
Vale	3144805	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Gerdau	3144805	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3145455	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Vale	3146107	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Vale	3146107	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale - MRS (com CSN e Gerdau)	3146107	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Vale	3147402	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale	3148004	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
InterCement	3149309	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	3154804	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale - MRS (com CSN e Gerdau)	3154804	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO

Vale	3155702	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale	3156700	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
InterCement	3158953	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	3161908	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale - MRS (com CSN e Gerdau)	3165537	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
TOTVS	3167202	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Fibria	3167202	PRODUÇÃO FLORESTAL	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
Vale	3168101	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
Magnesita	3168705	MANUTENÇÃO, REPARAÇÃO E INSTALAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Magnesita	3170107	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
Magnesita	3170107	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	3170107	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	3170206	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
CSN - Prada Embalagens	3170206	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	3170206	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	3170206	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	3200409	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Fibria	3200607	PRODUÇÃO FLORESTAL	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
Odebrecht (BRK Ambiental)	3201209	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Fibria	3201605	PRODUÇÃO FLORESTAL	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
WEG	3203205	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	3204104	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO

Magnesita	3205002	FABRICAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Magnesita	3205002	MANUTENÇÃO, REPARAÇÃO E INSTALAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Magnesita	3205002	SERVIÇOS DE ESCRITÓRIO, DE APOIO ADMINISTRATIVO E OUTROS SERVIÇOS PRESTADOS ÀS EMPRESAS	ATIVIDADES ADMINISTRATIVAS E SERVIÇOS COMPLEMENTARES
TOTVS	3205200	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Stefanini	3205309	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Vale	3205309	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Vale - MRS (com CSN e Gerdau)	3300308	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Magnesita	3300407	MANUTENÇÃO, REPARAÇÃO E INSTALAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3300407	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Braskem	3301702	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3302007	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Vale - MRS (com CSN e Gerdau)	3302270	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Odebrecht (Óleo e Gás)	3302403	ATIVIDADES DE APOIO À EXTRAÇÃO DE MINERAIS	INDÚSTRIAS EXTRATIVAS
Stefanini	3302403	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Odebrecht (BRK Ambiental)	3302403	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Vale - MRS (com CSN e Gerdau)	3302601	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
CSN	3304110	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
CSN - Prada Embalagens	3304201	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	3304409	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Odebrecht (BRK Ambiental)	3304524	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Magnesita	3304557	ATIVIDADES DE SERVIÇOS FINANCEIROS	ATIVIDADES FINANCEIRAS, DE SEGUROS E SERVIÇOS RELACIONADOS
Stefanini	3304557	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO

TOTVS	3304557	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Indústrias Romi	3304557	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Odebrecht (Defesa e Tecnologia)	3304557	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Odebrecht (BRK Ambiental)	3304557	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Klabin	3304557	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Bertin	3304557	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vulcan Material Plástico Ltda	3304557	FABRICAÇÃO DE PRODUTOS DE BORRACHA E DE MATERIAL PLÁSTICO	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	3304557	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Braskem	3304557	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Inpal SA	3304557	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	3304557	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3304557	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Votorantim Cimentos	3304904	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Vale - MRS (com CSN e Gerdau)	3306008	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
TOTVS	3306305	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Magnesita	3306305	FABRICAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	3306305	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
CSN	3306305	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3306305	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Bertin	3500303	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	3502101	COMÉRCIO VAREJISTA	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
JBS	3502101	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO

Klabin	3502200	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
InterCement	3502705	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	3502754	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	3503208	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Votorantim Cimentos	3503208	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Citrosuco	3503307	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	3505500	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Stefanini	3505708	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Bertin	3505708	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	3506003	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Marfrig	3506003	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
CSN - CSN/Prada Distribuição	3506102	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Citrosuco	3506102	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
CSN - CSN/Prada Distribuição	3506102	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Citrosuco	3507506	AGRICULTURA, PECUÁRIA E SERVIÇOS RELACIONADOS	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
Embraer	3507506	FABRICAÇÃO DE OUTROS EQUIPAMENTOS DE TRANSPORTE, EXCETO VEÍCULOS AUTOMOTORES	INDÚSTRIAS DE TRANSFORMAÇÃO
Natura	3509205	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
InterCement	3509254	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	3509254	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	3509254	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO

CI&T	3509502	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	3509502	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Votorantim Cimentos	3509502	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Embraer	3509502	FABRICAÇÃO DE PRODUTOS DIVERSOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Braskem	3509502	PESQUISA E DESENVOLVIMENTO CIENTÍFICO	ATIVIDADES PROFISSIONAIS, CIENTÍFICAS E TÉCNICAS
Fibria	3510203	PRODUÇÃO FLORESTAL	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
Odebrecht (BRK Ambiental)	3510401	OBRAS DE INFRAESTRUTURA	CONSTRUÇÃO
Citrosuco	3511102	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Fitesa	3512803	PRODUÇÃO FLORESTAL	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
Vale - MRS (com CSN e Gerdau)	3513405	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Magnesita	3513504	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
InterCement	3513504	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	3513504	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Braskem	3513504	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3513504	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Votorantim Cimentos	3513801	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Votorantim Cimentos	3515004	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Embraer	3516853	FABRICAÇÃO DE OUTROS EQUIPAMENTOS DE TRANSPORTE, EXCETO VEÍCULOS AUTOMOTORES	INDÚSTRIAS DE TRANSFORMAÇÃO
Bertin	3517208	AGRICULTURA, PECUÁRIA E SERVIÇOS RELACIONADOS	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
JBS	3517208	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	3517208	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3518701	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Votorantim Cimentos	3518800	SERVIÇOS ESPECIALIZADOS PARA CONSTRUÇÃO	CONSTRUÇÃO

WEG	3519071	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Citrosuco	3519253	AGRICULTURA, PECUÁRIA E SERVIÇOS RELACIONADOS	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
Brastec - Bought by Royal ICH in 2015	3520509	SERVIÇOS DE ARQUITETURA E ENGENHARIA; TESTES E ANÁLISES TÉCNICAS	ATIVIDADES PROFISSIONAIS, CIENTÍFICAS E TÉCNICAS
Citrosuco	3522307	AGRICULTURA, PECUÁRIA E SERVIÇOS RELACIONADOS	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
Marfrig	3524006	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Marfrig	3524006	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Natura	3524006	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
InterCement	3524402	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Fibria	3524402	PRODUÇÃO FLORESTAL	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
Vale - MRS (com CSN e Gerdau)	3524402	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Stefanini	3524709	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	3525904	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Gerdau	3525904	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Klabin	3525904	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Brastec - Bought by Royal ICH in 2015	3525904	FABRICAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3525904	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Biorigin - Zilor	3526803	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	3526902	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Odebrecht (BRK Ambiental)	3526902	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Citrosuco	3526902	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Bertin	3527108	AGRICULTURA, PECUÁRIA E SERVIÇOS RELACIONADOS	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
JBS	3527108	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO

CSN - Prada Embalagens	3527108	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3527207	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Biorigin - Zilor	3528007	PESQUISA E DESENVOLVIMENTO CIENTÍFICO	ATIVIDADES PROFISSIONAIS, CIENTÍFICAS E TÉCNICAS
Odebrecht (BRK Ambiental)	3528403	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Citrosuco	3529302	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	3529401	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Braskem	3529401	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Oxiteno	3529401	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	3529401	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Tupy	3529401	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (Agroindustrial)	3530201	FABRICAÇÃO DE COQUE, DE PRODUTOS DERIVADOS DO PETRÓLEO E DE BIOCOMBUSTÍVEIS	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	3530607	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
CSN - CSN/Prada Distribuição	3530607	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Alpargatas	3530805	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Sabó	3530805	FABRICAÇÃO DE VEÍCULOS AUTOMOTORES, REBOQUES E CARROCERIAS	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	3531308	FABRICAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Ober SA	3533403	FABRICAÇÃO DE PRODUTOS TÊXTEIS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	3534401	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Braskem	3536505	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	3538006	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Magnesita	3538006	OBRAS DE INFRAESTRUTURA	CONSTRUÇÃO
Vale - MRS (com CSN e Gerdau)	3538006	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO

CSN - CSN/Prada Distribuição	3538709	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Klabin	3538709	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	3540705	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Votorantim Cimentos	3541000	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Marfrig	3541604	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Biorigin - Zilor	3541703	PESQUISA E DESENVOLVIMENTO CIENTÍFICO	ATIVIDADES PROFISSIONAIS, CIENTÍFICAS E TÉCNICAS
Votorantim Cimentos	3543253	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Cia Brasileira de Cartuchos	3543303	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	3543402	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Bertin	3543402	COMÉRCIO VAREJISTA	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
TOTVS	3543402	COMÉRCIO VAREJISTA	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Indústrias Romi	3543402	FABRICAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Indústrias Romi	3545803	FABRICAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	3546702	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
TOTVS	3547304	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
JBS	3548500	COMÉRCIO VAREJISTA	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Vale - MRS (com CSN e Gerdau)	3548500	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
WEG	3548708	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	3548807	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
TOTVS	3549805	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO

Votorantim Cimentos	3549805	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
TOTVS	3549904	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Embraer	3549904	FABRICAÇÃO DE OUTROS EQUIPAMENTOS DE TRANSPORTE, EXCETO VEÍCULOS AUTOMOTORES	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (Óleo e Gás)	3550308	ATIVIDADES DE APOIO À EXTRAÇÃO DE MINERAIS	INDÚSTRIAS EXTRATIVAS
Instituto Aquila de Gestão	3550308	ATIVIDADES DE SEDES DE EMPRESAS E DE CONSULTORIA EM GESTÃO EMPRESARIAL	ATIVIDADES PROFISSIONAIS, CIENTÍFICAS E TÉCNICAS
Odebrecht	3550308	ATIVIDADES DE SERVIÇOS FINANCEIROS	ATIVIDADES FINANCEIRAS, DE SEGUROS E SERVIÇOS RELACIONADOS
Odebrecht (Transport)	3550308	ATIVIDADES DE SERVIÇOS FINANCEIROS	ATIVIDADES FINANCEIRAS, DE SEGUROS E SERVIÇOS RELACIONADOS
CI&T	3550308	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Neogrid	3550308	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	3550308	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Cia Brasileira de Cartuchos	3550308	COMÉRCIO E REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Natura	3550308	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Odebrecht (Defesa e Tecnologia)	3550308	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Fibria	3550308	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Klabin	3550308	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Metalfrio	3550308	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
CSN - Prada Embalagens	3550308	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	3550308	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Oxiteno	3550308	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Sabó	3550308	FABRICAÇÃO DE VEÍCULOS AUTOMOTORES, REBOQUES E CARROCERIAS	INDÚSTRIAS DE TRANSFORMAÇÃO

Odebrecht (Tenenge)	3550308	OBRAS DE INFRA-ESTRUTURA	CONSTRUÇÃO
Odebrecht (Transport)	3550308	OBRAS DE INFRA-ESTRUTURA	CONSTRUÇÃO
Alpargatas	3550308	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Braskem	3550308	SERVIÇOS DE ESCRITÓRIO, DE APOIO ADMINISTRATIVO E OUTROS SERVIÇOS PRESTADOS ÀS EMPRESAS	ATIVIDADES ADMINISTRATIVAS E SERVIÇOS COMPLEMENTARES
Vicunha	3550308	SERVIÇOS DE ESCRITÓRIO, DE APOIO ADMINISTRATIVO E OUTROS SERVIÇOS PRESTADOS ÀS EMPRESAS	ATIVIDADES ADMINISTRATIVAS E SERVIÇOS COMPLEMENTARES
Vale - MRS (com CSN e Gerdau)	3550308	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Vulcan Material Plástico Ltda	3550605	FABRICAÇÃO DE PRODUTOS DE BORRACHA E DE MATERIAL PLÁSTICO	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	3552205	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Embraer	3552205	FABRICAÇÃO DE OUTROS EQUIPAMENTOS DE TRANSPORTE, EXCETO VEÍCULOS AUTOMOTORES	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	3552403	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Oxiteno	3552502	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Embraer	3554102	FABRICAÇÃO DE OUTROS EQUIPAMENTOS DE TRANSPORTE, EXCETO VEÍCULOS AUTOMOTORES	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale - MRS (com CSN e Gerdau)	3554102	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
Oxiteno	3554805	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Instituto Aquila de Gestão	4100202	ATIVIDADES DE SEDES DE EMPRESAS E DE CONSULTORIA EM GESTÃO EMPRESARIAL	ATIVIDADES PROFISSIONAIS, CIENTÍFICAS E TÉCNICAS
CSN - CSN/Prada Distribuição	4101804	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
CSN - CSN/Prada Distribuição	4101804	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	4101804	SERVIÇOS ESPECIALIZADOS PARA CONSTRUÇÃO	CONSTRUÇÃO
Marfrig	4105805	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Stefanini	4106902	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO

Bertin	4106902	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Indústrias Romi	4106902	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Votorantim Cimentos	4106902	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	4113700	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Klabin	4117305	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Klabin	4118204	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	4119152	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Votorantim Cimentos	4122206	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Klabin	4122305	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Klabin	4127106	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	4201307	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Votorantim Cimentos	4202305	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Votorantim Cimentos	4202404	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Odebrecht (BRK Ambiental)	4202404	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
WEG	4202404	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	4203006	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Votorantim Cimentos	4203956	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Klabin	4204558	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO

Votorantim Cimentos	4204608	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
WEG	4206504	FABRICAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	4206504	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	4206504	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	4207304	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Inpal SA	4207502	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (Óleo e Gás)	4208203	ATIVIDADES DE APOIO À EXTRAÇÃO DE MINERAIS	INDÚSTRIAS EXTRATIVAS
Klabin	4208203	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	4208203	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	4208203	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	4208906	ATIVIDADES DE SEDES DE EMPRESAS E DE CONSULTORIA EM GESTÃO EMPRESARIAL	ATIVIDADES PROFISSIONAIS, CIENTÍFICAS E TÉCNICAS
WEG	4208906	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	4209003	FABRICAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	4209003	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Neogrid	4209102	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	4209102	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Votorantim Cimentos	4209102	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Tupy	4209102	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Klabin	4209300	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	4209300	SERVIÇOS ESPECIALIZADOS PARA CONSTRUÇÃO	CONSTRUÇÃO
Klabin	4211751	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Magnesita	4213302	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO

Votorantim Cimentos	4219200	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	4304358	EXTRAÇÃO DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS EXTRATIVAS
InterCement	4304358	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
CSN - CSN/Prada Distribuição	4304606	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
CSN - CSN/Prada Distribuição	4304606	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	4305108	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Votorantim Cimentos	4305108	SERVIÇOS ESPECIALIZADOS PARA CONSTRUÇÃO	CONSTRUÇÃO
Votorantim Cimentos	4305355	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Gerdau	4305355	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Bertin	4307609	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	4307708	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	4309209	FABRICAÇÃO DE MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
WEG	4309209	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Marfrig	4309654	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	4312401	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Cia Brasileira de Cartuchos	4312401	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	4314100	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
CSN - Prada Embalagens	4314407	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Fibria	4314407	PRODUÇÃO FLORESTAL	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
Votorantim Cimentos	4314506	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO

Neogrid	4314902	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Stefanini	4314902	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	4314902	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Gerdau	4314902	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Indústrias Romi	4314902	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Votorantim Cimentos	4314902	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Gerdau	4314902	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (Energia)	4315602	SERVIÇOS DE ARQUITETURA E ENGENHARIA; TESTES E ANÁLISES TÉCNICAS	ATIVIDADES PROFISSIONAIS, CIENTÍFICAS E TÉCNICAS
Stefanini	4318705	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Klabin	4318705	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Cia Brasileira de Cartuchos	4318705	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Gerdau	4320008	METALURGIA	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	4322400	CAPTAÇÃO, TRATAMENTO E DISTRIBUIÇÃO DE ÁGUA	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Fibria	5000203	PRODUÇÃO FLORESTAL	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
JBS	5000708	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Marfrig	5001904	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
InterCement	5002159	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5002902	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	5003207	EXTRAÇÃO DE MINERAIS METÁLICOS	INDÚSTRIAS EXTRATIVAS
Votorantim Cimentos	5003207	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Bertin	5005707	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO

JBS	5005707	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5005707	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (Agroindustrial)	5006002	FABRICAÇÃO DE COQUE, DE PRODUTOS DERIVADOS DO PETRÓLEO E DE BIOCOMBUSTÍVEIS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5006200	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5006200	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5006606	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Bertin	5007208	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5008008	AGRICULTURA, PECUÁRIA E SERVIÇOS RELACIONADOS	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
Fibria	5008305	FABRICAÇÃO DE CELULOSE, PAPEL E PRODUTOS DE PAPEL	INDÚSTRIAS DE TRANSFORMAÇÃO
Metalfrio	5008305	FABRICAÇÃO DE MÁQUINAS, APARELHOS E MATERIAIS ELÉTRICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5100250	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (Agroindustrial)	5100607	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5101258	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5101803	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5102678	FABRICAÇÃO DE COQUE, DE PRODUTOS DERIVADOS DO PETRÓLEO E DE BIOCOMBUSTÍVEIS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5103205	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5103353	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	5103403	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Amaggi	5103403	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Votorantim Cimentos	5103403	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Bertin	5103502	AGRICULTURA, PECUÁRIA E SERVIÇOS RELACIONADOS	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA

JBS	5103502	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Amaggi	5104609	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
JBS	5105101	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5105150	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5105259	AGRICULTURA, PECUÁRIA E SERVIÇOS RELACIONADOS	AGRICULTURA, PECUÁRIA, PRODUÇÃO FLORESTAL, PESCA E AQÜICULTURA
Votorantim Cimentos	5105903	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Marfrig	5106257	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Marfrig	5106307	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5106752	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Amaggi	5107602	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Amaggi	5107859	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Amaggi	5107875	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Marfrig	5107958	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	5201405	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Gerdau	5201405	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	5201405	SERVIÇOS ESPECIALIZADOS PARA CONSTRUÇÃO	CONSTRUÇÃO
Odebrecht (Agroindustrial)	5204300	FABRICAÇÃO DE COQUE, DE PRODUTOS DERIVADOS DO PETRÓLEO E DE BIOCOMBUSTÍVEIS	INDÚSTRIAS DE TRANSFORMAÇÃO
Vale	5205109	FABRICAÇÃO DE PRODUTOS QUÍMICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
InterCement	5205455	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Votorantim Cimentos	5207352	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
TOTVS	5208707	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO

JBS	5208707	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Votorantim Cimentos	5208707	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
JBS	5208707	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5208707	TRANSPORTE TERRESTRE	TRANSPORTE, ARMAZENAGEM E CORREIO
JBS	5211503	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	5211909	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
CSN - Prada Embalagens	5212501	FABRICAÇÃO DE PRODUTOS DE METAL, EXCETO MÁQUINAS E EQUIPAMENTOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (Agroindustrial)	5213103	FABRICAÇÃO DE COQUE, DE PRODUTOS DERIVADOS DO PETRÓLEO E DE BIOCOMBUSTÍVEIS	INDÚSTRIAS DE TRANSFORMAÇÃO
Marfrig	5213103	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Bertin	5214002	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5214002	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (Agroindustrial)	5216452	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Odebrecht (Agroindustrial)	5216452	FABRICAÇÃO DE COQUE, DE PRODUTOS DERIVADOS DO PETRÓLEO E DE BIOCOMBUSTÍVEIS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5218003	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Odebrecht (BRK Ambiental)	5218805	ESGOTO E ATIVIDADES RELACIONADAS	ÁGUA, ESGOTO, ATIVIDADES DE GESTÃO DE RESÍDUOS E DESCONTAMINAÇÃO
Bertin	5220108	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5220108	PREPARAÇÃO DE COUROS E FABRICAÇÃO DE ARTEFATOS DE COURO, ARTIGOS PARA VIAGEM E CALÇADOS	INDÚSTRIAS DE TRANSFORMAÇÃO
JBS	5220454	FABRICAÇÃO DE PRODUTOS ALIMENTÍCIOS	INDÚSTRIAS DE TRANSFORMAÇÃO

Stefanini	5300108	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
TOTVS	5300108	ATIVIDADES DOS SERVIÇOS DE TECNOLOGIA DA INFORMAÇÃO	INFORMAÇÃO E COMUNICAÇÃO
Bertin	5300108	COMÉRCIO POR ATACADO, EXCETO VEÍCULOS AUTOMOTORES E MOTOCICLETAS	COMÉRCIO;REPARAÇÃO DE VEÍCULOS AUTOMOTORES E MOTOCICLETAS
Votorantim Cimentos	5300108	FABRICAÇÃO DE PRODUTOS DE MINERAIS NÃO-METÁLICOS	INDÚSTRIAS DE TRANSFORMAÇÃO
Embraer	5300108	SERVIÇOS DE ESCRITÓRIO, DE APOIO ADMINISTRATIVO E OUTROS SERVIÇOS PRESTADOS ÀS EMPRESAS	ATIVIDADES ADMINISTRATIVAS E SERVIÇOS COMPLEMENTARES
Aceco TI	5300108	SERVIÇOS ESPECIALIZADOS PARA CONSTRUÇÃO	CONSTRUÇÃO
Votorantim Cimentos	5300108	SERVIÇOS ESPECIALIZADOS PARA CONSTRUÇÃO	CONSTRUÇÃO

7.3 State-level Results with Inward FDI Included, Select Years

Table 7.6: State-level MDFE Results with IFDI 2000, 2005, 2010, 2015

	Overworking	Benefits Rate	Long Term Employ	Permanent Contracts
EU FDI Linkage	-0.113^{*}	0.204^{***}	0.153^{***}	-0.010
	(0.064)	(0.072)	(0.049)	(0.021)
Education Rate	-0.367^{***}	0.022	0.416^{***}	-0.001
	(0.106)	(0.243)	(0.140)	(0.012)
Female Population	-0.015	-1.774^{*}	-0.838^{*}	0.075
	(0.556)	(0.910)	(0.463)	(0.064)
Non-White Population	-0.546^{***}	0.048	-0.024	0.027
	(0.156)	(0.197)	(0.112)	(0.029)
Employment Rate	0.147	1.091^{***}	0.430^{***}	0.050
	(0.148)	(0.317)	(0.129)	(0.030)
Informality Rate	-0.145	-0.849^{**}	0.061	-0.071^{**}
	(0.166)	(0.397)	(0.048)	(0.027)
Workers' Party Gov't	-0.984	-1.826	-0.205	-0.086
	(1.152)	(1.589)	(0.695)	(0.104)
Ln. VAB Agriculture	1.615	1.107	0.974	-0.024
	(1.423)	(1.888)	(0.926)	(0.189)
Ln. VAB Industry	1.806	4.475	-1.652	0.319
	(2.163)	(2.792)	(1.569)	(0.320)
Ln. VAB Services	-13.401^{***}	-11.656	3.850	-3.572^{***}
	(4.575)	(10.412)	(4.583)	(1.086)
Ln. Exports to Dev'd	-1.824^{***}	-0.484	-0.484	0.056
	(0.594)	(1.063)	(0.436)	(0.101)
Ln. IFDI	-0.935^{***}	-0.341^{**}	0.179	-0.013
	(0.143)	(0.166)	(0.110)	(0.024)
Observations	1782	1782	1188	1782
R-Squared	0.618	0.658	0.838	0.837
Adjusted R-Squared	0.604	0.646	0.829	0.831

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

7.4 CNAE Sector Classifications and Divisão-level Results

7.4.1 CNAE 2.3 Seção

The sectors are: A - Agriculture, livestock, forestry, fishing, and aquaculture; B - Extractive Industries; C - Transformative Industries (i.e. manufacturing); D - Utilities (i.e. electricity and gas); E - Water, sewage, management of residuals and decontamination; F - Construction; G - Sales, repair of vehicles; H - Transport, storage, and delivery; I - Room and board and restaurants; J - IT & Communication; K - Finance, insurance, and related activities; L - Real estate activities; M - Professional, scientific, and technical activities; N - Administrative services and complementary services; O - Public administration, defense, and social security; P - Education; Q - Health and human and social services; R - Arts, culture, sports, and recreation; S - Other services; T - Domestic services; U - International organizations, NGOs, and other extraterritorial institutions.

7.4.2 CNAE 2.3 Divisão

The CNAE 2.3 Divisão-level of economic sector classification disaggregates the Seção level into 87 distinct sectors. These are: 01 - Agriculture, Livestock, and Related Services; 02 - Forestry; 03 - Fishing and Aquaculture; 05 - Coal Mining; 06 - Extraction of Oil and Gas; 07 - Metallic Mineral Mining; 08 - Non-metallic Mineral Mining; 09 - Mining Support Activities; 10 - Food Processing; 11 - Drink Manufacturing; 12 - Manufacture of Smoking Products; 13 - Textile Manufacturing; 14 - Clothing Manufacturing; 15 - Leather Manufacturing; 16 - Manufacturing of Wood Products; 17 - Manufacturing of Cellulose, Paper, and Paper Products; 18 - Manufacture of Recordings; 19 - Manufacture of Coke, Oil, and Biofuel Derivatives; 20 - Chemical Manufacturing; 21 - Pharmaceutical Manufacturing; 22 - Rubber and Plastic Product Manufacturing;

23 - Non-Metallic Mineral Manufacturing; 24 - Metallurgy; 25 - Metal Product Manufacture, Except Machinery; 26 - Electrical, Optical, and Information Equip Manufacture; 27 - Manufacture of Electronic Machinery and Appliances; 28 - Manufacture of Machinery and Equipment; 29 - Automobile, Trailer, and Body Manufacture; 30 - Other Transport Equipment Manufacture; 31 - Furniture Manufacturing; 32 - Manufacturing of Diverse Products; 33 - Maintenance, Repair, and Installation of Machinery ; 35 - Utilities; 36 - Water Treatment and Distribution; 37 - Sewage and Related Activities; 38 - Trash and Recycling; 39 - Decontamination and Other Residual Management; 41 - Construction of Buildings; 42 - Infrastructure Works; 43 - Specialized Services for Construction; 45 - Car and Motorcycle Sale and Repair; 46 - Wholesale Retail, Except Cars and Motorcycles; 47 - Retail Business; 49 - Terrestrial Transport; 50 - Aquatic Transport; 51 - Airborn Transport; 52 - Storage and Auxiliary Transport Services; 53 - Post and Other Delivery Services; 55 - Accommodation; 56 - Restaurant and Food; 58 - Editing and Print Editing; 59 - Video and Sound/Music Production and Editing; 60 - Radio and Television Activities; 61 - Telecommunication; 62 - IT Services; 63 - Information Service Provision; 64 - Financial Services; 65 - Insurance and Pensions; 66 - Auxiliary Finance, Insurance, and Pension Services; 68 - Real Estate Services; 69 - Legal, Accounting, and Auditing Services; 70 - Business Management Consulting; 71 - Achitecture and Engineering Services; 72 - Scientific R&D; 73 - Marketing and Market Research; 74 - Other Professional, Scientific, and Technical Services; 75 - Veterinarian Services; 77 - Other Rental and Asset Services; 78 - Labor Agencies; 79 - Tourism Agencies; 80 - Security and Investigation Services; 81 - Building and Landscape Management; 82 - Administrative and Other Office Services; 84 - Security, Defense, and Public Administration; 85 - Education; 86 - Health and Human Services; 87 - Health Care Services for Private/Collective Residences; 88 - Social Welfare Services; 90

- Artistic, Creative, and Spectacle Activities; 91 - Environmental and Cultural Heritage Activities; 92 - Gambling and Betting; 93 - Sport and Recreation; 94 - Associative Organizations; 95 - Repair of Computers and Home Appliances; 96 - Other Personal Services; 97 - Domestic Service; 99 - International Oranizations and NGOs.

Using this lower level of economic sector aggregation, I re-estimated my independent and dependent variables and joined these with the controls and re-estimated my main models. The results are reported in Tables 7.7 and 7.8 below. Though the significance of the coefficients decreases they are within conventional acceptable levels and the results are otherwise consistent.

7.4.3 Divisão Model Results

Table 7.7: State-level CNAE Div MDFE Results

	Overworking	Benefits Rate	Long Term Employ	Permanent Contracts
EU FDI Linkage	-0.027^{*}	0.153^{**}	0.018^{*}	0.014^{*}
	(0.464)	(0.060)	(0.009)	(0.008)
Observations	32886	32886	32130	32130
R-squared	0.268	0.523	0.764	0.785
Adjusted R-squared	0.258	0.516	0.761	0.782
All Controls	✓	✓	✓	✓
State FE	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table 7.8: Municipality-level CNAE Div MDFE Results

	Overworking	Long Term Employ	Permanent Contracts
EU FDI Linkage	-0.736^{*}	0.614^{***}	0.547^{***}
	(0.464)	(0.170)	(0.202)
All Controls	✓	✓	✓
Microregion FE	✓	✓	✓
Sector FE	✓	✓	✓
Year FE	✓	✓	✓
Observations	952810	952810	952810
R-squared	0.272	0.473	0.468
Adjusted R-squared	0.271	0.472	0.468

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

7.5 Alternative Lags

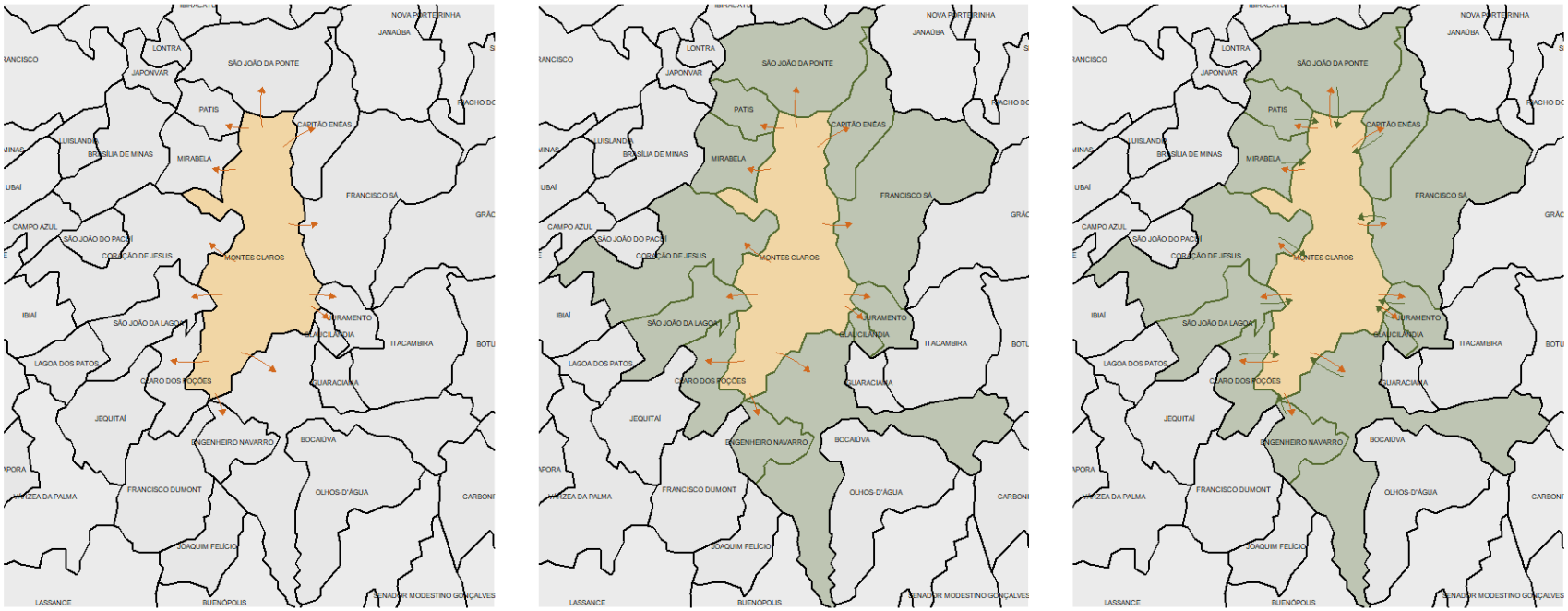
Table 7.9: MFDE Models with 2- and 4-year Lags

	2-year Lag			4-year Lag		
	Overworking	Long Term Employ	Permanent Contracts	Overworking	Long Term Employ	Permanent Contracts
EU FDI Linkage	-0.640^{*}	0.990^{***}	0.807^{***}	-0.641	1.436^{***}	1.493^{***}
	(0.346)	(0.118)	(0.138)	(0.398)	(0.181)	(0.242)
Observations	240944	240944	240944	240944	240944	240944
R-Squared	0.335	0.474	0.471	0.335	0.475	0.471
Adjusted R-Squared	0.332	0.472	0.468	0.332	0.472	0.468
All Controls	✓	✓	✓	✓	✓	✓
Microregion FE	✓	✓	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

7.6 Illustration of Feedback Effect in Spatial Models

Figure 7.2: Spatial Feedback Loop Between Brazilian Municipalities



The left-most panel shows the initial impact of investment linkages on a municipality in Brazil in the orange municipality with the orange outward pointing arrows indicating the impact on employers in the neighboring cities. The middle indicates that the neighboring (green) municipalities have experienced upgrading as a result of the influence of the central, orange municipality. The final, right-most panel shows the reciprocal influence whereby there is a feedback effect that increases the positive (negative) effect, indicated by the cyclical green and orange arrows.

7.7 Chemical Manufacturing Topics

Figure 7.3: Chemical Topics by LDA, Pre-investment

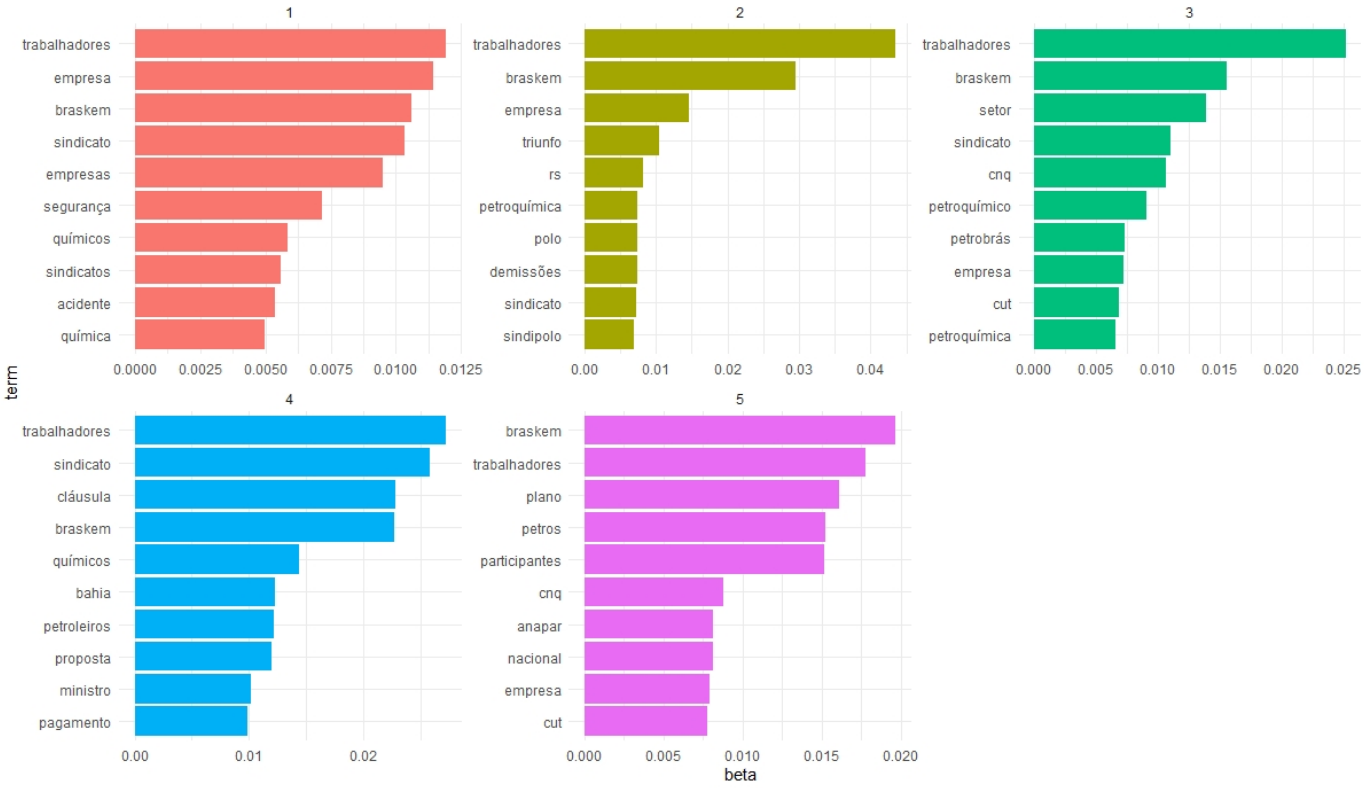
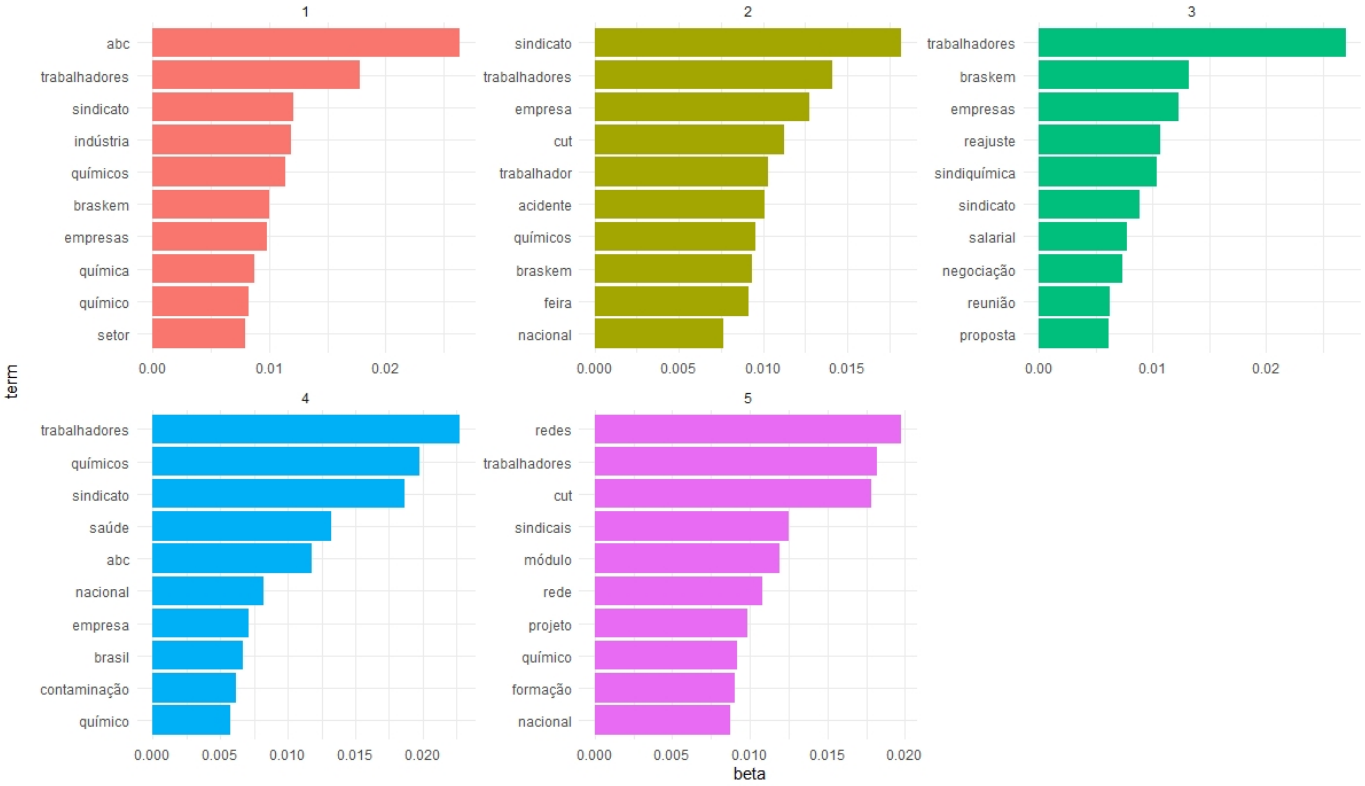


Figure 7.4: Chemical Topics by LDA, Post-investment



7.8 Food Processing Topics

Figure 7.5: Food Topics by LDA, Pre-investment

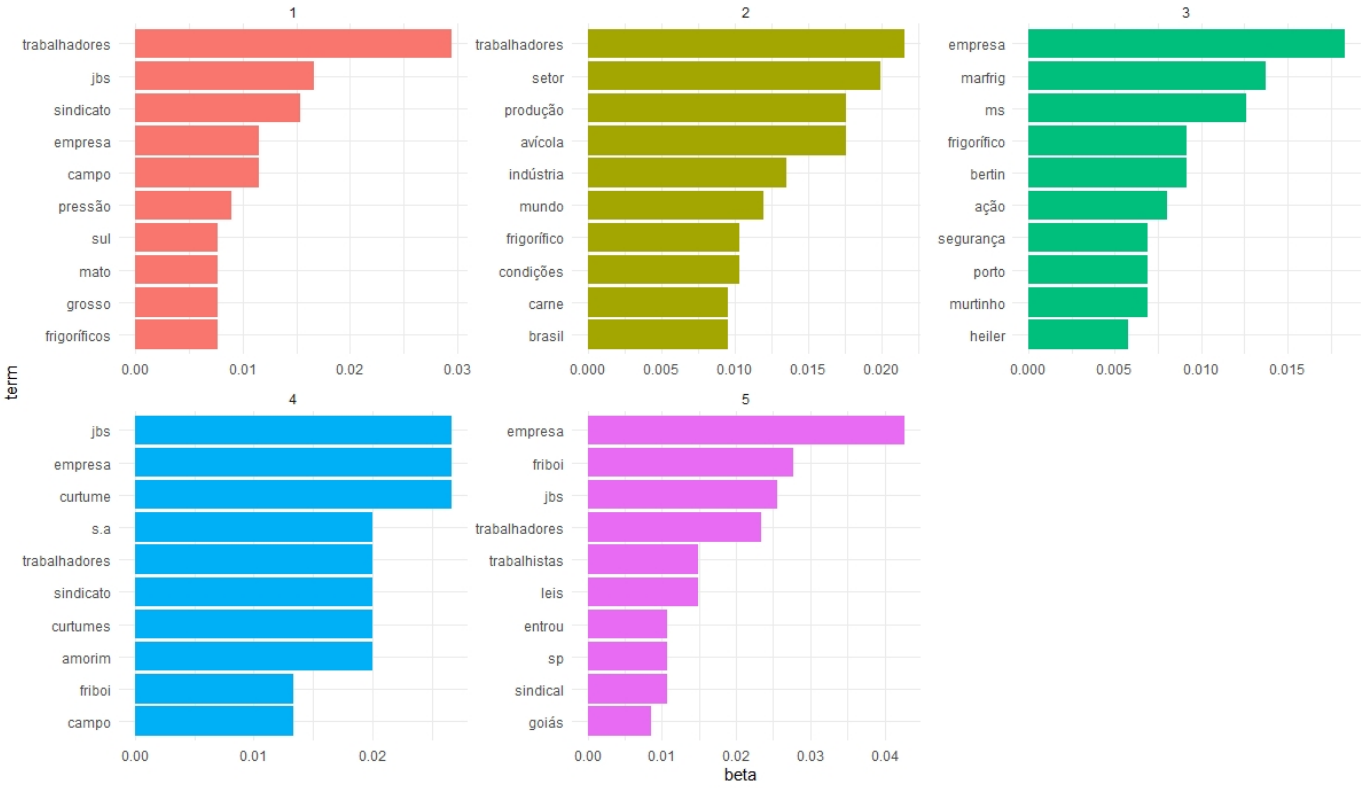
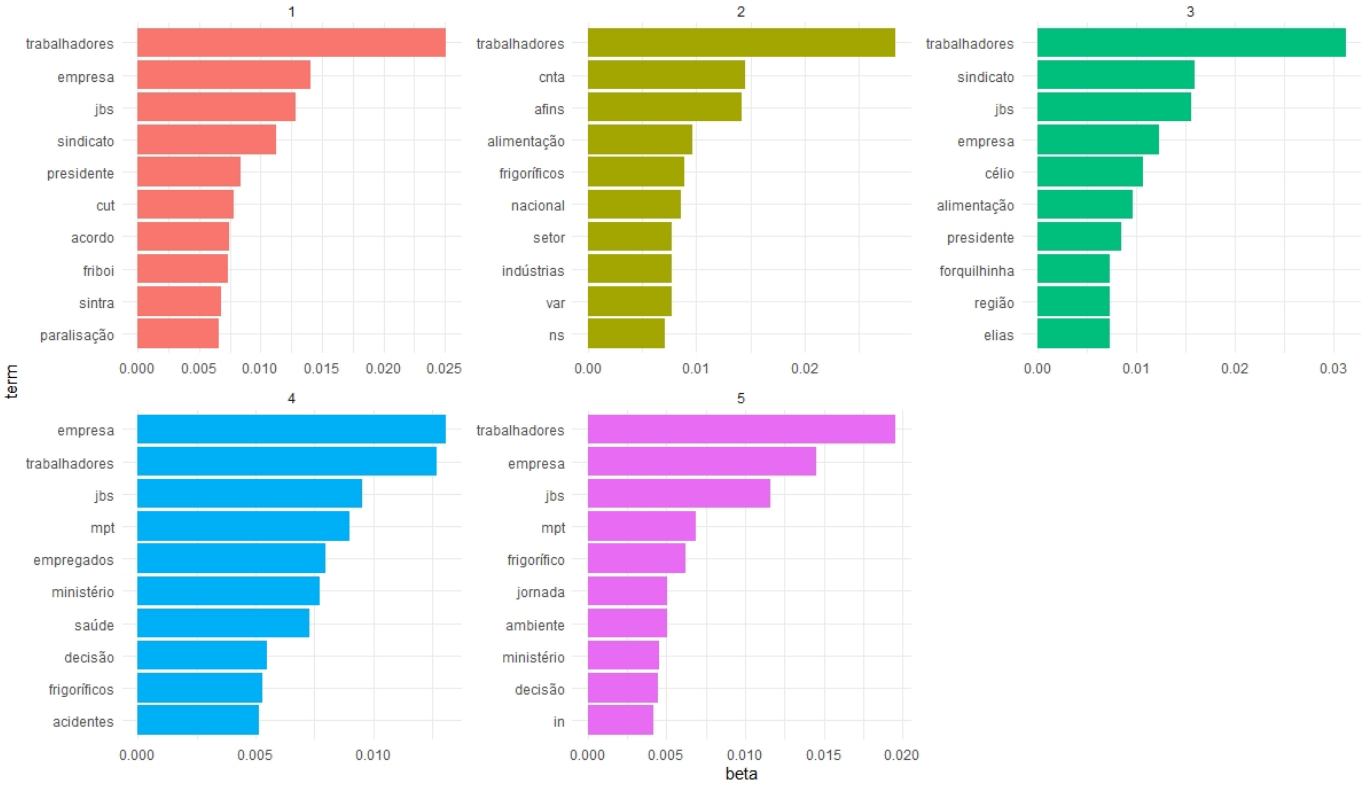


Figure 7.6: Food Topics by LDA, Post-investment



7.9 Metallic and Non-Metallic Mineral Mining Topics

Figure 7.7: Mining Topics by LDA, Pre-investment

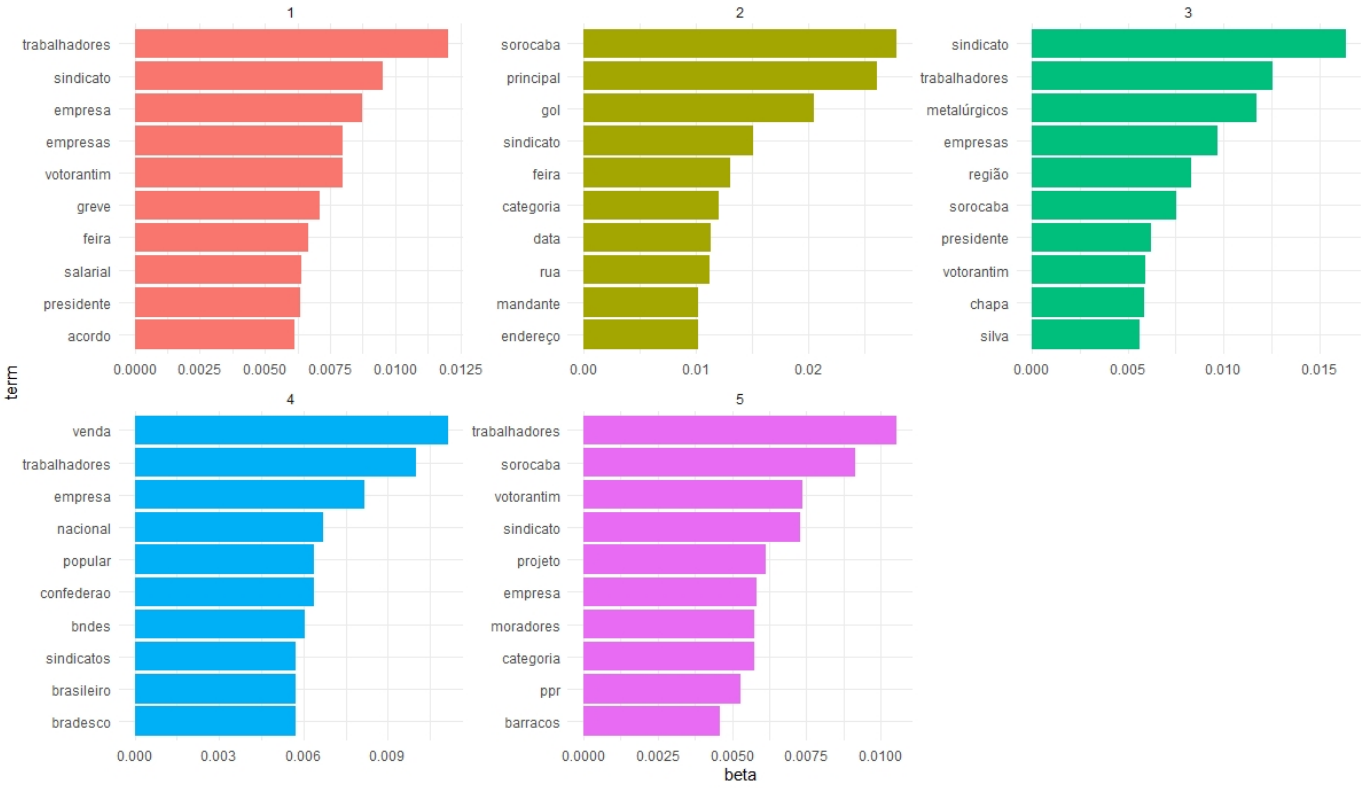
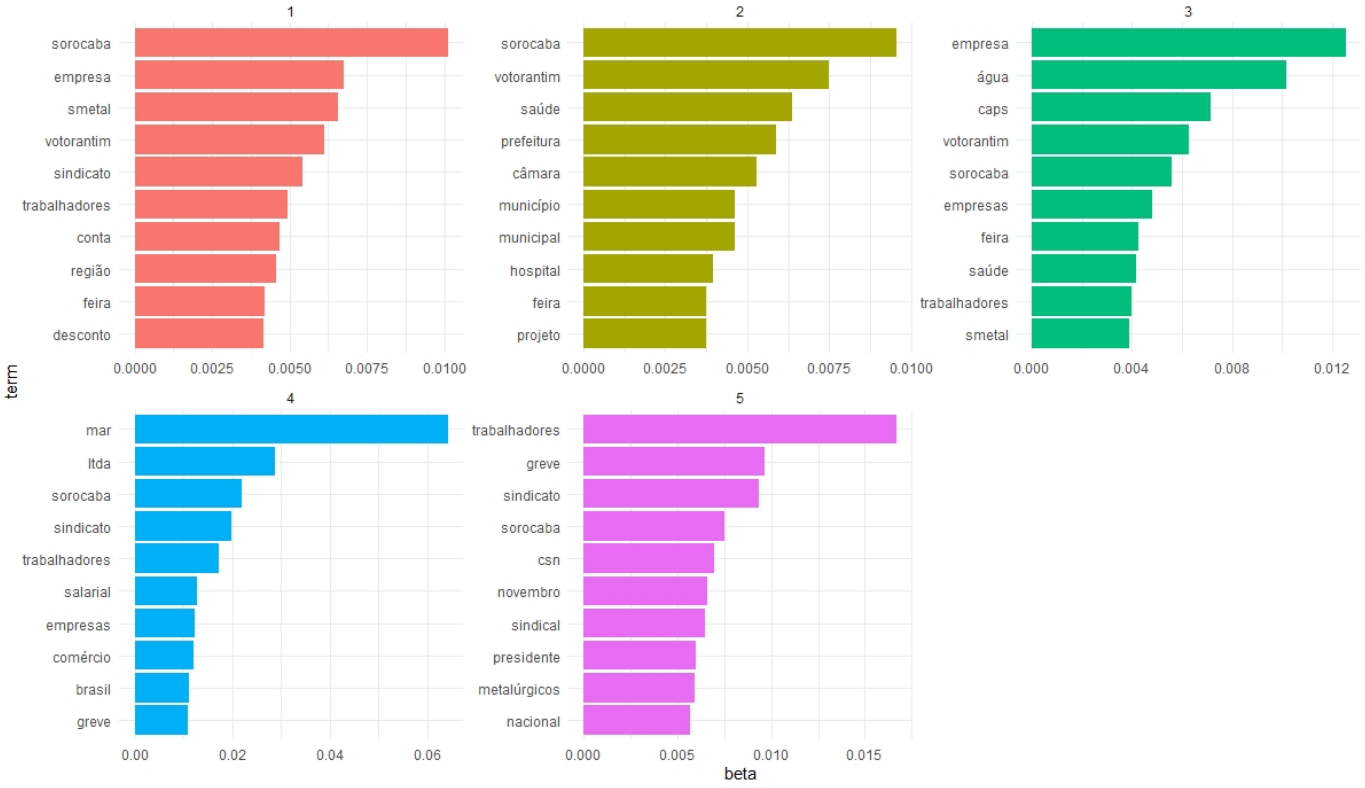


Figure 7.8: Mining Topics by LDA, Post-investment



7.10 List of Unions, Federations, Confederations, and Employer Associations

The following are the worker and employee union sites that were included in the web scraping process. Note: not every site provided relevant articles, posts, or blog entries.

Sindicato dos trabalhadores nas Indústrias de Fiação e Tecelagem de São Paulo

Sindicato dos Trabalhadores nas Indústrias de Alimentação do Estado de Rondônia

SINDICATO DOS TRABALHADORES NAS INDÚSTRIAS DE ALIMENTAÇÃO DOS ESTADOS DO PARÁ E EMAPÁ

SINTRACOMRRE-PA

SINTRACOOP-MS

STIC-CG

SINDICARNE-BA

STILASP

SINTIACR

Sindicato dos Trabalhadores nas Indústrias de Alimentação de Naviraí

Sindicato dos Trabalhadores na Alimentação, Frigoríficos, do Álcool e de Refinação de Açúcar nos Municípios de Tangará da Serra e Região

Stiab-DF

Sintiapp

Sindicato dos trabalhadores e empregados rurais de quata

Sindipolo

Sindipetro AL/SE

Sindiquimica Bahia

Sindiquimica Caxias

Sindicato Quimicos Unificados

Sindicato dos Trabalhadores nas Indústrias Químicas, Farmacêuticas e de Fertilizantes de Cubatão, Santos, São Vicente, Praia Grande, Guarujá, Bertioga, Mongaguá e Itanhaém

Sindicato dos Quimicos São Paulo

Sindicato dos Metalurgicos Jundiai

Sindados-MG

SINDPD

Quimicos-ABC

Sindicato dos trabalhadores metalurgicos do sul fluminense

Sindicato dos metalurgicos de Sao Paulo e Mogi das Cruzes

Sindicato de Engenheiros no Estado de Minas Gerais

Sindicato dos Metalúrgicos de Botucatu

Sindiaeroespacial

Sindicato dos Engenheiros

Sindicato dos Metalúrgicos de São José dos Campos

O Sindicato dos Trabalhadores da Extração da Madeira do Extremo Sul da Bahia

SITITREL

Sindicato dos Trabalhadores Rurais de Pelotas

Sindicato do Trabalhador Florestal

Sindicato dos Trabalhadores nas Indústrias de Papel e Celulose de Três Lagoas

STIMBAHIA

Sindicato dos Metalurgicos de Divinopolis e Regiaro

Sindicato dos Metalurgicos de Sorocaba e Regiao

Sindicato dos Metalúrgicos de Pindamonhangaba

Sindicato dos Metalúrgicos de São Caetano do Sul

Sindicato dos Metalúrgicos de Charquedas

Metalurgicos da Grande Porto Alegre

Sindicato dos Trabalhadores das Indústrias Metalúrgicas, Mecânicas e de Material Elétrico de São Leopoldo

Sindicato dos Trabalhadores das Indústrias Metalúrgicas, Mecânicas e de Material Elétrico de São Leopoldo Goiania

Sindicato dos Metalúrgicos de BH/Contagem

Sindicato dos Metalúrgicos de Ribeirão Preto

Sindicato dos Trabalhadores nas Indústrias Metalúrgicas Mecânicas e de Material Elétrico de Santa Bárbara D'Oeste

Sindicato dos Mineradores de Brumado e Microregião

Sindicato dos Trabalhadores nas Indústrias de Alimentação de Iturama

Sindicarne-MG

STI Papel

Sindicato dos Trabalhadores em Empresas Ferroviárias dos Estados do Maranhão, Pará e Tocantins

FNP

FUP

FENDADOS

FETQUIM

FTMN

FEM/CUT

FETIASP

FETIEP

FEQUIM

CUT

CUT/CNQ

CSB

CUT/CNTM

FS

FS/CNTQ

FIEP

FIESP

FIERO

FIEMT

FIEB

FIRJAN

CNI

Chapter 8

References

Abreu Campanario, M. d., Stal, E., and Muniz da Silva, M. (2012). Outward fdi from brazil and its policy context, 2012.

Adolph, C., Quince, V., and Prakash, A. (2017a). The shanghai effect: do exports to china affect labor practices in africa? *World Development*, 89:1–18.

Adolph, C., Quince, V., and Prakash, A. (2017b). The Shanghai Effect: Do Exports to China Affect Labor Practices in Africa? *World Development*, 89:1–18.

Agência Chasque (2009). Petroquímicos protestam contra demissões na braskem. *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/rio-grande-do-sul-5cd4.

Aguiar do Monte, P. (2012). Job dissatisfaction and labour turnover: Evidence from Brazil. *The international journal of human resource management*, 23(8):1717–1735.

Aguzzoli, R. and Geary, J. (2014). An 'emerging challenge': The employment practices of a brazilian multinational company in canada. *Human Relations*, 67(5):587–609.

Alam, A., Asim, M., et al. (2019). Relationship between job satisfaction and turnover intention. *International Journal of Human Resources Studies. ISSN*, pages 2162–3058.

Almeida, R. and Carneiro, P. (2009a). Enforcement of labor regulation and firm size. *Journal of comparative Economics*, 37(1):28–46.

Almeida, R. and Carneiro, P. (2009b). Mandated Benefits, Employment and Inequality in a Dual Economy.

Almeida, R., Carneiro, P., and Narita, R. (2015). Producing higher quality jobs: Enforcing mandated job benefits in Brazilian cities between 1996-2007. *ABCDE "Productivty, Growth, and the Law"*, pages 1–21.

Amal, M. and Kegel, P. L. (2012). Determinants of Brazilian outward foreign direct investment: A home country perspective. In *Impacts of emerging economies and firms on international business*, pages 168–188. Springer.

Amankwah-Amoah, J. and Debrah, Y. A. (2011). Competing for scarce talent in a liberalised environment: evidence from the aviation industry in africa. *The International Journal of Human Resource Management*, 22(17):3565–3581.

Ambos, B. and Schlegelmilch, B. B. (2008). Innovation in multinational firms: Does cultural fit enhance performance? *Management International Review*, 48(2):189.

Ambrosius, J. (2018). Strategic talent management in emerging markets and its impact on employee retention: Evidence from brazilian mncs. *Thunderbird International Business Review*, 60(1):53–68.

Amengual, M., Distelhorst, G., and Tobin, D. (2019). Global Purchasing as Labor Regulation: The Missing Middle. *Industrial & Labor Relations Review*.

Anderson, C. and Stark, C. (1988). Psychosocial problems of job relocation: Preventive roles in industry. *Social Work*, 33(1):38–41.

Anner, M. S. (2011). *Solidarity transformed: Labor responses to globalization and crisis in Latin America*. Cornell University Press.

Anselin, L. (2013). *Spatial Econometics: Methods and Models*. Springer Science & Business Media, 4 edition.

Anselin, L. and Florax, R. (2012). *New directions in spatial econometrics*. Springer Science & Business Media.

Arbia, G. (2011). A lustrum of sea: recent research trends following the creation of the spatial econometrics association (2007–2011). *Spatial Economic Analysis*, 6(4):377–395.

Arbix, G. and Caseiro, L. (2012a). Destination and strategy of brazilian multinationals. *Journal of academic research in economics*, 4(2).

Arbix, G. and Caseiro, L. (2012b). Determinants of the recent internationalization of brazilian companies. In *Third Copenhagen Conference on Emerging Multinationals: Outward Investment from Emerging Economies*, pages 25–26.

Arbix, G., Salerno, M. S., and De Negri, J. A. (2004). Inovação, via internacionalização, faz bem para as exportações brasileiras.

Arndt, C. and Hörisch, F. (2015). Flexicurity policies in europe–diffusion and effects of flexicurity labour market policies. Technical report, CUPESSE Working Paper.

Arnold, A. E., Coffeng, J. K., Boot, C. R., Van Der Beek, A. J., Van Tulder, M. W., Nieboer, D., and Van Dongen, J. M. (2016). The relationship between job satisfaction and productivity-related costs: a longitudinal analysis. *Journal of occupational and environmental medicine*, 58(9):874–879.

Asur, S. and Huberman, B. A. (2010). Predicting the future with social media. In *2010 IEEE/WIC/ACM international conference on web intelligence and intelligent agent technology*, volume 1, pages 492–499. IEEE.

Aydin, O. (2018). *R Web Scraping Quick Start Guide: Techniques and tools to crawl and scrape data from websites*. Packt Publishing Ltd.

Bassanini, A. and Venn, D. (2008). The impact of labour market policies on productivity in oecd countries. *International Productivity Monitor*, (17).

Benedet, M. (2013). Ato de lançamento da campanha salarial unificada das agroindústrias reúne sindicatos e avicultores. *sulinfoco*. Accessed from: https://www.sulinfoco.com.br/ato-de-lancamento-da-campanha-salarial-unificada-das-agroindustrias-reune-sindicatos-e-avicultores/.

Benedet, M. (2015a). Sem decisão da justiça, sindicato fecha acordo com jbs em 8 *CUT-SC NOTÍCIAS*. Accessed from: https://sc.cut.org.br/noticias/sem-decisao-da-justica-sindicato-fecha-acordo-com-jbs-em-8-255c.

Benedet, M. (2015b). Sindicalistas devem trazer congresso mundial da alimentação para o brasil. *CUT-SC NOTÍCIAS*. Accessed from: https://sc.cut.org.br/noticias/sindicalistas-devem-trazer-congresso-mundial-da-alimentacao-para-o-brasil-f084.

Bengfort, B., Bilbro, R., and Ojeda, T. (2018). *Applied Text Analysis with Python: Enabling Language-Aware Data Products with Machine Learning*. " O'Reilly Media, Inc.".

Benoit, K., Watanabe, K., Wang, H., Nulty, P., Obeng, A., Müller, S., and Matsuo, A. (2018). quanteda: An r package for the quantitative analysis of textual data. *Journal of Open Source Software*, 3(30):774.

Bernardo, A. C. (1992). O sindicalismo de estado no brasil: uma análise crítica da estrutura sindical. *Perspectivas: Revista de Ciências Sociais*, 15(1).

Blustein, D. L., Olle, C., Connors-Kellgren, A., and Diamonti, A. (2016). Decent work: A psychological perspective. *Frontiers in Psychology*, 7:407.

Böckerman, P. and Ilmakunnas, P. (2012). The job satisfaction-productivity nexus: A study using matched survey and register data. *ILR Review*, 65(2):244–262.

Brambor, T., Clark, W. R., and Golder, M. (2006). Understanding interaction models: Improving empirical analyses. *Political analysis*, pages 63–82.

Breinbauer, A., Brennan, L., Jager, J., Nachbagauer, A. G., and Nolke, A. (2019). *Emerging Market Multinationals and Europe: Challenges and Strategies*. Springer Nature.

Buettner, T. (1999). The effect of unemployment, aggregate wages, and spatial contiguity on local wages: An investigation with german district level data. *Papers in Regional Science*, 78(1):47–67.

Burchell, B., Sehnbruch, K., Piasna, A., and Agloni, N. (2014). The quality

of employment and decent work: definitions, methodologies, and ongoing debates. *Cambridge journal of economics*, 38(2):459–477.

Cappelli, R., Boschma, R., and Weterings, A. (2019). Labour mobility, skill-relatedness and new plant survival across different development stages of an industry. *Environment and Planning A: Economy and Space*, 51(4):869–890.

Cardie, C. and Wilkerson, J. (2008). Text annotation for political science research.

Carrasco, E. R. and Williams, S. (2012). emerging economies after the global financial crisis: the case of brazil. *Nw. J. Int'l L. & Bus.*, 33:81.

Casas, A., Davesa, F., and Congosto, M. (2016). Media coverage of a "connective" action: The interaction between the 15-m movement and the mass media. *Revista Española de Investigaciones Sociológicas (REIS)*, 155(1):73–118.

Caves, R. E. and Caves, R. E. (1996). *Multinational enterprise and economic analysis*. Cambridge university press.

Center for Global Workers' Rights (2021). Labour rights indicators. Retrieved from `http://labour-rights-indicators.la.psu.edu/`. (Date accessed: 1 Feb, 2021.).

Cha, Y. (2010). Reinforcing separate spheres: The effect of spousal overwork on men's and women's employment in dual-earner households. *American Sociological Review*, 75(2):303–329.

Chan, A. (2003). Racing to the bottom: international trade without a social clause. *Third world quarterly*, 24(6):1011–1028.

Chomitz, K. M., Magalhaes, J. C., da Mata, D., and de Carvalho, A. Y. (2005). *Spatial dynamics of labor markets in Brazil*. The World Bank.

Clarkberg, M. and Moen, P. (2001). Understanding the time-squeeze: Married couples' preferred and actual work-hour strategies. *American Behavioral Scientist*, 44(7):1115–1136.

CNI (2013). Vice-presidente da comissão europeia discute acordo comercial e investimentos com empresários brasileiros. *Agência CNI de Notícias*. Accessed from: https://noticias.portaldaindustria.com.br/noticias/internacional/vice-presidente-da-comissao-europeia-discute-acordo-comercial-e-investimentos-com-empresarios-brasileiros/.

CNI (2014). Executivos brasileiros participam de programa de gestão estratégica na frança. *Agência CNI de Notícias*. Accessed from: https://noticias.portaldaindustria.com.br/noticias/educacao/executivos-brasileiros-participam-de-programa-de-gestao-estrategica-na-franca/.

CNQ-CUT (2013). Grupo de trabalhadores da weg organiza segundo encontro da rede no espírito santo. *CNQ-CUT NOTÍCIAS*. Accessed from: http://cnq.org.br/noticias/grupo-de-trabalhadores-da-weg-organiza-

segundo-encontro-da-rede-no-espirito-santo/.

Colovic, A., Escobar, O. R., Lamotte, O., and Meschi, P.-X. (2019). Multinational enterprises, local firms, and employee human rights violation in the workplace. *Multinational Business Review*, 27(3).

Confederação Nacional do Ramo Químico (2013). Rede dos trabalhadores da braskem entrega carta de maceió à direção da empresa. *CNQ NOTÍCIAS*. Accessed from: http://cnq.org.br/noticias/rede-dos-trabalhadores-da-braskem-entregam-carta-de-maceio-a-direcao-da-empresa/.

Conley, T. G. and Topa, G. (2002). Socio-economic distance and spatial patterns in unemployment. *Journal of Applied Econometrics*, 17(4):303–327.

Contracs (2010). Liberdade e autonomia sindical jbs friboi mantém irregularidades e demite dirigente sindical. *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/liberdade-e-autonomia-sindical-ca48.

Cook, M. (2019). Divergence and Displacement : Southeast Asia-China Trade , 2013-2018. Technical Report 88, ISEAS Yusof Ishak Institute, Singapore.

Cook, S. J., An, S.-H., and Favero, N. (2019a). Beyond policy diffusion: Spatial econometric models of public administration. *Journal of Public Administration Research and Theory*, 29(4):591–608.

Cook, S. J., An, S. H., and Favero, N. (2019b). Beyond Policy Diffusion: Spatial Econometric Models of Public Administration. *Journal of Public Administration Research and Theory*, 29(4):591–608.

Cornejo, N., Kells, C., de Zuniga, T. O., Roen, S., and Thompson, B. (2010). Promoting social dialogue in the mining sector in the state of para, brazil.

Corrado, L. and Fingleton, B. (2012). Where is the economics in spatial econometrics? *Journal of Regional Science*, 52(2):210–239.

Coutinho, L., Hiratuka, C., and Sabatini, R. (2008). O investimento direto no exterior como alavanca dinamizadora da economia brasileira. *Brasil globalizado*, pages 63–88.

Cretoiu, S. L., Barakat, L., Ximenes, M., Alvim, F. d. M., and Neves, I. (2011). Ranking das transnacionais brasileiras 2011: Crescimento e gestão sustentável no exterior. *Belo Horizonte: Fundação Dom Cabral*.

Cuervo-Cazurra, A. and Ramamurti, R. (2014). *Understanding multinationals from emerging markets*. Cambridge University Press.

Cui, L., Meyer, K. E., and Hu, H. W. (2014). What drives firms' intent to seek strategic assets by foreign direct investment? A study of emerging economy firms. *Journal of World Business*, 49(4):488–501.

CUT (2007). Petroquímicos do rs consideram uma vergonha atitude da petrobrás. *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/petroquimicos-do-rs-consideram-uma-vergonha-atitude-da-petrobras-9f0b.

CUT (2011a). Sindicato denuncia demissão em massa na... *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/sindicato-denuncia-demissao-em-massa-na-curtume-jbs-em-campo-grande-9140.

CUT (2011b). Trabalhadores denunciam desvio de função... *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/trabalhadores-denunciam-desvio-de-funcao-e-assedio-moral-no-frigorifico-jbs-frib-aa9c.

CUT (2013a). Encontro de trabalhadores quer fortalecer rede... *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/encontro-de-trabalhadores-quer-fortalecer-rede-e-acoes-sindicais-conjuntas-no-es-1511.

CUT (2013b). Trabalhadores do jbs da friboi de vilhena garantem pré-acordo e suspendem paralisação por 30 dias. *CUT-RO NOTÍCIAS*. Accessed from: https://ro.cut.org.br/noticias/trabalhadores-do-jbs-da-friboi-de-vilhena-garantem-pre-acordo-e-suspendem-paralisacao-por-30-dias-be8f.

CUT (2014). Jbs é condenada em r1$mipormanterjornadairregular.Metalúrgicos - ABCNOTÍCIAS.Access$ $https : //smabc.org.br/jbs - e - condenada - em - r - 1 - mi - por - manter - jornada - irregular - 2/$.

CUT-CNTE (2007). Irregularidades podem decretar a nulidade na venda da vale. *CUT NOTÍCIAS*. Accessed from: https://appsindicato.org.br/?p=12718/.

CUT-MS (2011). Sindicato denuncia desvio de função e assédio moral contra trabalhadores de frigorífico. *CUT NOTÍCIAS*. Accessed from: https://ms.cut.org.br/noticias/sindicato-denuncia-desvio-de-funcao-e-assedio-moral-contra-trabalhadores-de-frigorifico-fdf3.

CUT-MT (2012). Jbs de barra do garças-mt é condenado a pagar indenização de um milhão de reais por dano moral colet. *CUT-MT NOTÍCIAS*. Accessed from: https://mt.cut.org.br/noticias/jbs-de-barra-do-garcas-mt-e-condenado-a-pagar-indenizacao-de-um-milhao-de-reais-por-dano-moral-colet-96ce.

CUT-RO (2013a). Cut-ro denuncia jbs friboi de vilhena e... *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/cut-ro-denuncia-jbs-friboi-de-vilhena-e-sindicato-por-acordo-lesivo-aos-trabalha-783c.

CUT-RO (2013b). Trabalhadores do jbs da friboi em vilhena (ro)... *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/trabalhadores-do-jbs-da-friboi-em-vilhena-ro-paralisam-atividades-contra-medidas-a39d.

CUT-SP (2015). Cut lança gibi caiu na rede é trabalhador, dia 7, em são paulo. *CUT-SP Notícias*. Accessed from: https://sp.cut.org.br/noticias/cut-lanca-gibi-caiu-na-rede-e-trabalhador-dia-7-em-sao-paulo-7c8b.

da Costa, H. (2013). Redes sindicais de trabalhadores em empresas multinacionais no brasil: Uma experiência em construção.

Da Costa, H. (2016). Redes sindicales de trabajadores: desafíos globales y locales. *Nueva Sociedad*, (264):111–124.

Davies, R. B. and Vadlamannati, K. C. (2013). A race to the bottom in labor

standards? an empirical investigation. *Journal of Development Economics*, 103:1–14.

de Alcântara, J. N., Paiva, C. M. N., Bruhn, N. C. P., de Carvalho, H. R., and Calegario, C. L. L. (2016). Brazilian ofdi determinants. *Latin American Business Review*, 17(3):177–205.

de Andrade Baltar, P. E., Dos Santos, A. L., Krein, J. D., Leone, E., Weishaupt Proni, M., Moretto, A., Gori Maia, A., and Salas, C. (2010). Moving towards decent work. labour in the lula government: reflections on recent brazilian experience. Technical report, Global Labour University Working Paper.

de Marchi, S. and Page, S. E. (2016). Computational social science: Discovery and prediction. *Perspectives on Politics*, 14(4):1169.

de Oliveira, A. L. M., Luiza, A., et al. (2015). *Brazil: Case study on working time organization and its effects in the health services sector*. ILO.

Decreton, B., Nell, P. C., and Stea, D. (2019). Headquarters involvement, socialization, and entrepreneurial behaviors in mnc subsidiaries. *Long Range Planning*, 52(4):101839.

Dembe, A. E., Erickson, J. B., Delbos, R. G., and Banks, S. M. (2005). The impact of overtime and long work hours on occupational injuries and illnesses: new evidence from the united states. *Occupational and environmental medicine*, 62(9):588–597.

Demirbag, M., Tatoglu, E., and Glaister, K. W. (2009). Equity-based entry modes of emerging country multinationals: Lessons from turkey. *Journal of World Business*, 44(4):445–462.

Deng, P. and Yang, M. (2015). Cross-border mergers and acquisitions by emerging market firms: A comparative investigation. *International Business Review*, 24(1):157–172.

Dias, E. C., Oliveira, R. P. d., Machado, J. H., Minayo-Gomez, C., Perez, M. A. G., Hoefel, M. d. G. L., and Santana, V. S. (2011). Employment conditions and health inequities: a case study of brazil. *Cadernos de Saúde Pública*, 27:2452–2460.

DiMaggio, P. J. and Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American sociological review*, pages 147–160.

Dinopoulos, E. and Zhao, L. (2007). Child labor and globalization. *Journal of Labor Economics*, 25(3):553–579.

Distelhorst, G. and Locke, R. M. (2018). Does compliance pay? social standards and firm-level trade. *American Journal of Political Science*, 62(3):695–711.

Dix-Carneiro, R. and Kovak, B. K. (2017). Trade liberalization and regional dynamics. *American Economic Review*, 107(10):2908–2946.

Dix-Carneiro, R. and Kovak, B. K. (2019). Margins of labor market adjustment

to trade. *Journal of International Economics*, 117:125–142.

Dix-Carneiro, R., Soares, R. R., and Ulyssea, G. (2018a). Economic shocks and crime: Evidence from the brazilian trade liberalization. *American Economic Journal: Applied Economics*, 10(4):158–95.

Dix-Carneiro, R., Soares, R. R., and Ulyssea, G. (2018b). Economic shocks and crime: Evidence from the Brazilian trade liberalization. *American Economic Journal: Applied Economics*, 10(4):158–195.

DNPM (2017). *Sumário Mineral Vol. 35*. Brasília: National Department of Mineral Production.

Dodds, P. S. and Danforth, C. M. (2010). Measuring the happiness of large-scale written expression: Songs, blogs, and presidents. *Journal of happiness studies*, 11(4):441–456.

Dreher, A. and Fuchs, A. (2015). Rogue aid? an empirical analysis of china's aid allocation. *Canadian Journal of Economics/Revue canadienne d'économique*, 48(3):988–1023.

Dreher, A. and Lohmann, S. (2015). Aid and growth at the regional level. *Oxford Review of Economic Policy*, 31(3-4):420–446.

Dunning, J. H. (1993). *The theory of transnational corporations*, volume 1. Taylor & Francis.

Dür, A. and Lechner, L. (2018). Who wins and who loses from trade agreements? stock market reactions to news on tpp and ttip.

Edwards, T. and Tempel, A. (2010). Explaining variation in reverse diffusion of hr practices: Evidence from the german and british subsidiaries of american multinationals. *Journal of World Business*, 45(1):19–28.

Eggenberger, C., Backes-Gellner, U., et al. (2019). It skills, occupation specificity and job separations. *Zürich, masch. verf.*

Emmenegger, P., Häusermann, S., Palier, B., and Seeleib-Kaiser, M. (2012). *The age of dualization: the changing face of inequality in deindustrializing societies*. OUP USA.

Emons, O. (2019). Chinese Investments in Germany: Curse or Blessing? In *Emerging Market Multinationals and Europe*, pages 195–209. Springer.

Eriksson, R. H., Hane-Weijman, E., and Henning, M. (2018). Sectoral and geographical mobility of workers after large establishment cutbacks or closures. *Environment and Planning A: Economy and Space*, 50(5):1071–1091.

Ernst, C. (2005). The fdi–employment link in a globalizing world: The case of argentina, brazil and mexico. *Employment strategy papers*, 17:1–45.

Evans, P. (2010). Is it labor's turn to globalize? twenty-first century opportunities and strategic responses.

Fan, J. (2019). Internal geography, labor mobility, and the distributional impacts

of trade. *American Economic Journal: Macroeconomics*, 11(3):252–88.

Federação Única de Petroleiros (2009a). Anapar desmascara conselheiros da petros apoiados pelas associações. *FUP NOTÍCIAS*. Accessed from: https://www.fup.org.br/plano-petros-1/item/7400-anapar-desmascara-conselheiros-da-petros-apoiados-pelas-associacoes.

Federação Única de Petroleiros (2009b). Anapar lança plano de previdência para trabalhadores e aposentados da braskem. *FUP NOTÍCIAS*. Accessed from: https://fup.org.br/ultimas-noticias/item/6917-anapar-lanca-plano-de-previdencia-para-trabalhadores-e-aposentados-da-brasken.

Federação Única de Petroleiros (2009c). Petroquímicos da bahia fazem manifestação e chamam a atenção do povo para a cláusula 4ª. *FUP NOTÍCIAS*. Accessed from: https://fup.org.br/ultimas-noticias/item/7429-petroquimicos-da-bahia-fazem-manifestacao-e-chamam-a-atencao-do-povo-para-a-clausula-4.

Federação Única de Petroleiros (2009d). Químicos e petroquímicos da bahia realizam mobilização no polo de camaçari. *FUP NOTÍCIAS*. Accessed from: https://www.fup.org.br/ultimas-noticias/item/7533-quimicos-e-petroquimicos-da-bahia-realizam-mobilizacao-no-polo-de-camacari.

Federação Única de Petroleiros (2010). Anapar alerta spc sobre prejuízos da retirada de patrocínio da brasken no plano petros. *FUP NOTÍCIAS*. Accessed from: https://www.fup.org.br/ultimas-noticias/item/8047-anapar-alerta-spc-sobre-prejuizos-da-retirada-de-patrocinio-da-brasken-no-plano-petros.

Feierherd, G. (2017). Constructing the Left's Support Base Economic Informality and Segmented Enforcement in Brazil.

Fenwick, R. and Tausig, M. (2001). Scheduling stress: Family and health outcomes of shift work and schedule control. *American Behavioral Scientist*, 44(7):1179–1198.

Fernández, M. and Messina, J. (2018). Skill premium, labor supply, and changes in the structure of wages in latin america. *Journal of Development Economics*, 135:555–573.

Ferner, A. and Varul, M. (2000). 'vanguard'subsidiaries and the diffusion of new practices: a case study of german multinationals. *British Journal of industrial relations*, 38(1):115–140.

Ferraz, J. C., Kupfer, D., and Serrano, F. (1999). Macro/micro interactions: economic and institutional uncertainties and structural change in brazilian industry. *Oxford Development Studies*, 27(3):279–304.

Festing, M. and Eidems, J. (2011). A process perspective on transnational hrm systems—a dynamic capability-based analysis. *Human Resource Management Review*, 21(3):162–173.

Fiaschi, D., Giuliani, E., and Nieri, F. (2015). Bric companies seeking legitimacy through corporate social responsibility. *Transnational Corporations*, 22(3):5–43.

Fiaschi, D., Giuliani, E., and Nieri, F. (2017). Overcoming the liability of origin by doing no-harm: Emerging country firms' social irresponsibility as they go global. *Journal of World Business*, 52(4):546–563.

FIESP (2013). Novo embaixador da alemanha no brasil se encontra com presidente da fiesp. *Agência FIESP de Notícias*. Accessed from: https://www.fiesp.com.br/tag/fiesp/page/32/.

FIESP (2015a). Simpósio internacional na fiesp discute sustentabilidade. *Agência FIESP de Notícias*. Accessed from: file:///C:/Users/patri/AppData/Local/Temp/informativo-fiesp_edicao109_set15.pdf.

FIESP (2015b). "sustentabilidade não pode ser um projeto, e, sim, um processo", diz na fiesp presidente da eurocâmaras. *Agência FIESP de Notícias*. Accessed from: https://www.fiesp.com.br/noticias/sustentabilidade-nao-pode-ser-um-projeto-e-sim-um-processo-diz-na-fiesp-presidente-da-eurocamaras/.

Fleury, A. and Fleury, M. T. L. (2011). *Brazilian multinationals: competences for internationalization*. Cambridge University Press.

Fleury, A. and Humphrey, J. (1993). Human resources and the diffusion and adaptation of new quality methods in brazilian manufacturing.

Fleury, M. T. L. and Fleury, A. C. C. (2016). O desenvolvimento das multinacionais brasileiras no cenário global. *GV EXECUTIVO*, 15(1):34–37.

Floro, M. S. and Messier, J. (2011). Is there a link between quality of employment and indebtedness? the case of urban low-income households in ecuador. *Cambridge Journal of Economics*, 35(3):499–526.

Framil Filho, R. and e Silva, L. M. (2019). From global unions to the shop floor: Trade union networks in transnational corporations in brazil. *GLOBAL LABOUR JOURNAL*, 10(3):192.

FUP (2014). Petroleiros iniciam encontro internacional para discutir demandas da rede sindical. *FUP NOTÍCIAS*. Accessed from: https://fup.org.br/ultimas-noticias/item/15655-petroleiros-iniciam-encontro-internacional-para-discutir-demandas-da-rede-sindical.

Gardner, T. M. (2002). In the trenches at the talent wars: Competitive interaction for scarce human resources. *Human Resource Management: Published in Cooperation with the School of Business Administration, The University of Michigan and in alliance with the Society of Human Resources Management*, 41(2):225–237.

Gehring, K., Kaplan, L. C., and Wong, M. H. (2019). China and the world bank: How contrasting development approaches affect the stability of african states.

Gilardi, F. (2016). Four ways we can improve policy diffusion research. *State Politics & Policy Quarterly*, 16(1):8–21.

Giuliani, E., Gorgoni, S., Günther, C., and Rabellotti, R. (2014). Emerging versus

advanced country mnes investing in europe: A typology of subsidiary global–local connections. *International Business Review*, 23(4):680–691.

Giuliani, E., Santangelo, G. D., and Wettstein, F. (2016). Human rights and international business research: A call for studying emerging market multinationals. *Management and Organization Review*, 12(3):631–637.

Golden, L. and Altman, M. (2008). Why do people overwork? over-supply of hours of labor, labor market forces and adaptive preferences. *The long work hours culture: Cause, consequences and choices*, pages 61–83.

Gonzaga, G., Maloney, W. F., and Mizala, A. (2003). Labor turnover and labor legislation in brazil [with comments]. *Economía*, 4(1):165–222.

Grabert, M. (2012). Direitos trabalhistas são defendidos em encontro de redes sindicais. *CNTV NOTÍCIAS*. Accessed from: http://cntv.org.br/noticia$_{5094}$$_{D}$$_{ireitos-trabalhistas-sao-defendidos-em-encontro-de-Redes-Sindicais.html}$.

Greenhill, B., Mosley, L., and Prakash, A. (2009). Trade-based diffusion of labor rights: A panel study, 1986-2002. *American Political Science Review*, 103(4):669–690.

Grineski, S. E., Collins, T. W., Romo Aguilar, M. d. L., and Aldouri, R. (2010). No safe place: environmental hazards & injustice along mexico's northern border. *Social Forces*, 88(5):2241–2265.

Guérin, I. and Srivastava, R. (2012). Labour regulations and labour standards in India: Decent work. *Labour*, 2:20–2012.

Guimarães, J. R. S. (2013). *Decent Work Country Profile: A Sub-national Perspective in Brazil*. ILO.

Haight, A. D. (2001). Burnout, chronic fatigue, and prozac in the professions: the iron law of salaries. *Review of Radical Political Economics*, 33(2):189–202.

Hale, G. and Xu, M. (2016). Fdi effects on the labor market of host countries. Federal Reserve Bank of San Francisco.

Halkos, G. and Bousinakis, D. (2010). The effect of stress and satisfaction on productivity. *International Journal of Productivity and Performance Management*.

Hall, P. A. and Soskice, D. (2001). *Varieties of capitalism: The institutional foundations of comparative advantage*. OUP Oxford.

Halleck Vega, S. and Elhorst, J. P. (2015). The slx model. *Journal of Regional Science*, 55(3):339–363.

Harrison, J. and Harrison, M. J. (2020). Package 'rselenium'.

Harter, J. K., Schmidt, F. L., Agrawal, S., Plowman, S. K., and Blue, A. (2013). The relationship between engagement at work and organizational outcomes. *Gallup Poll Consulting University Press, Washington*.

Helppie, B. and Macis, M. (2009). The impact of non-wage benefits on job quality and labor market outcomes in the developing world: What do we know?

Hochschild, A., Fligstein, N., Voss, K., Schor, J., Burawoy, M., and Sharone, O. (2001). Roundtable on overwork: Causes and consequences of rising work hours. *Berkeley journal of sociology*, 45:180–196.

IBGE (2007). Sistema integrado de pesquisas domiciliares. *Rio de Janeiro: IBGE*.

IHU (2011). A 'moderna' indústria brasileira da carne. produção à custa da saúde e da vida dos trabalhadores. entrevista especial com siderlei de oliveira. *FTIA-PR NOTÍCIAS*. Accessed from: https://ftiapr.org.br/a-moderna-industria-brasileira-da-carne-producao-a-custa-da-saude-e-da-vida-dos-trabalhadores-entrevista-especial-com-siderlei-de-oliveira/.

ILO (2009a). Decent work country profile: Brazil.

ILO (2009b). Decent work country profile: Brazil.

Imprensa da FUP (2010). Em memória das vítimas de acidentes e doenças do trabalho. *FUP NOTÍCIAS*. Accessed from: https://www.fup.org.br/ultimas-noticias/item/7945-em-memoria-das-vitimas-de-acidentes-e-doencas-do-trabalho.

Imprensa SMetal (2013a). Cruzeirão tem rodada do "quarentão" no clube de campo do sindicato. *SMetal NOTÍCIAS*. Accessed from: https://www.smetal.org.br/imprensa/cruzeirao-tem-rodada-do-quarentao-no-clube-de-campo-do-sindicato/20130313-162622-c625.

Imprensa SMetal (2013b). Ginásio dos metalúrgicos recebe jogos do cruzeirão na sexta-feira. *SMetal NOTÍCIAS*. Accessed from: https://www.smetal.org.br/imprensa/cruzeirao-tem-rodada-do-quarentao-no-clube-de-campo-do-sindicato/20130313-162622-c625.

InfoMet (2008). Mineração aquecida movimenta mercado de trabalho e fornecedores. *CNM-CUT NOTÍCIAS*. Accessed from: https://www.cnmcut.org.br/conteudo/mineracao-aquecida-movimenta-mercado-de-trabalho-e-fornecedores.

Institute for Workplace Studies, C. U. (1999). Overtime and the american worker.

Instituto Observatório Social (2013). Formada em blumenau (sc) a rede sindical... *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/formada-em-blumenau-sc-a-rede-sindical-nacional-da-weg-a9c1.

Jäger, S. and Heining, J. (2019). How substitutable are workers? evidence from worker deaths. *Evidence from Worker Deaths (January 2019)*.

Jockers, M. L. and Thalken, R. (2020). *Text Analysis with R*. Springer.

Johnson, R. C. and Corcoran, M. E. (2003). The road to economic self-sufficiency: Job quality and job transition patterns after welfare reform. *Journal of Policy Analysis and Management*, 22(4):615–639.

Jornal Cruzeiro do Sul (2016). Nível de represa está abaixo do esperado. *SMetal NOTÍCIAS*. Accessed from: https://www.smetal.org.br/noticias/nivel-de-represa-esta-abaixo-do-esperado/20141029-114901-t902.

Jürgens, U. and Krzywdzinski, M. (2016). *New worlds of work: Varieties of work in car factories in the BRIC countries*. Oxford University Press.

Kerner, A. (2014). What we talk about when we talk about foreign direct investment. *International Studies Quarterly*, 58(4):804–815.

Khan, Z., Rao-Nicholson, R., Akhtar, P., and He, S. (2017). Cross-border mergers and acquisitions of emerging economies' multinational enterprises—the mediating role of socialization integration mechanisms for successful integration. *Human Resource Management Review*.

Khanna, T. and Palepu, K. (1997). Why focused strategies may be wrong for emerging markets. *Harvard business review*, 75:41–54.

King, D. and Rueda, D. (2008). Cheap labor: the new politics of "bread and roses" in industrial democracies. *Perspectives on Politics*, 6(2):279–297.

Klaver, M. and Trebilcock, M. (2011). Chinese investment in africa. *Law & Dev. Rev.*, 4:168.

Knowledge@Wharton (2009). Lessons from brazil: Why is it bouncing back while other markets stumble? Accessed on 13 March 2021 at: https://knowledge.wharton.upenn.edu/article/lessons-from-brazil-why-is-it-bouncing-back-while-other-markets-stumble/.

Kosova, R. (2010). Do foreign firms crowd out domestic firms? evidence from the czech republic. *The Review of Economics and Statistics*, 92(4):861–881.

Lamberg, L. (2004). Impact of long working hours explored. *JAMA*, 292(1):25–26.

LeSage, J. and Pace, R. K. (2009). *Introduction to Spatial Econometrics*. Chapman and Hall/CRC.

LeSage, J. P. and Pace, R. K. (2014). The biggest myth in spatial econometrics. *Econometrics*, 2(4):217–249.

Li, X., Quan, R., Stoian, M.-C., and Azar, G. (2018). Do MNEs from developed and emerging economies differ in their location choice of FDI? A 36-year review. *International Business Review*, 27(5):1089–1103.

Liao, R. C., Wang, X., and Wu, G. (2019). The role of media in mergers and acquisitions. *Available at SSRN 3456718*.

Liou, R.-S., Chao, M. C.-h., and Ellstrand, A. (2017). Unpacking institutional distance: Addressing human capital development and emerging-market firms' ownership strategy in an advanced economy. *Thunderbird International Business Review*, 59(3):281–295.

Locke, R. M. (2013). Private regulation (and its limitations) in the global economy. *The Politics of Representation in the Global Age: Identification, Mobilization, and Adjudication*, pages 200–228.

Locke, R. M., Qin, F., and Brause, A. (2007). Does monitoring improve labor standards? Lessons from Nike. *Industrial and Labor Relations Review*, 61(1):3–

31.

Lowen, A. and Sicilian, P. (2009). "family-friendly" fringe benefits and the gender wage gap. *Journal of Labor Research*, 30(2):101–119.

Machado, M. T., Pardo, T. A., and Ruiz, E. E. S. (2018). Creating a portuguese context sensitive lexicon for sentiment analysis. In *International Conference on Computational Processing of the Portuguese Language*, pages 335–344. Springer.

MacIsaac, D. and Rama, M. (1997). Determinants of hourly earnings in ecuador: The role of labor market regulations. *Journal of Labor Economics*, 15(S3):S136–S165.

Madarazo, G. (2011). *Solidariedade e Igualdade de Oportunidades*. Confederação Nacional do Ramo Químico da CUT (CNQ-CUT).

Madhok, A. and Keyhani, M. (2012). Acquisitions as entrepreneurship: Asymmetries, opportunities, and the internationalization of multinationals from emerging economies. *Global Strategy Journal*, 2(1):26–40.

Mahdi, A. F., Zin, M. Z. M., Nor, M. R. M., Sakat, A. A., and Naim, A. S. A. (2012). The relationship between job satisfaction and turnover intention. *American Journal of Applied Sciences*, 9(9):1518–1526.

Malesky, E. and Mosley, L. (2018). Chains of love? global production and the firm-level diffusion of labor standards. *American Journal of Political Science*, 62(3):712–728.

Malik, M., Ashraf, M., Rehman, C. A., Zamin Abbas, D., et al. (2012). Exploring the link between foreign direct investment, multinational enterprises and spillover effects in developing economies. *International Journal of Business and Management*, 7(1).

ManPowerGroup (2013). Talent shortage survey research results. Date accessed: 11 Feb, 2021.

Marginson, P. and Sisson, K. (2004). *European integration and industrial relations: Multi-level governance in the making*. Springer.

Martin, C. J. and Swank, D. (2012). *The political construction of business interests: Coordination, growth, and equality*. Cambridge University Press.

Matesco, V. R. and Hasenclever, L. (2000). As empresas transnacionais e o seu papel na competitividade industrial e dos países: o caso do brasil. *VEIGA, Pedro da Motta. O Brasil e os Desafios da Globalização. Rio de Janeiro: Relume-Dumará*, pages 161–192.

Matura, T. (2018). The belt and road initiative depicted in hungary and slovakia. *Journal of Contemporary East Asia Studies*, 7(2):174–189.

Mayer, F. W. and Pickles, J. (2011). Re-embedding governance: Global apparel value chains and decent work. *International Labour Review*, 150.

Mazzanti, M., Montini, A., and Nicolli, F. (2012). Waste dynamics in economic

and policy transitions: decoupling, convergence and spatial effects. *Journal of environmental planning and management*, 55(5):563–581.

Meghir, C., Narita, R., and Robin, J.-M. (2015). Wages and informality in developing countries. *American Economic Review*, 105(4):1509–46.

Mellahi, K., Frynas, J. G., and Collings, D. G. (2016). Performance management practices within emerging market multinational enterprises: the case of brazilian multinationals. *The International Journal of Human Resource Management*, 27(8):876–905.

Mello e Silva, L., Framil Filho, R., and Freston, R. (2015). Redes sindicais em empresas transnacionais.

Mesquita, M. and Torós, M. (2010). Brazil and the 2008 panic. *BIS Papers*, 54:113–120.

Messier, J., Floro, M., et al. (2008). Measuring the quality of employment in the informal sector. *Department of Economics, WorNing Papers Series*, (2008Y10).

Meyer, J. W. and Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American journal of sociology*, 83(2):340–363.

Meyer, K. E. (2015). What is "strategic asset seeking FDI"? *The Multinational Business Review*.

Misoczky, M. C. and Imasato, T. (2014). The Brazilian sub-imperialist strategy of regional insertion. *critical perspectives on international business*.

Mocelin, D. G. (2011). Redução da jornada de trabalho e qualidade dos empregos: entre o discurso, a teoria e a realidade. *Revista de Sociologia e Política*, 19(38):101–119.

Mohammad, S. and Turney, P. (2010). Emotions evoked by common words and phrases: Using mechanical turk to create an emotion lexicon. In *Proceedings of the NAACL HLT 2010 workshop on computational approaches to analysis and generation of emotion in text*, pages 26–34.

Mollick, A. V. (2011). The world elasticity of labor substitution across education levels. *Empirical Economics*, 41(3):769–785.

Mosley, L. (2011a). *Labor rights and multinational production*. Cambridge Uni versity Press, New York.

Mosley, L. (2011b). *Labor rights and multinational production*. Cambridge University Press.

Mosley, L. and Uno, S. (2007). Racing to the bottom or climbing to the top? economic globalization and collective labor rights. *Comparative Political Studies*, 40(8):923–948.

Mostafa, M. M. (2013). More than words: Social networks' text mining for consumer brand sentiments. *Expert Systems with Applications*, 40(10):4241–4251.

MPT (2012). Jbs de barra do garças-mt é condenado a... *CUT NOTÍCIAS*.

Accessed from: https://www.cut.org.br/noticias/jbs-de-barra-do-garcas-mt-e-condenado-a-pagar-indenizacao-de-um-milhao-de-reais-d8a3.

Munton, A. G. (1990). Job relocation, stress and the family. *Journal of Organizational behavior*, pages 401–406.

Nair, S. R., Demirbag, M., Mellahi, K., and Pillai, K. G. (2018). Do parent units benefit from reverse knowledge transfer? *British Journal of Management*, 29(3):428–444.

Nölke, A. (2014). *Multinational corporations from emerging markets: State capitalism 3.0*. Springer.

Olney, W. W. (2013). A race to the bottom? employment protection and foreign direct investment. *Journal of International Economics*, 91(2):191–203.

Orellano, V. I. F. and Pazello, E. T. (2010). Evolução e determinantes da rotatividade da mão-de-obra nas firmas da indústria paulista na década de 1990.

Owoo, N. S., Lambon-Quayefio, M. P., Dávalos, J., and Manu, S. B. (2020). Union 'facilitation effect'and access to non-wage benefits in the ghanaian labour market. *Oxford Development Studies*, 48(3):240–255.

Pang, B. and Lee, L. (2009). Opinion mining and sentiment analysis. *Comput. Linguist*, 35(2):311–312.

Park, S.-B. (2018). Multinationals and sustainable development: Does internationalization develop corporate sustainability of emerging market multinationals? *Business Strategy and the Environment*, 27(8):1514–1524.

Paulo-Santos, A., Ramos, C., and Marques, N. C. (2011). Determining the polarity of words through a common online dictionary. In *Portuguese Conference on Artificial Intelligence*, pages 649–663. Springer.

Pede, V. O., Sparks, A. H., and McKinley, J. D. (2012). Regional income inequality and economic growth: a spatial econometrics analysis for provinces in the philippines. Technical report.

Pegler, L. (2009). Development through global value chains and the achievement of decent work: challenges to work and representational processes. *ISS Working Paper Series/General Series*, 485:1–35.

Perea, J. R. and Stephenson, M. (2017). Outward fdi from developing countries.

Ponczek, V. and Ulyssea, G. (2017). Is informality an employment buffer? evidence from the trade liberalization in brazil. *Unpublished Working Paper*.

Poulsen, L. S. and Hufbauer, G. C. (2013). Foreign direct investment in times of crisis. *Transnational Corporations*, 20(1):19–37.

Pureza, A. P. and Lee, K.-H. (2020). Corporate social responsibility leadership for sustainable development: An institutional logics perspective in Brazil. *Corporate Social Responsibility and Environmental Management*, 27(3):1410–1424.

Quintanar, S. A. K. (2019). Spatial dependence of labor market outcomes: the case

of the metropolitan area of mexico city. *Revue dEconomie Regionale Urbaine*, (2):317–354.

Raess, D. (2020a). The demand-side politics of china's global buying spree: managers' attitudes toward chinese inward fdi flows in comparative perspective. *Review of International Political Economy*, pages 1–27.

Raess, D. (2020b). Union membership, patient capital and preferences over fdi inflows.

Raess, D. and Burgoon, B. (2006). The dogs that sometimes bark: Globalization and works council bargaining in germany. *European Journal of Industrial Relations*, 12(3):287–309.

Ramamurti, R. (2009). 13 what have we learned about emerging—market mnes? *Emerging multinationals in emerging markets*, page 399.

Ramamurti, R. (2012). What is really different about emerging market multinationals? *Global Strategy Journal*, 2(1):41–47.

Rao-Nicholson, R. and Svystunova, L. (2020). Assessing the Role of Host Country Human Rights Protection on Multinational Enterprises' Choice of Investment Strategy. *Management International Review*, pages 1–33.

Reeg, C. (2015). *Micro and small enterprises as drivers for job creation and decent work*. Number 10/2015. Discussion Paper.

Repórter Brasil (2008). Porto murtinho-ms irregularidade em frigorífico gera ação de 3 mi reais contra marfrig. *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/porto-murtinho-ms-3c18.

Repórter Brasil (2010). Trabalhadores são resgatados na colheita de... *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/trabalhadores-sao-resgatados-na-colheita-de-erva-mate-em-sc-82f9.

Ribeiro, M. A., Teixeira, M. A. P., and Ambiel, R. A. M. (2019). Decent work in Brazil: Context, conceptualization, and assessment. *Journal of Vocational Behavior*, 112:229–240.

Ronconi, L. (2012). Globalization, domestic institutions, and enforcement of labor law: Evidence from latin america. *Industrial Relations: A Journal of Economy and Society*, 51(1):89–105.

Rosenthal, S., Farra, N., and Nakov, P. (2017). Semeval-2017 task 4: Sentiment analysis in twitter. In *Proceedings of the 11th international workshop on semantic evaluation (SemEval-2017)*, pages 502–518.

Roulet, T. J. (2019). Sins for some, virtues for others: Media coverage of investment banks' misconduct and adherence to professional norms during the financial crisis. *Human Relations*, 72(9):1436–1463.

Rugman, A. M. (2009). Theoretical aspects of mnes from emerging economies. *Emerging multinationals in emerging markets*, pages 42–63.

Rui, H. and Yip, G. S. (2008). Foreign acquisitions by chinese firms: A strategic intent perspective. *Journal of World Business*, 43(2):213–226.

Sachs, A. and Schleer, F. (2013). Labour market performance in oecd countries: A comprehensive empirical modelling approach of institutional interdependencies. *ZEW-Centre for European Economic Research Discussion Paper*, (13-040).

Sanfilippo, M. (2013). Investing abroad from the bottom of the productivity ladder–BRICS multinationals in Europe.

Sanfilippo, M. (2015). Fdi from emerging markets and the productivity gap—an analysis on affiliates of brics emnes in europe. *International Business Review*, 24(4):665–676.

Scheve, K. and Slaughter, M. J. (2004). Economic insecurity and the globalization of production. *American Journal of Political Science*, 48(4):662–674.

Selwyn, B. (2013). Social Upgrading and Labour in Global Production Networks: A Critique and an Alternative Conception. *Competition & Change*, 17(1):75–90.

Silge, J. and Robinson, D. (2017). *Text mining with R: A tidy approach.* " O'Reilly Media, Inc.".

Silva, M. J., Carvalho, P., Costa, C., and Sarmento, L. (2010). Automatic expansion of a social judgment lexicon for sentiment analysis.

Simas, M. S., Golsteijn, L., Huijbregts, M. A., Wood, R., and Hertwich, E. G. (2014). The "bad labor" footprint: quantifying the social impacts of globalization. *Sustainability*, 6(11):7514–7540.

Simon, K. I. and Kaestner, R. (2004). Do minimum wages affect non-wage job attributes? evidence on fringe benefits. *ILR Review*, 58(1):52–70.

Sindicato dos Metalúrgicos de Blumenau (2013). Criada rede sindical de internacional dos trabalhadores na metalúrgica weg. *CUT-SC NOTÍCIAS*. Accessed from: https://sc.cut.org.br/noticias/criada-rede-sindical-de-internacional-dos-trabalhadores-na-metalurgica-weg-7f4f.

Sindicato dos Químicos do ABC (2015). Químicos do abc lançam livro sobre saúde do trabalhador. *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/quimicos-do-abc-lancam-livro-sobre-30-anos-de-conquistas-na-saude-do-trabalhador-4a21.

Sindicato dos Químicos do ABC (2016). Lançamento do livro "o quarto poder". *CUT NOTÍCIAS*. Accessed from: http://quimicosabc.org.br/videos/comunicacao-internet/lancamento-do-livro-o-quarto-poder/?p=2.

SINDICOMERCIÁRIOS (2014). Unidade da jbs, em montenegro, é interditada pelo mpt. *SINDICOMERCIÁRIOS NOTÍCIAS*. Accessed from: http://sindicomerciariosviamao.com.br/sec/unidade-da-jbs-em-montenegro-e-interditada-pelo-mpt/.

Sindipolo (2010a). Petroquímicos do sul intensificam luta contra retirada

de patrocínio da brasken no plano petros. *FUP NOTÍCIAS*. Accessed from: https://www.fup.org.br/ultimas-noticias/item/8118-petroquimicos-do-sul-intensificam-luta-contra-retirada-de-patrocinio-da-brasken-no-plano-petros.

Sindipolo (2010b). Sindipolo denuncia desrespeito da braskem com... *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/sindipolo-denuncia-desrespeito-da-braskem-com-os-trabalhadores-227a.

Sindipolo (2012). Acidente químico na braskem expõe... *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/acidente-quimico-na-braskem-expoe-trabalhadores-a-produtos-explosivos-6fa4.

Sindiquímica-BA (2012). Nos 10 anos da braskem, nada temos a comemorar. *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/nos-10-anos-da-braskem-nada-temos-a-comemorar-c27e.

Sintiacr (2011a). Seara alimentos condenada em mais de r16$milhõespordanomoralcoletivo$. $SintiacrNOTÍCIAS$. $Accessedfrom$: $http://www.sintiacr.com.br/noticias/ver/seara-alimentos-condenada-em-mais-de-rs-16-milhoes-por-dano-moral-coletivo-306$.

Sintiacr (2011b). Seara alimentos condenada em mais de r16$milhõespordanomoralcoletivo$. $SintiacrNOTÍCIAS$. $Accessedfrom$: $http://www.sintiacr.com.br/noticias/ver/seara-alimentos-condenada-em-mais-de-rs-16-milhoes-por-dano-moral-coletivo-306$.

Sintiacr (2012). Doenças ocupacionais e afastamento do trabalho desmotivam comemoração. *Sintiacr NOTÍCIAS*. Accessed from: http://sintiacr.com.br/noticias/ver/doencas-ocupacionais-e-afastamento-do-trabalho-desmotivam-comemoracao-366.

Sintiacr (2013a). Em rondônia, jbs é condenada a pagar indenização de r3$milhões$. $SintiacrNOTÍCIAS$. $Accessedfrom$: $http://www.sintiacr.com.br/noticias/ver/em-rondonia--jbs-e-condenada-a-pagar-indenizacao-de-rs-3-milhoes--485$.

Sintiacr (2013b). Trt-sc condena frigorífico de forquilhinha... *CUT NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/trt-sc-condena-frigorifico-de-forquilhinha-em-r-25-milhoes-para-recuperar-trabal-ad64.

Sintiacr (2014a). Atual direção do sintiacr é aprovada por cerca de 80trabalhadores. *Sintiacr NOTÍCIAS*. Accessed from: http://www.sintiacr.com.br/noticias/ver/atual-direcao-do-sintiacr-e-aprovada-por-cerca-de-80–dos-trabalhadores-528.

Sintiacr (2014b). Trabalhadores derrubam jbs: Justiça nega interdito na seara. *Sintiacr NOTÍCIAS*. Accessed from: https://www.cut.org.br/noticias/cut-ro-denuncia-jbs-friboi-de-vilhena-e-sindicato-por-acordo-lesivo-aos-trabalha-783c.

Smith, C. and Meiksins, P. (1995). System, society and dominance effects in cross-national organisational analysis. *Work, employment and society*, 9(2):241–267.

Soroka, S. N., Stecula, D. A., and Wlezien, C. (2015). It's (change in) the (future)

economy, stupid: economic indicators, the media, and public opinion. *American Journal of Political Science*, 59(2):457–474.

Souza, M. and Vieira, R. (2011). Construction of a portuguese opinion lexicon from multiple resources. *Anais do Simpósio Brasileiro de Tecnologia da Informação e da Linguagem Humana, 2011, Brasil*.

Stevis, D. and Creation, J. (2009). *International framework agreements and global social dialogue: Lessons from the Daimler case*. ILO.

Sullivan, T. A. (2014). Greedy institutions, overwork, and work-life balance. *Sociological Inquiry*, 84(1):1–15.

Tomio, B. T. and Amal, M. (2015). Institutional distance and brazilian outward foreign direct investment. *M@ n@ gement*, 18(1):78–101.

Tomohara, A. and Takii, S. (2011). Does globalization benefit developing countries? effects of fdi on local wages. *Journal of Policy Modeling*, 33(3):511–521.

Trindade, J. R., Cooney, P., and de Oliveira, W. P. (2016). Industrial trajectory and economic development: dilemma of the re-primarization of the brazilian economy. *Review of Radical Political Economics*, 48(2):269–286.

Tüselmann, H.-J., McDonald, F., and Heise, A. (2002). Globalisation, nationality of ownership and employee relations. *Personnel Review*.

Ulyssea, G. (2018). Firms, informality, and development: Theory and evidence from brazil. *American Economic Review*, 108(8):2015–47.

Ulyssea, G. and Ponczek, V. (2018). Enforcement of labor regulation and the labor market effects of trade: Evidence from brazil. iza discussion papers 11783. *Institute for the Study of Labor (IZA)*.

UNCTAD (2013). *World Investment Report 2013*. New York: United Nations.

UNCTAD (2015). *World Investment Report 2015*. New York: United Nations.

Vadlamannati, K. C. (2015). Rewards of (dis) integration: Economic, social, and political globalization and freedom of association and collective bargaining rights of workers in developing countries. *ILR Review*, 68(1):3–27.

Valor Econômico (2013). Seara é condenada em r25$milhõespelotrt$. $CUTNOTÍCIAS$. $Accessedfrom$: $https$: $//www.cut.org.br/noticias/seara-e-condenada-em-r-25-milhoes-pelo-trt-3fb1$.

Van Dijk, M., Weyzig, F., and Murphy, R. (2006). *The Netherlands: a tax haven?*, volume 5. SOMO Amsterdam.

Van Zon, A., Muysken, J., and Meijers, H. (1998). Asymmetric skill substitution, labour market flexibility, and the allocation of qualifications'. *Towards a transparent labour market for educational decisions, London: Avebury Publishers*.

Vogel, D. (1997). Trading up and governing across: transnational governance and environmental protection. *Journal of European public policy*, 4(4):556–571.

Wang, Y. and Reagan, J. (2020). Media sentiment towards chinese investments in malaysia: An examination of the forest city project. *Asian Journal for Public Opinion Research*, 8(3):197–221.

Ward, M. D. and Gleditsch, K. S. (2018). *Spatial regression models*, volume 155. Sage Publications.

Wickham, H. (2017). The tidyverse. *R package ver*, 1(1).

Wickham, H. and Wickham, M. H. (2016). Package 'rvest'. *URL: https://cran. r-project. org/web/packages/rvest/rvest. pdf*.

Wilkerson, J. and Casas, A. (2017). Large-scale computerized text analysis in political science: Opportunities and challenges. *Annual Review of Political Science*, 20:529–544.

Williams, U. and Williams, S. P. (2014). txttool: Utilities for text analysis in stata. *The Stata Journal*, 14(4):817–829.

Wilmers, N. (2019). Solidarity within and across workplaces: How cross-workplace coordination affects earnings inequality. *RSF: The Russell Sage Foundation Journal of the Social Sciences*, 5(4):190–215.

Wilthagen, T. and Tros, F. (2004). The concept of 'flexicurity': a new approach to regulating employment and labour markets. *Transfer: European Review of labour and research*, 10(2):166–186.

Xu, Z. and Guo, H. (2018). Using text mining to compare online pro-and anti-vaccine headlines: word usage, sentiments, and online popularity. *Communication Studies*, 69(1):103–122.

Younis, E. M. (2015). Sentiment analysis and text mining for social media microblogs using open source tools: an empirical study. *International Journal of Computer Applications*, 112(5).

Zeng, K. and Eastin, J. (2012). Do developing countries invest up? the environmental effects of foreign direct investment from less-developed countries. *World Development*, 40(11):2221–2233.

Zhang, A. Y., Tsui, A. S., Song, L. J., Li, C., and Jia, L. (2008). How do i trust thee? the employee-organization relationship, supervisory support, and middle manager trust in the organization. *Human Resource Management*, 47(1):111–132.

Zhang, M. and Edwards, C. (2007). Diffusing 'best practice'in chinese multinationals: The motivation, facilitation and limitations. *The International Journal of Human Resource Management*, 18(12):2147–2165.

Zhou, X., Tao, X., Yong, J., and Yang, Z. (2013). Sentiment analysis on tweets for social events. In *Proceedings of the 2013 IEEE 17th international conference on computer supported cooperative work in design (CSCWD)*, pages 557–562. IEEE.