

Turning Away From the State: Trade Shocks and Informal Insurance in Brazil*

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Abstract

How does economic globalization affect vote choices? Conventional wisdom holds that voters who lose from economic integration support parties that propose to expand the welfare state. I argue that a key scope condition of this causal relationship is expectations about the state. In the global south, non-state organizations (such as churches and gangs) are often more credible providers of insurance than the state. In these contexts, globalization increases the effectiveness of “organizational brokers” in persuading local communities. To test this argument, I propose a new shift-share instrument that measures the exposure of Brazilian local labor markets to an exogenous decline in exports. By matching this instrument with electoral and survey data, I provide evidence that declining exports increased the power of Evangelical leaders to persuade their congregations to vote against parties that favor welfare-state expansion. My findings explain and describe the contingencies underlying the political consequences of globalization.

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1 Introduction

Economic globalization has long been a contentious domestic issue due to its distributional consequences. Exposure to international markets can increase economic volatility and depress income among the most vulnerable industries, workers and communities (e.g., [Rodrik, 1998](#); [Autor et al., 2013](#); [Dix-Carneiro, 2014](#)). How does this volatility affect domestic politics? [Ruggie \(1982\)](#) famously hypothesized that the deepening of international economic integration was politically feasible thanks to higher public spending in welfare states. However, empirical evidence on the causal link between globalization and demand for welfare programs and public spending is mixed. A number of studies support Ruggie’s expectations (e.g., [Scheve and Slaughter, 2004](#); [Walter, 2010](#); [Scheve and Serlin, 2022](#)), while others show that globalization shocks can also generate demands for other types of political platforms, such as authoritarianism, nationalism and far-right populism ([Colantone and Stanig, 2018b,a](#); [Autor et al., 2020](#); [Baccini and Weymouth, 2021](#); [Ballard-Rosa et al., 2021, 2022](#)). Such contrasting findings highlight the need to identify the scope conditions that underline the causal relations between economic integration and mass support for the welfare state.

I argue that an important scope condition of this causal relationship is the extent to which the state is seen as a credible provider of compensation and insurance *vis-à-vis* non-state actors (such as churches and gangs). Most of the research examining how voters’ preferences change as a result of economic integration focuses on the US and European countries (for recent reviews, see [Rodrik, 2021](#); [Walter, 2021](#)), where state capacity is high. In these contexts, goods and services provided by non-state actors (i.e., *informal insurance systems*)¹ play little to no role. However, even in these contexts scholars conjecture that state credibility matters. For instance, [Colantone and Stanig \(2019\)](#) put forward that post-Great Recession austerity measures have eroded the perceived ability of the state to compensate and insure

¹I define informal insurance systems as sources of financial resources, goods, services and social capital that can be accessed by individuals through informal transactional relations. For example, Evangelical churches provide financial help and access to rehabilitation centers for its members in exchange for recurrent donations and compliance with behavioral norms ([Spyer, 2020](#))

workers against the negative effects caused by globalization, thereby causing voters to turn to protectionist instead of pro-redistribution parties. In the Global South, where expectations about the state (and not only about the welfare state) are diminished (Holland, 2018), I argue that the negative effects of globalization make vulnerable individuals more dependent on informal insurance systems. As a result, leaders of institutions that operate as informal insurance systems (e.g., bishops, gang leaders) are in a better position to act as *organizational brokers* (Holland and Palmer-Rubin, 2015) and influence political opinions and behavior in their communities.

I examine this argument in the context of Brazil, the 4th biggest democracy and 12th largest economy in the world. In the 2010s, lower growth in OECD countries and China caused a sharp decline in Brazilian exports.² The preceding period was marked by a sustained growth of exports and GDP per capita. Specifically, exports went from 60 billion in 1995 to a peak of 170 billion (constant USD) in 2012 and dropped to 120 billion in 2015.

The main center-left party, the Worker's Party (*Partido dos Trabalhadores*, PT), held the Presidency for most of this period (from 2002 to 2016) and helped to promote positive social change by investing in welfare policies (Arretche, 2019), such as a conditional cash transfer program entitled *Bolsa Família* (BF). Despite these new government programs, a series of protests and mounting anti-PT sentiment marked the 2010s when economic growth slowed down (Samuels and Zucco, 2018). This process culminated with the impeachment of President Dilma Rousseff (PT) in 2016 and the election of a far-right populist President in 2018: Jair Bolsonaro. He ran with an anti-establishment, economic liberal, and socially conservative political platform (Hunter and Power, 2019; Nicolau, 2020).

Why did a substantial share of voters turn their backs on PT and its redistributive promises in the 2010s? This is a multicausal phenomenon that is still being studied. Some of the potential causes mentioned in the literature include the high crime levels and corruption scandals (Nicolau, 2020; Hunter and Power, 2019). In this paper, I focus on the

²https://www.ecb.europa.eu/pub/pdf/other/eb201601_focus01_en.pdf

interaction between declining exports and the role of informal insurance providers, specifically the Evangelical churches. I hypothesize that the decline in exports made members of Evangelical churches more dependent upon services and goods provided by the church. As a result, Evangelical leaders were better placed to influence vote choice among impoverished communities.

To test these hypotheses, I examine two consecutive Presidential elections in Brazil (2014 and 2018). Similar to recent research in economics and political science (Colantone and Stanig, 2018b,a; Campello and Urdinez, 2020; Costa et al., 2016; Baccini and Weymouth, 2021), I exploit plausibly exogenous change in trade patterns to construct a shift-share instrument (Bartik, 1987; Autor et al., 2013). Specifically, I measure the exposure of commuting zones (CZs) to the dramatic drop in Brazilian exports between 2011 and 2018 based on the labor market specialization of CZs in the pre-shock period. Aware of the recent developments in shift-share designs (Adão et al., 2019; Goldsmith-Pinkham et al., 2018; Borusyak et al., 2018), I conduct a series of tests and robustness checks to examine threats to inference. For example, I show that my results are substantially unchanged once I control for trends in CZs specialized in the top Brazilian exports. Also, I follow the method proposed by Adão et al. (2019) to avoid the overrejection problem in shift-share designs.

I rely on electoral and census data to analyze the effect of the export shock on changes in PT vote shares in this period in CZs with different levels of Evangelical population. Matching electoral data to a series of party scores,³ I analyze how the interaction between exposure to the drop in exports and reliance on church-based insurance changes the appeal of different types of parties. Lastly, I match survey data with the shock based on respondents' place of residency to provide evidence on the underlying mechanisms.

I show that there is heterogeneity in the responses to the decline in exports across Brazilian CZs. Consistent with the expectations of the economic voting literature (Duch and Stevenson, 2008; Healy and Malhotra, 2013; Campello and Zucco, 2016, 2020a), the

³Party scores are based on Comparative Manifesto Project (CMP), Chapel Hill Expert Survey (CHES) and ideological party scores by Power and Rodrigues-Silveira (2019).

PT lost support in regions negatively affected by the shock. However, in the 2018 election, when Evangelical leaders for the first time cohesively supported one specific candidate (Jair Bolsonaro), this effect is present only in CZs with high levels of Evangelicals. Turning to parties' political platforms, I provide evidence that exposure to the decline in exports in CZs with a high concentration of Evangelicals benefited parties that lean to the right and defend traditional moral values, oppose state-led redistribution and apply an anti-establishment rhetoric only in regions with a high concentration of Evangelicals. Analyzing survey data from 2017, I demonstrate that in the presence of a negative export shock, Evangelicals become even more religious and hold more negative attitudes towards the PT. However, I observe no effect of the decline in exports on individual-level attitudes towards redistribution or conservative values, such as opposition to abortion. These findings are consistent with my hypothesis that, in countries with low state capacity, some voters become more dependent upon informal insurance systems during times of economic downturn. As a consequence, these voters become more susceptible to political persuasion by leaders of informal institutions that provide insurance and compensation.

My intended contribution is threefold. First, I add to the literature on public opinion responses to trade shocks by providing a theory and a mechanism that can help to explain seemingly contradictory findings (Margalit, 2011; Walter, 2017; Margalit, 2019b; Colantone and Stanig, 2018a,b). Second, I inform the debate about the material and non-material (i.e., cultural and psychological) roots of political behavior by showing that local contexts and social identities bind individuals to different types of insurance systems, thereby shaping their attitudes and political behavior (Shayo, 2009; Thachil, 2014; Margalit, 2019b; Suryanarayan, 2019). Third, I contribute to the vast literature on preferences for redistribution and insurance (Iversen and Soskice, 2001; Alesina and Ferrara, 2005; Scheve and Stasavage, 2006; Rehm, 2009, 2016; Huber and Stanig, 2011; Lefgren et al., 2016; Holland, 2018; Rueda and Stegmueller, 2019) by highlighting the importance of informal insurance systems in shaping electoral outcomes in times of economic decline.

2 Exposure to Trade and Political Behavior

An extensive literature in political economy examines how the distributional consequences of economic globalization in general and trade in particular impact demand for policies. Based on the idea that individuals are motivated by material self-interest, this literature claims that individuals who lose income or are exposed to higher risk of losing their job as a consequence of trade openness, will demand compensation and insurance in the form of increased public spending. A series of empirical work provide support for this theory (Scheve and Slaughter, 2004; Walter, 2010; Margalit, 2011; Scheve and Serlin, 2022). However, recent literature in the American and Western European contexts show that exposure to trade competition can also cause an increase in demand for nationalistic and authoritarian political platforms (e.g., Ballard-Rosa et al., 2021; Colantone and Stanig, 2018b).

Why similar trade shocks lead to different political outcomes? The literature has pointed to a number of contextual mediators and moderators that might explain this puzzle. First, the role of austerity and the credibility of increasing public spending (Colantone and Stanig, 2019). Second, the role of political entrepreneurs, such as trade unions and parties, in linking grievances about material loss and risk to specific policy solutions that can span from the left to the right of the political spectrum. For example, political entrepreneurs claim that limiting competition for jobs and public services between natives and immigrants and increasing trade barriers can solve the problem of material loss and risk caused by increased trade openness (Colantone and Stanig, 2019; Cavaille et al., 2017; Cremaschi et al., 2022). Third, psychological mechanisms unleashed by material insecurity might lead to a higher appeal of authoritarian and identitarian political platforms, at least among certain social groups (Ballard-Rosa et al., 2021, 2022; Baccini and Weymouth, 2021).

While the literature has made important progress in explaining the heterogeneous mass public political responses to trade shocks, most work focuses on advanced economies (Rodrik, 2021; Walter, 2021). Remarkable exceptions include the work showing how commodity prices impact support for incumbent presidents and regime change in Latin America (Campello and

Zucco, 2016, 2020b; Novaes and Schiumerini, 2021). If the literature on the effects of trade shock on political behavior is more scant in the global south, this is even more so when we consider studies that go beyond incumbent effects (however, see Campello and Urdinez, 2020, on how exposure to trade with China impacts attitudes towards China among voters and political elites in Brazil). The focus on incumbent effects is probably explained by the fact that the combination of weak, non-programmatic parties with welfare states that exclude the most vulnerable part of the population and states that are perceived as ineffective and corrupt do not yield straightforward predictions about how material self-interests structures political behavior (Holland, 2018).

I argue that to understand the effects of trade shocks on political behavior in the Global South it is crucial to examine how individuals seek to compensate and insure against adverse life events in these contexts. In particular, I argue that where the state fails to provide solutions for higher material loss and risk, it is important to take into account how non-state actors – such as religious organizations – insure and compensate the poor against adverse life events and how they use their resulting influence for political purposes.

3 Compensation and Insurance beyond the State

Due to its focus on advanced economies, the literature on the political consequences of trade tend to assume that the state is the unique resource that globalization losers have at their disposal to get compensation and insurance for increased economic loss and risk. For example, Rodrik (1998) argues that higher levels of trade integration coupled with high sectoral concentration in the economy increases the risk associated with international business cycle. Hence, trade integration can only be politically feasible through compensatory programs delivered by the state. Some empirical evidence supports this claim. For example, Walter (2010) shows that workers more exposed to globalization support welfare expansion in the Switzerland. Also, Scheve and Serlin (2022) show that increased import competition from

Germany led to higher electoral returns of parties that proposed welfare-state investments in 19th century Britain.

Yet, trade integration is not necessarily associated with an increase in public spending and welfare state expansion in developing countries (Kaufman and Segura-Ubiergo, 2001).⁴ Scholars have identified multiple factors to explain why the positive association between exposure to globalization and expansion of the welfare state is often missing. Some examples include: (a) how the high proportion of low skilled workers hinders labor mobilization capacity (Rudra, 2002) and; (b) the fact that economic globalization causes more intense economic volatility (i.e., more pronounced booms and busts) in developing countries, preventing governments in these countries to access international credit markets and adopt counter-cyclical policies (Wibbels, 2006).

Not only trade integration often fails to foster increases in public spending and welfare state expansion in developing countries, but also existing benefits tend to exclude the most vulnerable individuals. For example, in Latin America, social spending is concentrated on contributory benefits for formal-sector workers, subsidies tend to be either flat or regressive and informal access barriers make it difficult for the most vulnerable to access state benefits (Holland, 2018). Hence, in these contexts, disadvantaged citizens facing economic loss and insecurity tend to rely on goods and services provided by non-state formal and informal institutions. Examples of such institutions include within-family transfers as well as services and goods provided by gangs, civic organizations and churches (Hayashi et al., 1996; Iannaccone, 1998; Milán, 2016; Ager and Ciccone, 2018; Auriol et al., 2020; Lessing and Willis, 2019; Tertychnaya et al., 2018; Doyle, 2015; Holland and Palmer-Rubin, 2015). A characteristic of such “informal security regimes” is that they rely on relationships that are informal, transactional and hierarchical, hence easily instrumented for clientelistic purposes (Gough et al., 2004).

While the effect of trade shocks on political behavior when state-led compensation is not

⁴Although, see Avelino et al. (2005) and Xu (2020) for discussion and evidence on when trade openness increases welfare spending in Latin America.

credible has been discussed in the context of developed countries, much less has been written about that in the Global South context. In the developed world, the perceived inability of states to compensate and insure against globalization shocks creates demand for other types of state intervention: protectionism and more restrictive immigration policies (Colantone and Stanig, 2019; Cavaille et al., 2017). I argue that in a context in which citizens already have diminished expectations about the state Holland (2018), non-state institutions play a key role in defining how citizens respond to trade shocks.

4 Goods, Services and Brokers

When disadvantaged citizens can hardly count on the state to cope with economic loss and risk, informal insurance systems develop. Civic organizations, churches and the family play an important role in risk sharing and compensation in these contexts. For example, Ager and Ciccone (2018) show that in US counties with greater agricultural risk in the 19th, a larger share of the population belonged to religious organizations. Similarly, economic development and the consolidation and expansion of the welfare state explain secularization in the developed world (Norris and Inglehart, 2011).

Important features of such informal insurance systems is that they are informal, transactional and hierarchical, with organization leaders playing a prominent role in distributing and controlling resources (Gough et al., 2004). Such hierarchical structure provide organization leaders with brokerage opportunities. Using case studies from Colombia and Mexico, Holland and Palmer-Rubin (2015) show how organizational leaders with strong ties with local communities gain votes for parties and candidates in exchange for particularistic or club goods. Similarly, Thachil (2014) shows that grassroots organizations in India successfully mobilize voters only when they provide services to local communities.

I argue that, by changing local economic conditions, trade shocks affect the extent to which citizens need services and goods provided by non-state organizations. Hence, I expect

that when local communities are negatively hit by trade shocks, the relationship between organization leaders and members is strengthened. As a consequence, organizational brokers are more successful in mobilizing voters in communities more exposed to the negative effects of trade openness.

5 The Case of Brazil

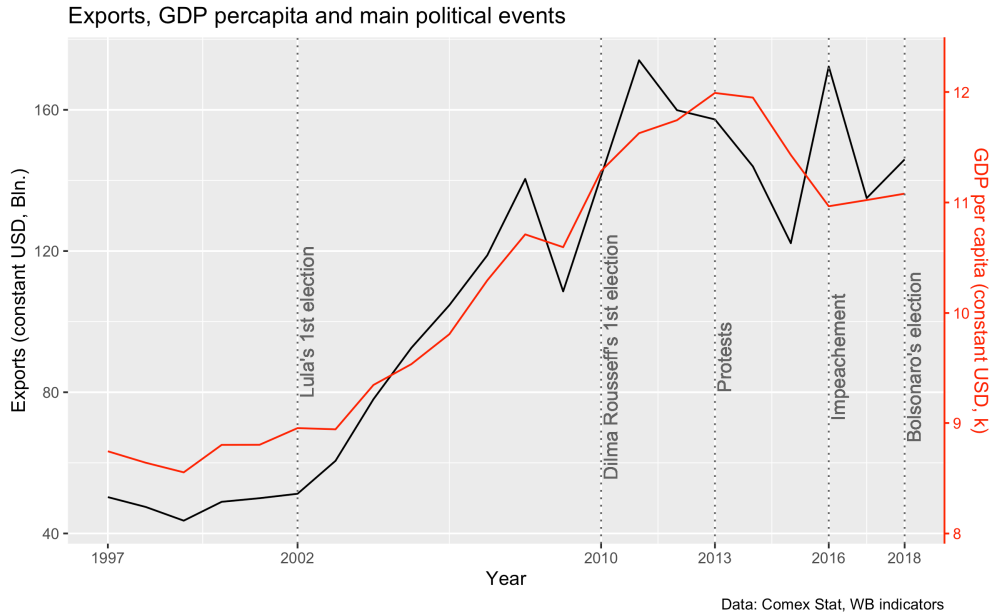
Brazil is an ideal case to study how the effect of trade shocks on political behavior is mediated by informal insurance systems for two main reasons. First, the Brazilian economy's complexity and size results in a significant sub-national variation of exposure to globalization shocks (Dix-Carneiro, 2014; Costa et al., 2016). Second, it is a country where non-state organizations — such as churches, gangs and social movements — have historically played an important role in compensating for the state's failure to provide for the most disadvantaged segments of the population (Lessing and Willis, 2019; Houtzager, 2001). These two factors allow me to leverage within-country variation of exposure to trade shocks and reliance informal insurance systems to test my argument.

5.1 Brazilian Exports and Politics in the 2010s

After a period of sustained growth, Brazilian exports began to decline sharply in 2012 as a result of low growth in advanced economies and the consequent reduced demand for commodities.⁵ Figure 1 shows how Brazilian exports to the rest of the world (black line) and GDP per capita (red line) were in a steady upward trend between 1997 (the first year to which data on exports is available) and 2012, followed by a sharp decline in both measures. Figure 5 in the Appendix, also shows how important a relatively small number of commodities are to the total value of Brazilian exports. Indeed, cereals (mostly soy), crude oil, iron ore, meat and sugar represented about 45% of the total value of Brazilian exports in 2010

⁵https://www.ecb.europa.eu/pub/pdf/other/eb201601_focus01_en.pdf

Figure 1: Evolution of Exports and GDP per capita in Brazil (1995-2018)



Note: The black line shows variations in total yearly exports in constant billion USD. The red line shows changes in GDP per capita in constant thousand USD. Export data comes from Comex Stat. Export values are in billions of constant USD. GDP per capita data comes from World Bank's World Development Indicators.

(the base year in my analysis).

As a result of the economic recession, the value of imports from the rest of the world to Brazil also decreased. This was due to reduced economic activity in Brazil driving down demand for imports of intermediate materials – such as basic chemicals and parts of motor vehicles – that are used in Brazilian manufacturing (see 6 in the appendix). Because the decline in imports is due to the general decline in economic activity, not changes in import competition, my analysis focuses exclusively on exports.

The period that succeeds the decline in exports in Brazil is characterized by political turmoil. Dilma Rousseff (PT) was the President for most of the period considered in this study. She was elected in 2010, as the successor of Lula (PT), a center-left President that ruled the country for eight years. In 2014, Rousseff was re-elected by a small margin, just a year after massive country-wide demonstrations against her government. She was impeached

in a controversial process in 2016. After her impeachment, the then vice-president, Michel Temer (MDB), took office. Jair Bolsonaro (PSL)⁶—a far-right politician, who was unknown by most of the population before the electoral campaign—was later elected in 2018 (for a graphic overview of political events in the period, see figure 1).

The PT is the organizing force in the Brazilian party system (Samuels and Zucco, 2018), and its importance in Presidential elections is paramount. The PT has either won or arrived second in all Presidential elections since the first post-dictatorship direct presidential election in 1989. Moreover, the PT won four consecutive Presidential elections in Brazil (2002, 2006, 2010, and 2014). Thus even though the PT was not the incumbent party in 2018, positive and negative sentiments towards this party were crucial in defining the election (Nicolau, 2020; Hunter and Power, 2019).

Moreover, the PT is considered to be one of the only programmatic parties in the country. Its campaigns and policies were historically marked by a concern with inequality and an effort to promote inclusion, redistribution and welfare expansion (Samuels and Zucco Jr, 2014; Samuels and Zucco, 2018). Examples of inclusive policies promoted by the PT's government include a massive conditional cash transfer program (*Bolsa Família*, hereafter BF) and improved access to tertiary education (Arretche, 2019; Lindert et al., 2007; de Brauw et al., 2015). Given the lack of consolidated party brands in Brazil (with the exception of the PT), it is puzzling that voters have turned to more economically conservative party in times of economic decline. I argue below that this is at least in part driven by anti-PT mobilization by leaders of Evangelical churches that offer goods and services to their congregations.

5.2 Church Services and Religious Brokers in Brazil

While the PT was in power in Brazil, social policies became more inclusive. Policies such as conditional cash transfers and investments in basic infrastructure – such as electricity and drinkable water – benefited poor populations, especially in remote rural areas (Arretche,

⁶Jair Bolsonaro exited the PSL (*Partido Social Liberal*) in 2019.

2019). Yet, there remain many gaps in the Brazilian welfare state. For example, one of the PT's most popular and praised policies was a conditional cash transfer, named *Bolsa Família* (BF), introduced by Lula during his first term.⁷ And yet, despite subsequent expansions of the program, by 2010, only 55% of the eligible families were receiving the benefit (Campello and Neri, 2014).

The historically limited ability of the state to support individuals facing economic scarcity and the incomplete expansion of social policies create the conditions for informal insurance systems to develop and persist (Gough et al., 2004). In the last decade, a prominent and increasingly important source of support for people facing adverse life events in Brazil are Evangelical churches. While in 1970 only 5% of the population self-declared as Evangelical, today they are about a third of the adult population.

Based on extensive ethnographic research, Spyer (2020) shows how Evangelical churches succeeded in supporting and improving the lives of poor individuals that often have few other alternatives. Evangelical churches are present in the most disadvantaged neighborhoods and remote parts of the country. These religious institutions provide financial resources, psychological support, access to networks that facilitate job hunting, medical and legal appointments, complementary educational activities to children as well as access to rehabilitation centers. As such, they provide a wealth of services and goods that help individuals ascend the socioeconomic ladder.

Service provision by Evangelical churches differ from that of the Catholic Church (still the largest religious denomination in Brazil) in important ways. While the first provides services to members only, the second offers charity that is open to anyone. Moreover, Evangelical churches tend to impose stricter rules upon its members than the Catholic church. By limiting the number of members through strict behavioral rules and restricting access to services to members only, Evangelical churches are able to provide more generous services

⁷The value transferred to families by the program varies depending on the number of children in the household and their age. Households with children are required to send children to school and vaccinate them.

and goods to its members (Iannaccone, 1998). Therefore, belonging to an Evangelical church is a measure of reliance on an exclusionary form of insurance. By contrast, Catholic church's low barriers to entry and its inclusive approach to service provision make being Catholic a bad proxy for reliance of Catholic church services. This explains why economic decline has also been linked to conversion from Catholicism to Protestantism in Brazil Costa et al. (2019).

Moreover, there is evidence that Evangelical leaders use their relationship with church members for electoral purposes. For example, in the 2018 election, Evangelical leaders spoke clearly and cohesively in favor of Jair Bolsonaro (the far-right candidate) at the expense of the center-left candidate, Fernando Haddad (PT). Nicolau (2020) argues that Evangelical leaders influenced their congregants to vote disproportionately more to the former. Moreover, Cammett et al. (2022) show how a law that increased the importance of brokers during electoral campaigns benefited the *Republicanos* (a party with strong ties to a large Evangelical church) in legislative elections.

In summary, Evangelical churches provide exclusive goods and services to congregants in exchange for donations, engagement in the community, and compliance with strict behavioral rules. These exchanges are regulated only informally and the power of Evangelical leaders to distribute services and goods makes these relations hierarchical. Therefore, Evangelical churches constitute an informal insurance system, often making up for gaps in the welfare-state. I argue that negative globalization shocks increase the dependency of congregants on the services and goods provided by their church. As a consequence, the persuasive power of Evangelical leaders is stronger in communities that are more exposed to the decline in exports.

Therefore, I hypothesize that in the 2018 election the negative effect of the drop in exports on vote share for the PT is higher in magnitude where Evangelicals represent a larger share of the population. In the next section, I discuss my data and empirical strategy for testing these hypotheses.

6 Data

My empirical analysis relies on data at the commuting zone (CZ) and individual levels. I first describe the construction of my main explanatory variable: the export shock. This is a variable at the CZ-level and which is used in both CZ and individual-level analysis. I then proceed by explaining the dependent variables I use in my CZ-level analysis. Then, I describe other co-variates at the CZ-level. Lastly, I describe the individual-level data and how I match it with CZ-level data.

6.1 Export shocks

I estimate the effect of the drop in Brazilian exports on voting behavior and attitudes. My empirical strategy relies on a shift-share instrument, in the spirit of the one proposed by [Bartik \(1987\)](#). Recently, many authors have applied a similar approach both in political science and economics to measure local exposure to changes in trade patterns ([Autor et al., 2016, 2020](#); [Colantone and Stanig, 2018a,b](#); [Campello and Urdinez, 2020](#); [Scheve and Serlin, 2022](#)).

The unit of analysis are microregions, which are territorial units defined for statistical purposes by The Brazilian Institute of Geography and Statistics.⁸ They are the equivalent of commuting zones (CZs) and are defined in accordance to their specificity in terms of production specialization and natural resources. Therefore, microregions (henceforth, CZs) are the ideal unit of analysis for this research. This is also the level of analysis used in previous work that apply shift-share instruments in the Brazilian context ([Dix-Carneiro, 2014](#); [Costa et al., 2016](#); [Campello and Urdinez, 2020](#); [Xu, 2020](#)) and beyond ([Autor et al., 2016](#)).

I measure the exposure of Brazilian CZs to the drop in exports in the 2010s following the empirical strategy by [Autor et al. \(2013\)](#). I use 2010 as my base year because it is the first

⁸The official definition can be found at The Brazilian Institute of Geography and Statistics glossary: https://censo2010.ibge.gov.br/apps/atlas/pdf/209_213_Glossario_ATLASDEMO

election prior to the decline in exports that began in 2012. Specifically, I compute

$$\Delta EPW_{rt} = \sum_j^n \frac{L_{rjt=2010}}{L_{rt=2010}} \cdot \frac{\Delta EXP_{jt}}{L_{jt=2010}} \quad (1)$$

where r indexes commuting zones (CZs), t election-years (2014 or 2018) and j industries. $\frac{L_{rjt=2010}}{L_{rt=2010}}$ measures the labor market specialization of CZs in the base year. $L_{rjt=2010}$ is the number of formal employees in CZ r and industry j in the base year. L_{rt} is the total number of formal employees in CZ r in the base year. $\frac{\Delta EXP_{jt}}{L_{jt=2010}}$ measures the per capita change in exports by industry j at time t from Brazil to the rest of the world. More precisely, ΔEXP_{jt} is the change in exports of industry j between 2010 and time t measured in thousand constant USD Free on Board (USD FOB). I normalize this value by the total number of jobs in industry j in the base year in the entire country ($L_{jt=2010}$).

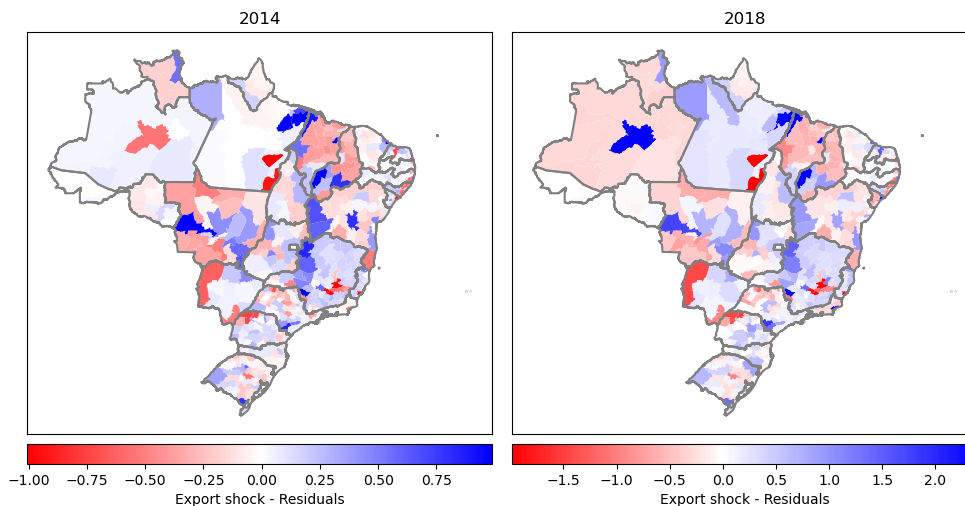
The intuition behind this measure is that a CZ's level of exposure to a decline in exports is a function of the employment structure in that CZ prior to the shock. For example, a CZ in which a large share of the population is employed in a sector that experienced a steep decline in exports receives a more negative export shock score than a CZ with a low share of employment in that sector (all else equal). Figure 2 shows the geographical distribution of the export shocks net of state-year fixed effects in 2014 (left panel) and 2018 (right panel), which are included in all models.

Data on exports at the product level comes from the Brazilian Ministry of Economy.⁹ Data on the number of jobs in each industry and CZ come from RAIS (*Relação Anual de Informações Sociais*), which is an administrative data set collected annually by the Brazilian Ministry of Economy. It contains information on the universe of formal jobs in Brazil, including municipality and detailed industry classification. The de-identified data is publicly available on the Ministry of Economy website.¹⁰ A key challenge of constructing this database

⁹<https://www.gov.br/produti-vi-dade-e-comercio-exterior/pt-br/assuntos/comercio-exterior/estatisticas/base-de-dados-bruta>

¹⁰The website (<ftp://ftp.mtps.gov.br/>) is accessible only from Brazil.

Figure 2: Geographic Distribution of Exposure to Changes in Exports from Brazil to the Rest of the World per Worker



Note: This figure displays the geographic distribution of $\Delta EPW_{r,t}$ in 2014 (on the left) and 2018 (on the right) net of state fixed-effects. Blue colors indicate a shock above the state average, while red colors indicate a shock below the state average.

is to match the classification of jobs to the classification of exports because they follow different classification systems (CNAE 2.0 and NCM 2012, respectively). To do that, I rely mostly on existing conversion tables provided by the Brazilian Statistical Office and convert both systems into International Standard Industrial Classification (ISIC) Revision 4. In appendix B.1 I explain the process in detail. My final database contains 178 industries, which are listed in table 4.

6.2 Electoral Data and Party Scores

The commuting zone (CZ) level analysis is based on two dependent variables. The first is the change in vote shares for the PT in presidential elections. This is computed as the change in valid votes for the PT in CZ r between the base year 2010 and election-year t , where t is either 2014 or 2018. The second outcome variable is a CZ-level ideological score (as in Colantone and Stanig, 2018b; Power and Rodrigues-Silveira, 2019). These scores are meant to represent

the aggregate ideological position (or “center of gravity”) of a given CZ. The CZ center of gravity is defined as the sum of ideological positions of parties, weighted by their vote share in each CZ. Brazil has a highly fragmented and volatile party system (Zucco and Power, 2020). A way to measure changes in electoral behavior when many parties are involved is to consider party characteristics (e.g., Martin and Vanberg 2020). More precisely, in volatile or fragmented party systems, we may assume that a voter did not change her voting behavior if, in subsequent elections, she votes for different parties that highlight the same policy issues and stand for similar issue positions and general ideology.

To construct the CZ-level ideology scores, I gather data on party-positioning on general political ideology (i.e., position on the *Left-Right* scale) and policy issues related to welfare state and religion, namely: state-led redistribution (*Redistribution*), expanding the welfare state (*Welfare*), relationship between politics and religious principles (*Religiosity*) and support for traditional moral values (*Traditional Morality*). I also gather data on the use of anti-establishment rhetoric (*Anti-establishment*). These data come from three sources that apply different methodologies to compute party scores across different policy issues. The first source I use is the Brazilian Legislative Surveys (BLS), which includes data at the year-legislator level on a series of policy issues as well as self-placement and perceptions of party position on the left-right scale (Zucco and Power, 2019). Specifically, I rely on the party ideological scores computed by Power and Rodrigues-Silveira (2019). Second, I also obtain party-position data from the 2020 Chapel Hill Expert Survey (CHES): Latin America. This dataset, based on a survey of 160 experts in Latin American politics, scores the positions of 11 Brazilian parties across a series of policy issues. The drawback of this data set is that it contains only one wave. Hence, when using this data set to measure party scores, party positions are necessarily fixed over time. Third, I use the Comparative Manifesto Project (CMP), which computes party position on political ideology and a series of policy issues based on text analysis of party manifestos.¹¹

¹¹For scores computed using the CMP, the position of a party on a policy issue is computed based on the number of negative and positive references to such issue, as in Colantone and Stanig (2018b) and Martin

To measure policy preferences at the commuting zone (CZ) level, I compute *CZ's center of gravity* on political ideology and a series of policy issues by weighting party scores by party vote shares. Data on electoral results come from the Brazilian official electoral authority.¹²

Formally,

$$Center\ of\ Gravity_{rt} = \sum_p^n \frac{Vote_{pt}}{Vote_{rt}} \times PartyScore_{pt} \quad (2)$$

where r indexes CZs, t election-years and p parties. $\frac{Vote_{pt}}{Vote_{rt}}$ denotes the vote share of party p in CZ r in year t . I then subtract *Center of Gravity*_{rt} at election-year 2014 or 2018 by its value in the base year (i.e., 2010) to obtain the change in the center of gravity (Δ *Center of Gravity*_{rt}).

6.3 Insurance and Compensation

Based on the discussion I develop in section 5.2, I consider two main insurance systems: welfare state policies and the Evangelical church. I measure reliance on the state and on the Evangelical church using census data collected in 2010, the base year. For each commuting zone (CZ), I compute the share of adults that (a) are beneficiaries of the conditional cash transfer program *Bolsa Família* and (b) belong to any Evangelical denomination.¹³ Figure 3 shows the geographic distribution of *Bolsa Família* (BF) beneficiaries (left panel) and Evangelicals (right panel) in 2010 net of state fixed effects. Interestingly, the correlation between the share of evangelicals and BF recipients at the CZ level net of state fixed effects is negative (-0.37). I also include a measure of the share of the population in a CZ that receive a pension. Pensions in Brazil are an important source of income, especially among the poor in rural areas. Hence, I include this measure as another way to proxy reliance on

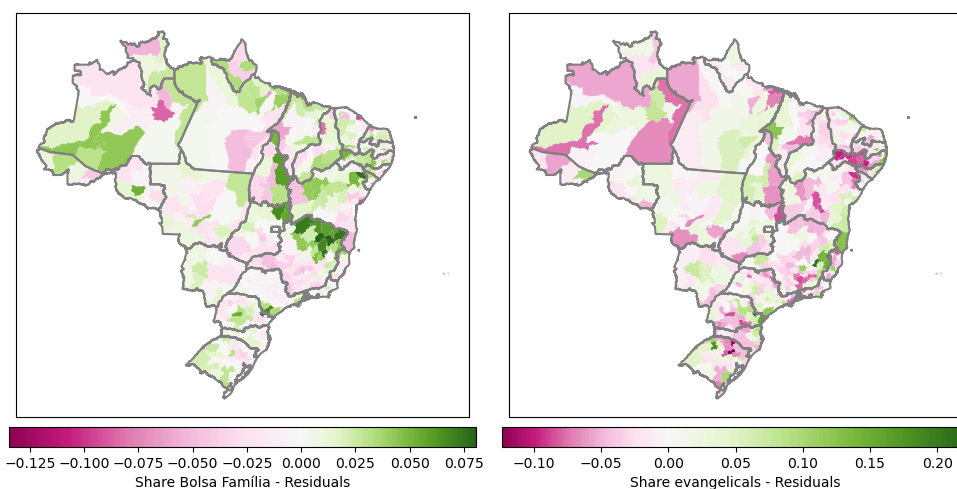
and Vanberg (2020).

¹²<https://www.tse.jus.br/el-ei-coes/estati-sti-cas/repositori-o-de-dados-el-ei-torai-s-1>

¹³While Evangelical churches in Brazil are usually classified as belonging to “historical Protestantism” or “(Neo-)Pentecostalism”, how this distinction works in practice is not clear-cut. For example, Spyer (2020, p. 54) argues that many Evangelical churches that have their origins in the historical Protestantism adopt an hybrid model, incorporating many of the values and practices of Pentecostal churches. Furthermore, Araújo (2022) shows how the attitudes towards the PT are very similar between historical Evangelicals and Pentecostals.

the welfare state.

Figure 3: Spatial Variation of BF Beneficiaries and Evangelicals in 2010



Note: This figure displays the geographic distribution of beneficiaries of the conditional cash transfer program *Bolsa Família* (on the left) and Evangelicals (on the right) at the CZ level net of state FE. Calculations are based on the 2010 Brazilian census. Data is sourced from the Brazilian Institute of Geography and Statistics. Shades of green indicate a concentration above the state average, while shades of pink indicate a shock below the state average.

As I discussed in section 5.2, I do not expect the Catholic church to work as an informal insurance system. I include this variable as a placebo in order to test whether it is *religion* at work or the organizational power of the Evangelical church. I also include data on the share of pensioners in a CZ.

6.4 Other CZ–Level Data

I also include a series of covariates at the commuting zone level. First, GDP per capita and log population at the base year.¹⁴ Data is sourced from Ipeadata, run by the Brazilian Institute of Applied Economic Research. Second, the share of the population working on export sectors. This variable is computed based on the matching of RAIS and export data

¹⁴<http://www.ipeadata.gov.br/Default.aspx>

made available by the Brazilian Ministry of Economy. For more information about the data cleaning and matching procedure, see section 6.1 above and appendix B.1.

6.5 Individual–Level Data

Commuting zone–level electoral returns capture within-country variation in voting behavior. However, many different factors underlie voting decisions. To better examine the channels through which export shocks caused a shift away from parties that defend welfare-state expansion, I gather individual-level survey data from the Latin American Public Opinion Project (LAPOP). These data include information on the municipality of residency of respondents. I then use this information to match the survey data with the export shock at the commuting zone level. To approximate the date of the 2018 election, I use the 2017 wave of the LAPOP survey. While there was a wave that was on the field close to the 2014 election, it excludes items that are crucial for my analysis. Therefore, I use the 2017 wave only.

I construct indices that measure respondents’ religiosity as well as attitudes toward the political establishment and traditional moral values. To measure attitudes towards the political establishment, I select items that measure attitudes towards political institutions (e.g., the national legislature, political parties) and politicians (i.e., the prevalence of corruption practices among politicians). Turning to religiosity, I selected three items: how often the respondent prays, goes to church, and how important she thinks religion is in her life. Lastly, I measure opinion on traditional moral values based on items on women’s role in society and LGBTQIA+ rights (i.e., whether homosexuals should be allowed to be public officials, whether they should be allowed to marry, and if men are better politicians than women). Based on these survey items, I use factor analysis to construct three indices that I use as dependent variables: *religiosity*, *traditional morality* and *anti-establishment*. Details about the reliability of indices items can be found in appendix A.5.

I also select items that measure attitudes toward the PT and redistribution. To measure

support for *Redistribution*, I select one item that measures agreement on a 7-point Likert scale with the statement “the state should implement public policies to reduce inequality of opportunity.” To measure attitudes toward PT, I select the following items: (a) whether, on a 10-point Likert scale, the respondent likes PT supporters (*like PT sup.*) and; (b) to what extent, on a 7-point Likert scale, the respondent thinks that the impeachment of Dilma Rousseff’s (a member of PT and the President of Brazil between 2010 and 2016) was unfair.

I also construct two dummy variables that I use in the individual level models to estimate heterogeneous treatment effects. These variables are: *BF beneficiary* (equals one if respondent is a BF beneficiary) and *Evangelical* (equals one if respondent is Evangelical). Lastly, I control for basic socioeconomic characteristics, namely: gender, age, race, and the number of years of education. I select variables that are unlikely to be affected by the export shock, since including variables that can be affected by the treatment is a source of bias (Rosenbaum, 1984). These same basic socioeconomic characteristics have been used in previous research that analyzes survey data matched with trade shocks (Colantone and Stanig, 2018b).

7 Research Design

7.1 Model Specification

My empirical strategy relies on examining the effect of changes in exports per worker at the commuting zone (CZ) level on electoral behavior and public opinion. First, for electoral behavior, I estimate stacked first differences models at the CZ level, which is in line with previous research in political science and economics studying the effect of trade shocks (Autor et al., 2016; Colantone and Stanig, 2018b; Scheve and Serlin, 2022). I estimate regressions

of the following form

$$\Delta Y_{srt} = \alpha_{st} + \beta \Delta EPW_{srt} + \gamma \Delta EPW_{srt} \cdot \text{Evangel}_{srt=2010} + \zeta \text{Evangel}_{srt=2010} + \mathbf{X}_{\text{srt}=2010} \eta' + \epsilon_{srt}, \quad (3)$$

where r indexes CZs in state s , election-year t , and ϵ_{srt} is the error term. ΔY_{srt} is one of the dependent variables described in section 6.2 (i.e., either first differences in PT's vote shares or CZ's centers of gravity). The term α_{st} are state-year fixed effects, which capture factors common to all regions within a state in a given election, such as the governor's ideological leaning and the general political climate in the state. $\text{Evangel}_{srt=2010}$ is a dummy variable that equals one if CZ r is above the median in terms of the share of the population that belongs to any Evangelical denomination in 2010. \mathbf{X}_{srt} is a vector of controls measured pre-treatment, i.e., in 2010. It includes the share of formal jobs in CZ r that are in export industries, log population, and log GDP per capita. The coefficients of interest are β – which estimates the effect of the export shock in CZs with low levels of Evangelicals – and, γ , which estimates the difference of the effect of the export shock in CZs with high levels of Evangelicals (as compared to CZs with low levels of Evangelicals). The dependent variables and ΔEPW_{srt} are standardized to facilitate the interpretation of the results.

Second, to estimate the effect of the drop in exports on individual-level attitudes, I estimate regressions of the following general form

$$\text{Attitude}_{i sr} = \alpha_s + \beta \Delta EPW_{sr(i)} + \gamma \Delta EPW_{sr} \cdot \text{Evangel}_i + \zeta \text{Evangel}_i + \mathbf{X}_{\text{srt}=2010} \eta' + \mathbf{Z}_{it} \kappa' + \epsilon_{isrt}, \quad (4)$$

where i indexes individuals, s states and r CZs. $\text{Attitude}_{i sr}$ is one of the dependent variables described in section 6.2, namely: religiosity, attitudes towards the PT, support for redistribution, opinion on traditional moral values, and the political establishment. $\Delta EPW_{sr(i)}$ is the export shock at the CZ-level attributed to individual i based on her municipality of residency. Evangel_i is a dummy variable that equals one if respondent i self-described as Evangelical.

α_s is a vector of state-fixed effects and $\mathbf{X}_{\text{srt}=2010}$ is the vector of pre-treatment, regional-level controls. Finally, \mathbf{Z}_{it} is a vector of individual-level controls that includes: gender, age, ethnicity, and educational levels. The coefficients of interest are β – which estimates the effect of the export shock among non-Evangelicals – and, γ – which estimates the difference of the effect of the export shock among Evangelicals (as compared to non-Evangelicals).

7.2 Identification

A potential issue with this empirical strategy is that local pre-shock labor market specialization (i.e., the shares of jobs in CZ r that are in sector j in the base year, 2010) are correlated with pre-existing trends in electoral outcomes (Goldsmith-Pinkham et al., 2020). For example, regions with a high concentration of soy production may exhibit an upward trend in favor of a particular type of candidate preceding the drop in exports. I address this concern in two different ways. First, in appendix C, I control for trends in CZs with similar labor market specialization in 2010. Namely, I control for the share of workers in the main export industries interacted with election-year. I define the main export industries as the top four Brazilian exports in 2010. These industries correspond to 42% of the total Brazilian exports in that year (see figure 5). Table 10 in Appendix C shows that the results I present in the next section are substantively unchanged once I add these controls. Second, in Appendix C, I regress the export shock in 2014 and 2018 on lags of the main dependent variable. I show that there is no statistically significant correlation between the export shock and lagged changes in vote shares for the PT.

Another threat to inference is spatial autocorrelation. I account for that by clustering the standard errors at the mesoregion-year level. Mesoregions are defined by the Brazilian Institute of Geography and Statistics and are one level of aggregation above CZs (i.e., microregions). Mesoregions share social and economic characteristics. There are 137 mesoregions and 558 CZs in Brazil. Moreover, Adão et al. (2019) call attention to another potential problem with the residuals in shift-share designs. Specifically, units with similar labor mar-

ket specialization in the pre-shock period (i.e., with similar shares) may have correlated residuals, causing an overrejection of the null hypothesis. This issue is not solved by clustering standard errors at higher levels of geographic aggregation. To test for this issue, the authors recommend conducting a placebo exercise in which the shift part of the shift-share instrument (here, the per capita change in exports by industry) is replaced by a normally distributed random variable. The exercise is repeated thousands of times and the rejection rate is computed at the 95% confidence level. An indication of the overrejection problem occurs when the test yields a rejection rate considerably above 5%. I perform this exercise as they suggest. After running the regression in equation 3 with my “random shift” replacing my shift-share instrument ten thousand times, I end up with a rejection rate of 5.5% for the coefficient of interest (i.e., the interaction of the export shock with the Evangelical dummy). The rejection rate for the coefficient of the export shock on its own is similar and available upon request. Figure 7 in Appendix D shows the distribution of the estimated coefficients in this placebo test. The figure shows that the estimates are normally distributed with mean equals zero. These results suggest that the correlation between residuals of units with similar labor market specialization in the pre-shock period is unlikely in this case.

8 Effects of Exports Decline on Electoral Returns

I first examine the effects of export decline on voting for the PT in the 2010s. Table 1 reports the results of models with changes in vote shares for the PT between 2010 and the two subsequent Presidential elections (2014 and 2018) as the dependent variable. All variables are standardized to make interpretation easier. My theoretical expectation is that a decrease in exports reduces the votes cast for the PT, especially in CZs with higher concentration of evangelicals. The results suggest that the decline in exports in the 2010s decreased the votes cast for the Workers’ Party (PT). Column (1) shows that one standard deviation decrease in the export shock reduces the vote share for the PT by approximately 0.04 standard

Table 1: Effects of Export Decline on Votes for the PT by Concentration of Evangelicals and Catholics (2010–2018)

	DV: Δ PT Vote Shares				
	(1)	(2)	(3)	(4)	(5)
ΔEPW_t	0.0378** (0.0154)	0.0211 (0.0135)	0.0445*** (0.0132)	0.0618*** (0.0237)	0.0437*** (0.0131)
Evangelicals (dummy) \times ΔEPW_t		0.0593** (0.0253)			
Evangelicals (dummy)		-0.0552 (0.0693)		-0.0874 (0.0589)	
Catholics (dummy)		-0.0790 (0.0572)		-0.0987 (0.0647)	
Evangelicals (cont.) \times ΔEPW_t			0.0213* (0.0117)		
Evangelicals (cont.)			-0.141** (0.0625)		-0.159*** (0.0579)
Catholics (cont.)			-0.145** (0.0583)		-0.161** (0.0632)
Catholics (dummy) \times ΔEPW_t				-0.0326 (0.0262)	
Catholics (cont.) \times ΔEPW_t					-0.0198* (0.0120)
Constant	3.496*** (0.432)	3.775*** (0.501)	3.638*** (0.489)	3.835*** (0.514)	3.632*** (0.486)
Observations	1114	1114	1114	1114	1114
Adjusted R^2	0.820	0.821	0.822	0.820	0.822
Evangelicals (dummy) \times year		\times			
Evangelicals (cont.) \times year			\times		
Catholics (dummy) \times year				\times	
Catholics (cont.) \times year					\times
State \times year FE	\times	\times	\times	\times	\times
CZ controls	\times	\times	\times	\times	\times

Note: Stacked first difference estimates at the commuting zone (CZ) level. Models (2) and (3) include interaction between the export shock and the share of Evangelicals at the CZ level as a dummy variable (i.e., below the median equal zero and above the median equals one) and as a continuous variable, respectively. Columns (4) and (5) do the same but with the concentration of Catholics. All models include state by year fixed effects and the following CZ-level controls: share of workers in export sectors, log GDP per capita and log population in base year. All continuous variables are standardized. Standard errors clustered at the meso-region by year level in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

deviations. While the estimated effects are small, this is common in studies examining the effect of trade shocks on voting behavior (Margalit, 2019a). Moreover, columns (2) and (3) suggest that this effect is stronger in CZs with above the median levels of Evangelicals.

To assess whether the marginal effect of the export shock on vote shares for the PT is a linear function of the concentration of evangelicals at the regional level, I follow the diagnostic recommendations by Hainmueller et al. (2018). Specifically, I re-estimate model (3) in table 1 using their proposed binning estimator. Figure 8 in Appendix E plots both the linear marginal effects as well as the binning estimator. The fact that the Low, Medium and High binned estimates align almost perfectly with the linear marginal effect line suggests that the assumption holds for this moderator. Moreover, the density plot at the bottom of the figure demonstrates a high degree of common support. Finally, these results indicate that the heterogeneity within Evangelical communities reported in table 1 is not sensitive to the coding of the Evangelical variable.

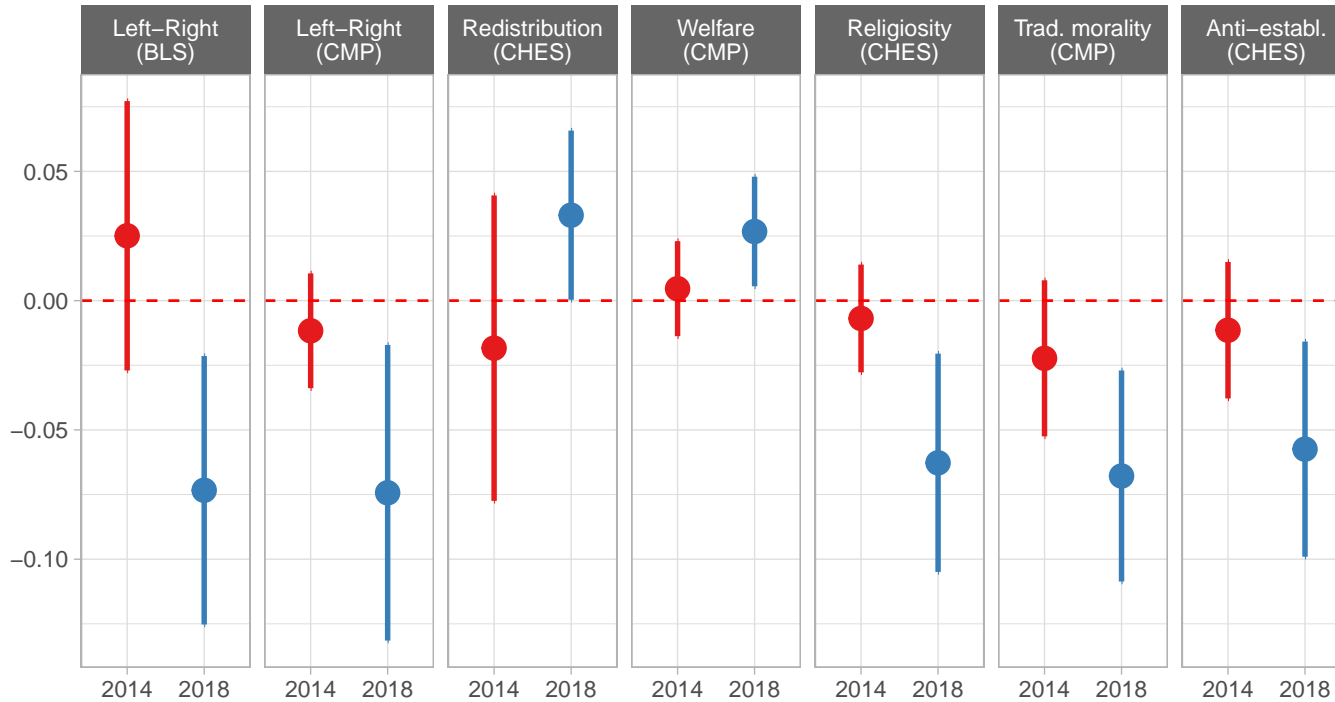
I then proceed by estimating the models in columns (1), (3), and (5) in table 1 by election-year. While many Evangelical leaders – notably Edir Macedo (The Universal Church of the Kingdom of God) and Silas Malafaia (Assemblies of God) – took a clear position against the PT and in favor of the far-right candidate, Jair Bolsonaro, in 2018, the same did not happen in 2014 (Nicolau, 2020). Hence, I expect that the effect of the interaction between the export shock and the concentration of Evangelicals at the CZ level to be statistically significant only in 2018. Table 2 reports the results. Columns (1) and (4) show that a decrease in exports causes a decline in vote share for the PT in both elections. While in 2014 there is no difference between CZs with larger Evangelical communities (column 2), in 2018 this effect is driven entirely by CZs with high shares of Evangelicals (column 5). This difference between 2014 and 2018 suggests that mobilization by religious elites is a necessary condition for church-based insurance to matter electorally. Again, the interaction of the export shock with a variable indicating the concentration of Catholics does not yield statistically significant results, suggesting that, as I argue in section 5.2, there is something

Table 2: Effects of Export Decline on Votes for the PT by Concentration of Evangelicals and Catholics by Election

	DV: Δ PT Vote Shares					
	2014 Election			2018 Election		
	(1)	(2)	(3)	(4)	(5)	(6)
ΔEPW_t	0.0544* (0.0301)	0.0376 (0.0342)	0.0990** (0.0477)	0.0308* (0.0175)	0.0136 (0.0139)	0.0503* (0.0289)
Evangelicals (dummy) \times ΔEPW_t		0.0616 (0.0590)			0.0604** (0.0288)	
Evangelicals (dummy)		-0.0714 (0.0762)	-0.0720 (0.0773)		-0.100 (0.0878)	-0.104 (0.0886)
Catholics (dummy)		-0.0674 (0.0735)	-0.0683 (0.0729)		-0.0908 (0.0876)	-0.0940 (0.0887)
Catholics (dummy) \times ΔEPW_t			-0.0619 (0.0589)			-0.0260 (0.0299)
Constant	3.581*** (0.411)	3.832*** (0.574)	3.831*** (0.568)	3.402*** (0.773)	3.767*** (0.852)	3.781*** (0.856)
Observations	557	557	557	557	557	557
Adjusted R^2	0.665	0.665	0.665	0.758	0.759	0.758
State FE	\times	\times	\times	\times	\times	\times
CZ controls	\times	\times	\times	\times	\times	\times

Note: Stacked first difference estimates at the commuting zone (CZ) level. Models (1–3) report the results for the 2014 election. Models (4–6) to the 2018 election. Models (2) and (5) include interaction between the export shock and the concentration of Evangelicals at the CZ level as a dummy variable, while models (3) and (6) interact the export shock with a dummy variable indicating the concentration of Catholics at the CZ-level. All models include state fixed effects and the following CZ-level controls: share of workers in export sectors, log GDP per capita and log population in base year. All variables are standardized. Standard errors clustered at the meso-region level in parenthesis.

Figure 4: Estimates of Export Shock Interacted with Evangelical Dummy (DVs: Centers of Gravity)



Note: The figure plots the estimated coefficients and 95% confidence intervals of the interaction between the export shock and the evangelical dummy for models as in columns (2) and (5) of table 2 but with different DVs. The DVs are the first difference of the centers of gravity of CZs for different party scores: position in the left-right scale (*Left-Right*), use of anti-establishment rhetoric (*Anti-establ.*) as well as support for: redistribution (*Redistribution*), expansion of the welfare state (*Welfare*) and religious principles in politics (*Religiosity*). CZs' centers of gravity are a weighted average of party scores where the weights are vote shares. For more information about how the centers of gravity are computed, see 6.2. The acronyms in parenthesis indicate the data source for the party scores used to compute the centers of gravity, namely: the Brazilian Legislative Survey (BLS), the Comparative Manifesto Project (CMP), and the Chapel Hill Expert Survey (CHES).

particular to the Evangelical churches in this context.

I then proceed by examining whether the change in vote shares for the PT caused by the decline in exports also translated into support for parties with political platforms more in line with the interests and values of Evangelical churches. To do that, I ran the same models as in columns (2) and (6) of table 2 but with my alternative CZ-level outcome: specifically, I substitute the first difference in vote share for the PT with the first difference in centers of gravities of CZs. The first difference of centers of gravity is meant to capture changes in preferences for parties with different political platforms. Centers of gravity are computed as the weighted average of party scores, where the weights are vote shares. Details about how centers of gravity are computed can be found in section 6.2. I consider three dimensions of party positions: general ideology (i.e., position on the left-right scale), redistribution and welfare state, the relationship between religious values and practices and politics, and, finally, use of anti-establishment rhetoric. The estimated coefficients for the interaction of the export shock and the Evangelicals dummy are reported in figure 4. The estimates in figure 4 suggest that in CZs with high shares of Evangelicals, the decline in exports caused a shift in preferences toward parties with different political platforms only in the 2018 election (blue lines), but not in 2014 (red lines). Specifically, the decline in exports caused CZs with high shares of Evangelicals to turn more towards right-wing parties, parties more opposed to redistribution and welfare expansion as well as parties that are more in favor of adopting religious practices and values in politics. Finally, the decline in exports also led to a stronger support for parties that adopt anti-establishment rhetoric in CZs with above-the-median Evangelical populations.

9 Evaluating the Mechanisms

In the previous section, I show that the decline in exports had a negative effect on the electoral returns of the Workers' Party (PT) both in the 2014 and in the 2018 election. I

also provided evidence that in 2018, but not in 2014, this effect was stronger in commuting zones (CZs) where Evangelicals represent a higher share of the population. Moreover, in 2018 the shift away from the PT in Evangelical-dominated CZs is accompanied by increased support for parties that lean to the right, oppose redistribution and defend religious values and practices. I conjecture that the shift in party preferences is explained by a two-step process. First, in CZs that are more exposed to the decline in exports, the relationship between members of the Evangelical church and their leaders becomes stronger. As I argue in section 5.2, this difference is explained by Evangelical churches acting as informal insurance providers. More specifically, I put forward that when Evangelicals face economic insecurity, they tend to invest more in their ties with their religious communities in order to increase access their the goods and services distributed by Evangelical leaders. Second, Evangelical leaders acting as brokers for parties and candidates that share their political views — notably Jair Bolsonaro, who ran in 2018 but not in 2014 — are more successful in mobilizing voters in places where the dependency of church members on church services and goods is stronger (i.e., places in economic decline). To better explore this individual-level mechanism, I now turn to my analysis of survey data.

I rely on the LAPOP’s Americas Barometer 2017 Brazilian wave. This wave was selected for two reasons. First, to approximate the date of the 2018 Brazilian Presidential election. Second, due to data availability, namely the presence of survey items that measure: the relationship between individuals and religion and attitudes towards the PT. I also select items that measure attitudes towards redistribution, traditional moral values and anti-establishment sentiment. If the decline in exports caused changes in policy preferences or values, this might suggest that voters are turning away from the PT for programmatic reasons.

Table 3 reports the results. The variables are standardized to make interpretation easier. Column (1) shows that the decline in exports increases religiosity (i.e., frequency of prayer and church services attendance as well as the importance of religion) only among

Table 3: Individual-Level Estimates: Interaction with Evangelical Dummy

	(1)	(2)	(3)	(4)	(5)	(6)
DV:	Religiosity	Like PT supporters	Rousseff's impeachment was unfair	Redistribution	Trad. Morality	Anti-establ.
ΔEPW_{2018}	0.0287 (0.0332)	-0.0233 (0.0221)	-0.0573* (0.0298)	0.0484** (0.0240)	0.0492 (0.0422)	0.00700 (0.0234)
Evangelical \times ΔEPW_{2018}	-0.0684** (0.0313)	0.119** (0.0538)	0.101** (0.0471)	-0.0147 (0.0464)	-0.0363 (0.0480)	-0.124* (0.0680)
Evangelical	0.751*** (0.0623)	-0.0934 (0.0566)	-0.113* (0.0601)	-0.0233 (0.0633)	0.589*** (0.0633)	-0.0903 (0.0678)
Observations	1070	1071	1081	1084	1065	1055
Adjusted R ²	0.178	0.0372	0.0511	0.00331	0.184	0.0145
State FE	×	×	×	×	×	×
Ind. controls	×	×	×	×	×	×
CZ controls	×	×	×	×	×	×
N of CZs	82	82	82	82	82	82

Note: The table reports the results of regressions of the form as in equation 4. The dependent variables are individual-level survey measures of: (1) religiosity (an index measuring church attendance, frequency of prayers and importance of religion); attitudes towards the Worker's Party (PT), specifically (2) the extent to which the respondent likes PT supporters and; (3) thinks that the impeachment of President Dilma Roussef (PT) was unfair; (4) attitude towards redistribution, specifically the extent to which respondents think that the State should act to reduce inequality of opportunity and, finally (6) anti-establishment attitudes, which is an index including items asking pride in the political system, respect in political institutions, trust in different branches of government and whether political leaders are interested in what people think. More information about the indices used in these models can be found in appendix A.5. All variables are standardized to facilitate interpretation. The Evangelical dummy is measured at the individual level, i.e., whether respondents declare to be Evangelical. All modes include state FE and CZ-level controls (share of workers in the export sector, log GDP per capita and log population) as well as pre-treatment individual-level controls (age, gender, race and educational level). Data is sources from LAPOP's AmericasBarometer 2017. Only data from Brazil is included. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Evangelicals. Columns (2) and (3) show that a decline in exports causes a decrease pro-PT sentiment (i.e., liking PT supporters and thinking that the Rouseff’s impeachment (PT) was unfair). Columns (4) and (5) show that the decline in exports did not change Evangelicals’ attitudes towards redistribution, nor their conservatism in relation to traditional moral values. Finally, column (6) shows that the decline in exports caused more negative attitudes towards the political establishment in general only among Evangelicals (however, this effect is statistically significant only at the 90% confidence level). Overall, the results suggest that Evangelicals became closer to their religious communities as a result to the decline in exports. However, such tighter relationship did not translate into more conservative values (e.g., higher opposition to abortion). To be sure, Evangelicals hold more traditional moral values on average (see column (5) of table 3), but the decline in export did not make this pattern stronger. Instead, the positive effect of the decline in exports on religiosity (column 1) is accompanied by more negative attitudes towards the PT (columns 2 and 3). These results suggest that the mechanism behind the increased anti-PT sentiment is not changes in preferences and values as a result of the decline in exports. Instead, the results are more consistent with religious elites sending cues to more dependent church members (i.e., an “organizational broker” effect).

10 Conclusion

The progressive integration of national economies increases economic volatility and creates winners and losers (Rodrik, 1998; Autor et al., 2013; Dix-Carneiro, 2014). Rational theories of voting behavior posit that voters who bear the costs of economic globalization support parties that propose expanding the welfare state (Meltzer and Richard, 1981). However, the empirical evidence is mixed. On the one hand, a number of studies confirm these expectations (e.g., Walter, 2010; Scheve and Slaughter, 2004; Scheve and Serlin, 2022). On the other hand, other work provides empirical evidence that globalization can also lead globalization’s losers

to turn to nationalist, authoritarian and far-right parties (e.g., [Colantone and Stanig, 2018b](#); [Ballard-Rosa et al., 2021, 2022](#)). Such contrasting findings highlight the need to identify the scope conditions underlying the causal relation between exposure to economic globalization and support for the welfare state.

In this paper, I focus on one crucial aspect of citizens’ material experience: insurance systems. In developed countries, state capacity is high and the state plays by far the most essential role in providing public goods and services. By contrast, in the Global South, non-state organizations — such as churches and gangs — are more relevant ([Gough et al., 2004](#); [Lessing and Willis, 2019](#)). In these contexts, the negative effect of globalization might make voters more dependent upon insurance systems provided by non-state organizations and, hence, more susceptible to the political persuasion of “organizational brokers” ([Holland and Palmer-Rubin, 2015](#)).

I exploit a sharp decline in exports from Brazil to test this argument. I show that exposure to the negative effects of globalization reduced support for parties defending the expansion of the welfare state. I also show that this effect is stronger in commuting zones (CZs) with a high share of Evangelicals. Evangelical churches are an increasingly important source of insurance and compensation to voters. They provide financial resources and access to services (e.g., access to rehabilitation centers) in exchange for donations and compliance with strict behavioral rules ([Spyer, 2020](#)). These heterogeneous results of the decline in exports by share of Evangelicals at the CZ level are, however, observed only in the election that Evangelical leaders cohesively turned against the left. By analyzing survey data, I provide evidence of the underlying mechanism. Specifically, Evangelicals in CZs more exposed to the drop in exports pray and attend church services more often and also report higher importance of religion in their lives. Furthermore, Evangelicals more exposed to the drop in exports also report more negative attitudes towards the Worker’s Party (PT), but do not oppose redistribution more or hold more conservative moral values. Overall, the evidence is consistent with the argument that, in the Global South, an economic decline caused by globalization shocks can

increase the dependency of poor communities toward informal insurance systems. In turn, such increased dependency gives organizational leaders more persuasive power and, hence, leverage to succeed in their brokerage efforts.

Much work remains to be done on the contingencies underlying the political consequences of globalization. A fruitful way forward is to analyze how globalization shocks interact with other types of informal insurance systems in the Global South. In Latin America, especial attention should be paid to organized crime. Another promising way forward is to examine whether informal insurance systems make economic liberalization more politically palatable in the Global South, by providing support to the poor without increasing taxes on the rich.

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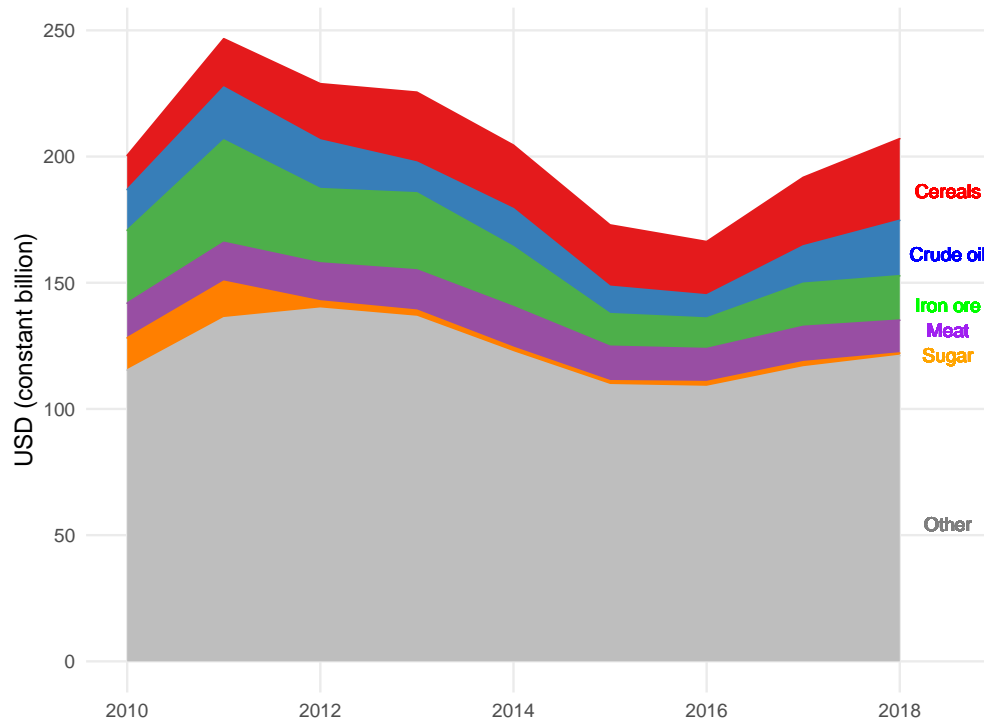
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A Descriptive Statistics

A.1 Variation in Exports

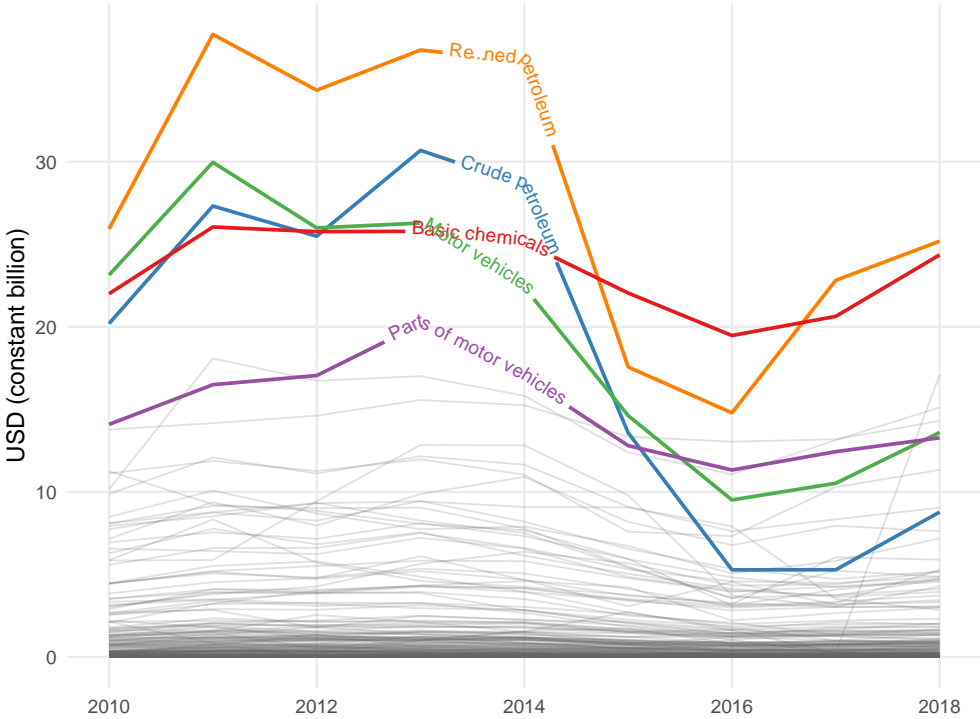
Figure 5: Evolution of Exports by ISIC Category (1995-2018)



Note: Export data comes from Comex Stat. Export values are in billions of constant USD.

A.2 Variation in Imports

Figure 6: Evolution of Imports by ISIC Category (1995-2018)



Note: Import data comes from Comex Stat. Import values are in billions of constant USD.

A.3 Changes in exports by ISIC 4.0 Rev. classes

ISIC Code	ISIC 4.0 Rev. Description	Δ exports 2010-2014	Δ exports 2010-2018
0111	Growing of cereals (except rice), leguminous crops and oil seeds	1170182	1886466
0112	Growing of rice	8853	16662
0115	Growing of tobacco	-374	-1702
0116	Growing of fibre crops	42651	64588
0121	Growing of grapes	-7490	-5645
0122	Growing of tropical and subtropical fruits	-1546	-2883
0123	Growing of citrus fruits	2788	1945
0124	Growing of pome fruits and stone fruits	-2600	-970
0127	Growing of beverage crops	43137	-136414
0141	Raising of cattle and buffaloes	-3220	-19732
0142	Raising of horses and other equines	35	326
0144	Raising of sheep and goats	866	523
0145	Raising of swine/pigs	106	370
0146	Raising of poultry	1642	3269
0149	Raising of other animals	3562	2838
0170	Hunting, trapping and related service activities	0	0
0220	Logging	1740	5090
0311	Marine fishing	94	1910
0510	Mining of hard coal	16	13
0520	Mining of lignite	11	1
0610	Extraction of crude petroleum	-110297	581742
0620	Extraction of natural gas	0	0
0710	Mining of iron ores	-511416	-1127601
0729	Mining of other non-ferrous metal ores	45103	106145
0891	Mining of chemical and fertilizer minerals	317	426
0892	Extraction of peat	-5	-13
0893	Extraction of salt	378	24
0899	Other mining and quarrying n.e.c.	5972	6552
1010	Processing and preserving of meat	239609	-71998
1020	Processing and preserving of fish, crustaceans and molluscs	-2738	-40
1040	Manufacture of vegetable and animal oils and fats	149068	55008

Table 4: Changes in exports by ISIC Rev. 4 classification

Continued on next page...

ISIC Code	ISIC 4.0 Rev. Description	Δ exports 2010-2014	Δ exports 2010-2018
1050	Manufacture of dairy products	17185	-8331
1061	Manufacture of grain mill products	8206	4892
1062	Manufacture of starches and starch products	-735	-1047
1072	Manufacture of sugar	-406520	-708939
1073	Manufacture of cocoa, chocolate and sugar confectionery	-15360	-20929
1074	Manufacture of macaroni, noodles, couscous and similar farinaceous products	1497	-91
1080	Manufacture of prepared animal feeds	8299	10631
1101	Distilling, rectifying and blending of spirits	1049	-168
1103	Manufacture of malt liquors and malt	4327	4032
1104	Manufacture of soft drinks; production of mineral waters and other bottled waters	-166	-361
1200	Manufacture of tobacco products	-43997	-98169
1311	Preparation and spinning of textile fibres	115	-2385
1391	Manufacture of knitted and crocheted fabrics	-96	-868
1393	Manufacture of carpets and rugs	-650	-728
1394	Manufacture of cordage, rope, twine and netting	778	-617
1410	Manufacture of wearing apparel, except fur apparel	-5009	-5671
1420	Manufacture of articles of fur	32	-34
1430	Manufacture of knitted and crocheted apparel	-81	67
1520	Manufacture of footwear	-51044	-65874
1610	Sawmilling and planing of wood	-3812	23038
1621	Manufacture of veneer sheets and wood-based panels	8931	49989
1622	Manufacture of builders' carpentry and joinery	1615	5175
1623	Manufacture of wooden containers	2765	-319
1701	Manufacture of pulp, paper and paperboard	-10843	220046
1702	Manufacture of corrugated paper and paperboard and of containers of paper and paperboard	2174	2044
1812	Service activities related to printing	-101	-86
2012	Manufacture of fertilizers and nitrogen compounds	2057	-14249
2013	Manufacture of plastics and synthetic rubber in primary forms	-1368	-24916
2021	Manufacture of pesticides and other agrochemical products	-12506	-15357
2022	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	-1260	-5475

Table 4: Changes in exports by ISIC Rev. 4 classification
Continued on next page...

ISIC Code	ISIC 4.0 Rev. Description	Δ exports 2010-2014	Δ exports 2010-2018
2023	Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	-11448	-22093
2030	Manufacture of man-made fibres	-4998	-6476
2211	Manufacture of rubber tyres and tubes; retreading and re-building of rubber tyres	-15620	-32528
2310	Manufacture of glass and glass products	-9514	-10085
2391	Manufacture of refractory products	1929	1938
2393	Manufacture of other porcelain and ceramic products	-1725	-1152
2394	Manufacture of cement, lime and plaster	359	-124
2395	Manufacture of articles of concrete, cement and plaster	7998	-4431
2396	Cutting, shaping and finishing of stone	19802	-6455
2399	Manufacture of other non-metallic mineral products n.e.c.	2792	-2916
2410	Manufacture of basic iron and steel	95546	216958
2511	Manufacture of structural metal products	632	-3278
2512	Manufacture of tanks, reservoirs and containers of metal	2713	-1087
2513	Manufacture of steam generators, except central heating hot water boilers	-1694	-3866
2520	Manufacture of weapons and ammunition	-2731	-1548
2620	Manufacture of computers and peripheral equipment	-6013	3413
2652	Manufacture of watches and clocks	33	122
2660	Manufacture of irradiation, electromedical and electrotherapeutic equipment	491	1343
2680	Manufacture of magnetic and optical media	-304	-148
2720	Manufacture of batteries and accumulators	-1855	-2041
2732	Manufacture of other electronic and electric wires and cables	-9302	229
2750	Manufacture of domestic appliances	-20785	-21694
2813	Manufacture of other pumps, compressors, taps and valves	-12808	-40561
2814	Manufacture of bearings, gears, gearing and driving elements	-10996	-15433
2818	Manufacture of power-driven hand tools	-3963	-2641
2821	Manufacture of agricultural and forestry machinery	-16657	-34669
2823	Manufacture of machinery for metallurgy	-2817	-6023
2824	Manufacture of machinery for mining, quarrying and construction	38984	87398

Table 4: Changes in exports by ISIC Rev. 4 classification
Continued on next page...

ISIC Code	ISIC 4.0 Rev. Description	Δ exports 2010-2014	Δ exports 2010-2018
2825	Manufacture of machinery for food, beverage and tobacco processing	-2981	-3133
2910	Manufacture of motor vehicles	-230297	24351
2920	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	-5146	-4561
3012	Building of pleasure and sporting boats	-2668	-1182
3091	Manufacture of motorcycles	1797	-2632
3099	Manufacture of other transport equipment n.e.c.	159	228
3220	Manufacture of musical instruments	-72	-125
3240	Manufacture of games and toys	-752	-623
3510	Electric power generation, transmission and distribution	-34684	-34684
3520	Manufacture of gas; distribution of gaseous fuels through mains	0	0
3811	Collection of non-hazardous waste	550	-1
5310	Postal activities	0	7
9102	Museums activities and operation of historical sites and buildings	-9	56

Table 4: Changes in exports by ISIC Rev. 4 classification

A.4 Summary Statistics of Main Variables

Table 5: Summary Statistics of Regional-level Variables

	Mean	SD	Min	Max
Export Shock	0.083	0.766	-11.956	7.547
% Evangelical	0.188	0.080	0.043	0.434
% BF	0.093	0.060	0.003	0.229
% Emp. in exp	0.072	0.079	0.000	0.433
ln Population (2010)	17.246	0.972	13.068	21.665
ln GDP per capita (2010)	9.251	0.662	7.924	11.706
Δ PT Vote Share	-0.088	0.108	-0.525	0.153
Ideology (PRS)	0.177	0.177	-0.181	0.714
Ideology (CMP)	7.497	10.215	-5.005	42.932
Establishment Score	0.024	0.048	-0.076	0.094
Trad. Morality (Pos.)	0.092	0.299	-0.298	0.998
Trad. Morality (Sal.)	0.110	0.194	-0.282	0.645
Welfare (Pos.)	-0.427	0.585	-1.837	0.589
Welfare (Sal.)	-0.099	0.206	-0.611	0.556

Table 6: Summary Statistics of Individual-level Variables

	Mean	SD	Min	Max
Cash Transfers	0.000	0.834	-1.437	1.535
Supp. Pol. establishment	0.000	0.838	-1.184	3.297
Like PT supporters	3.899	2.912	1.000	10.000
Religiosity	0.000	0.764	-1.885	1.022
Traditional Morality	0.000	0.794	-1.140	1.523
Gender	0.498	0.500	0.000	1.000
Age	39.101	15.907	16.000	89.000
Income Index	0.000	0.857	-1.533	1.153
Education (Years)	8.491	3.885	0.000	17.000

A.5 Indices (Individual-level)

Table 7: Political Establishment

Pol. Establishment		
<i>Factor loading</i>		
Variable	Factor 1 (loading)	Uniqueness
Respect for Political Institutions	0.4842	0.7535
Pride in Political System	0.6556	0.5572
Trust in the National Legislature	0.6844	0.5292
Trust in Political Parties	0.7375	0.4554
Trust in Executive	0.6779	0.5094
Trust in Elections	0.6377	0.5894
Leaders Are Interested in What People Think	0.3567	0.8577
Impeachment of Dilma Rousseff Was Fair	0.0550	0.9123
Amount of corruption among politicians	-0.3350	0.8637
<i>Bartlett test of sphericity</i>		
Chi-square = 2976.171		
Degrees of freedom = 36		
p-value = 0.000		
<i>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</i>		
KMO = 0.879		
<i>Test scale</i>		
Average interitem covariance: .8163401		
Number of items in the scale: 9		
Scale reliability coefficient: 0.7414		

Table 8: Religiosity

Religiosity		
<i>Factor loading</i>		
Variable	Factor 1 (loading)	Uniqueness
Attendance at Meetings of Religious Organization	0.6019	0.6377
Attendance at Religious Services	0.6627	0.5609
Importance of Religion	0.4856	0.7642
<i>Bartlett test of sphericity</i>		
Chi-square = 682.050		
Degrees of freedom = 3		
p-value = 0.000		
<i>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</i>		
KMO = 0.623		
<i>Test scale</i>		
Average interitem covariance: .5170831		
Number of items in the scale: 3		
Scale reliability coefficient: 0.6425		

Table 9: Traditional Morality

Trad. Morality		
<i>Factor loading</i>		
Variable	Factor 1 (loading)	Uniqueness
I support the right of homosexuals to apply to jobs in the public sector	0.7222	0.4784
I support same-sex marriage	0.7104	0.4953
Men are better leaders than women	0.2219	0.9508
<i>Bartlett test of sphericity</i>		
Chi-square = 763.347		
Degrees of freedom = 3		
p-value = 0.000		
<i>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</i>		
KMO = 0.528		
<i>Test scale</i>		
Average interitem covariance: 2.938136		
Number of items in the scale: 3		
Scale reliability coefficient: 0.6031		

B Notes on Data Source and Cleaning Procedures

B.1 Sectoral Crosswalk (NCM and CNAE 2.0)

Description of the procedure: sectors in the export data are classified according to the the “*Nomenclatura Comum do Mercosul 2012*” (NCM 2012). RAIS classifies sectors according to the “Classificação Nacional de Atividades Econômicas (CNAE). In RAIS 2010 and subsequent databases, CNAE 2.0 classes and subclasses are included.

I convert NCM and CNAE 2.0 into ISIC Rev. 4 because ISIC Rev. 4 is more general and easily combined with both of classification systems. In order to do that, I use the conversion tables provided by the Brazilian Statistical Office.

The major problem that I found in constructing the crosswalk between NCM 2012 and ISIC Rev 4 is that 95 NCM classes that are included in the export database in the period that I analyze (2010-2018) are classified in the NCM2012-ISIC Rev. 4 conversion table as “8999-Not classified”. Moreover, exports in deflated USD FOB (USD Free On Board, which I deflated for baseline year, i.e. 2010) decreased more in the analyzed period than for the other NCM 9251 sectors included in the export database.

I partially solve this problem by converting NCM 2012 classified as “8999-Not classified” into CNAE 2.0 and then converting CNAE 2.0 into ISIC Rev. 4 based on the conversion tables provided by the Brazilian Statistical Office. By doing that, I reduced the NCM 2012 unclassified sectors from 95 to 38. I exported these 38 remaining sectors into an excel file, so that I can manually link them to ISIC Rev. 4. later. However, this procedure is necessary since t-tests indicate that the null hypothesis that the means of export changes in the period analyzed is the same for matched and unmatched sectors.

A last note on this matter is that, at a first glance, it might seem more straightforward to convert NCM 2012 into CNAE 2.0 and then directly merge to RAIS’ database. However, many sectors that are present in the export database are not preset in the NCM 2012 - CNAE 2.0 conversion table provided by the Brazilian Statistical Office. Namely, out of the 9346 sectors in the export database, 1200 are not included in this conversion table. Therefore, using ISIC Rev. 4. is preferable because it prevents a more serious loss of information. Since constructing this crosswalk requires multiple steps, I manually checked a random sample of the resulting conversion table.

Data sources:

- CNAE 2.0. classification table comes from the Brazilian Statistical Office (<https://concla.ibge.gov.br/classificacoes/correspondencias/atividades-economicas.html>).
- ISIC 4.0 classification table is sourced from the United Nations statistics website (<https://unstats.un.org/unsd/classifications/Econ>). I also use a detailed description of ISIC 4.0 classes (https://unstats.un.org/unsd/publication/seriesm/seriesm_4rev4e.pdf) to check the crosswalks that I construct as explained above.

B.2 Computing number of jobs using RAIS

RAIS is a database at the contract level, i.e., each row contains information about a contract. Among other details, the database contains information about in which months of a given year a contract was active. I divide the number of months for which a contract is active in a given year by 12. I then sum this value by sector and microregion to get the number of jobs by sector and microregion L_{srt} .

C Robustness

Table 10: Effects of Export Decline on Votes for the PT (2010–2018) with Controls for Trends in CZs with Similar Labor Market Specialization in Export Industries in the Base Year

	DV: Δ PT Vote Shares				
	(1)	(2)	(3)	(4)	(5)
ΔEPW_t	0.0120 (0.0221)	0.0230 (0.0152)	0.0201 (0.0134)	0.0154 (0.0124)	-0.0133 (0.0483)
Evangelicals (dummy)	-0.0550 (0.0696)	-0.0550 (0.0693)	-0.0511 (0.0685)	-0.0566 (0.0697)	-0.0508 (0.0706)
Evangelicals (dummy) $\times \Delta EPW_t$	0.0614** (0.0257)	0.0590** (0.0253)	0.0597** (0.0249)	0.0624** (0.0254)	0.0713*** (0.0273)
Catholics (dummy)	-0.0757 (0.0578)	-0.0787 (0.0572)	-0.0791 (0.0567)	-0.0793 (0.0573)	-0.0732 (0.0581)
Observations	1114	1114	1114	1114	1114
Adjusted R^2	0.821	0.820	0.821	0.821	0.820
Initial % of jobs \times year	Iron ore	Crude oil	Meat	Cereals	All
Evangelicals (dummy) \times year	\times	\times	\times	\times	\times
State \times year FE	\times	\times	\times	\times	\times
CZ controls	\times	\times	\times	\times	\times

Note: Stacked first difference estimates at the commuting zone (CZ) level. Columns (1) to (4) control for share of jobs by election-year in one of the following industries: iron ore, crude oil, meat and cereals, respectively. Column (5) control for the shares of jobs by time in all these four industries. All models include state by year fixed effects and the following CZ-level controls: share of workers in export sectors, log GDP per capita and log population in base year. All variables are standardized. Standard errors clustered at the meso-region by year level in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

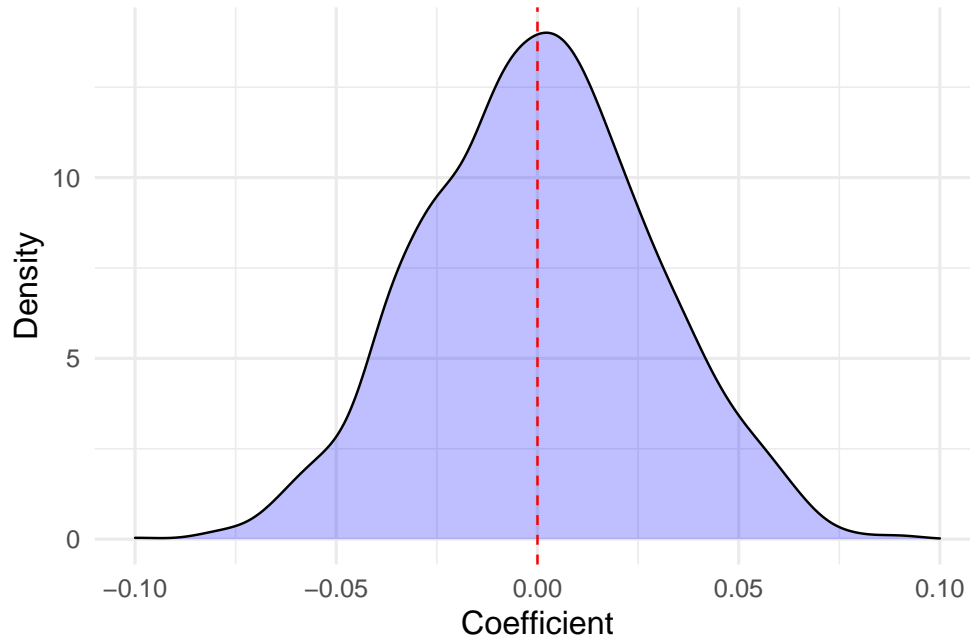
Table 11: Robustness: Lags

	DV: Δ PT Vote Shares (2006-2010)				
	(1)	(2)	(3)	(4)	(5)
ΔEPW_{t+8}	0.00917 (0.0114)	0.0164 (0.0129)	0.0103 (0.0110)	-0.00533 (0.0173)	0.00898 (0.0109)
Evangelicals (dummy)				-0.0443 (0.0624)	
Evangelicals (dummy) \times ΔEPW_{t+8}		-0.0194 (0.0198)			
Catholics (dummy)		0.0902 (0.0593)			
Evangelicals (cont.)			0.0329 (0.0827)		-0.0516 (0.0658)
Evangelicals (cont.) \times ΔEPW_{t+8}			-0.00465 (0.00982)		
Catholics (cont.)			0.00551 (0.0604)		-0.0719 (0.0654)
Catholics (dummy) \times ΔEPW_{t+8}				0.0220 (0.0213)	
Catholics (cont.) \times ΔEPW_{t+8}					0.00859 (0.00998)
Observations	1114	1114	1114	1114	1114
Adjusted R^2	0.799	0.802	0.803	0.801	0.803
Evangelicals (dummy) \times year		\times			
Evangelicals (cont.) \times year			\times		
Catholics (dummy) \times year				\times	
Catholics (cont.) \times year					\times
State \times year FE	\times	\times	\times	\times	\times
CZ controls	\times	\times	\times	\times	\times

Note: Stacked first difference estimates at the commuting zone (CZ) level. The dependent variable is the lagged changes in vote share for the PT at CZ level. Changes in vote shares are computed as the difference between the percentage of valid votes cast for the PT in 2006 or 2010 minus 2002. Models (2) and (3) include interaction between the export shock and the percentage of Evangelicals at the CZ level as a dummy and a continuous variable, respectively. Columns (4) and (5) do the same but with the concentration of Catholics. All models include state by year fixed effects and the following CZ-level controls: share of workers in export sectors, log GDP per capita and log population in base year. All variables are standardized. Standard errors clustered at the meso-region by year level in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

D Random-Shifts

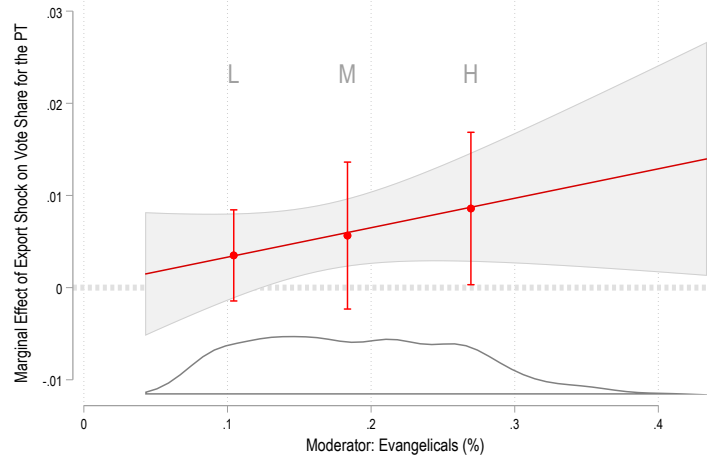
Figure 7: Estimates Distribution for Interaction between Random Shifts Placebo by Evangelicals



Note: The figure plots the distribution of estimates for 10k iterations of the coefficient of the interaction between the shift-share placebo (in which real shares are interacted with a normally distributed random shift variable) and the Evangelical dummy. The rest of the specification is as in equation 3. This is a test proposed by [Adão et al. \(2019\)](#) to evaluate the concern that in shift-share designs residuals of units with similar shares have correlated residuals. They point out that if the share of statistically significant coefficients with a 95% confidence level is expressively superior to 5%, this suggests overrejection of the null hypothesis, representing a threat to inference. In my test, 5.5% of the coefficients are statistically significant at the 95% confidence level, suggesting that there is no overrejection problem.

E Linearity

Figure 8: Evaluating the linearity assumption



Note: These figures plot the both the marginal effect of the Export Shock on vote share for the PT, conditional on the level of Evangelicals. The vertical lines plot the binning estimator proposed by [Hainmueller et al. \(2018\)](#) to evaluate the linearity assumption.

F Effects of the Export Shock on Voting Behavior by Concentration of Beneficiaries of State Programs

F.1 Commuting Zone–Level Estimates

Table 12: Effects of Export Decline on Votes for the PT by Concentration of *Bolsa Família* Beneficiaries and Pensioners (2010–2018)

	DV: Δ PT Vote Shares			
	(1)	(2)	(3)	(4)
ΔEPW_t	0.0269*	0.0316**	0.0337	0.0379**
	(0.0150)	(0.0138)	(0.0232)	(0.0153)
BF (dummy) \times ΔEPW_t	0.00297			
	(0.0295)			
BF (dummy)	0.134**			
	(0.0523)			
BF (cont.) \times ΔEPW_t		-0.00905		
		(0.0134)		
BF (cont.)		0.194***		
		(0.0462)		
Pensions (dummy) \times ΔEPW_t			0.000445	
			(0.0295)	
Pensions (dummy)			-0.0591	
			(0.0425)	
Pensions (cont.) \times ΔEPW_t				-0.00220
				(0.0105)
Pensions (cont.)				-0.00508
				(0.0336)
Observations	1114	1114	1114	1114
Adjusted R ²	0.832	0.838	0.820	0.819
BF (dummy) \times year	×			
BF (cont.) \times year		×		
Pensions (dummy) \times year			×	
Pensions (cont.) \times year				×
State \times year FE	×	×	×	×
CZ controls	×	×	×	×

Note: Stacked first difference estimates at the commuting zone (CZ) level. Models (2) and (3) include interaction between the export shock and level of *Bolsa Família* (BF) beneficiaries at the CZ level as a dummy and a continuous variable, respectively. Columns (4) and (5) do the same but with the levels of pensioners. All models include state by year fixed effects and the following CZ-level controls: share of workers in export sectors, log GDP per capita and log population in base year. All variables are standardized. Standard errors clustered at the meso-region by year level in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 13: Individual-Level Estimates: Interaction with BF Dummy

	(1)	(2)	(3)	(4)	(5)	(6)
	Religiosity	Like PT supporters	Rousseff's impeachment was unfair	Redistribution	Trad. Morality	Anti-establ.
ΔEPW_{2018}	0.0461 (0.0476)	-0.00425 (0.0283)	-0.0262 (0.0476)	0.0461 (0.0292)	0.0312 (0.0608)	-0.0905*** (0.0304)
BF beneficiary \times ΔEPW_{2018}	-0.0738 (0.0444)	0.0189 (0.0592)	-0.0157 (0.0522)	-0.00256 (0.0564)	0.0204 (0.0721)	0.149*** (0.0452)
BF beneficiary	0.0798 (0.0608)	0.131 (0.0784)	0.0299 (0.0778)	-0.0722 (0.0910)	-0.0113 (0.0704)	-0.182** (0.0771)
Observations	1070	1071	1081	1084	1065	1055
Adjusted R ²	0.179	0.0347	0.0492	0.00327	0.184	0.0174
State FE	×	×	×	×	×	×
Ind. controls	×	×	×	×	×	×
CZ controls	×	×	×	×	×	×
N of CZs	82	82	82	82	82	82

Note: The table reports the results of regressions of the form as in equation 4. The dependent variables are individual-level survey measures of: (1) religiosity (an index measuring church attendance, frequency of prayers and importance of religion); attitudes towards the Worker's Party (PT), specifically (2) the extent to which the respondent likes PT supporters and; (3) thinks that the impeachment of President Dilma Roussef (PT) was unfair; (4) attitude towards redistribution, specifically the extent to which respondents think that the State should act to reduce inequality of opportunity and, finally (6) anti-establishment attitudes, which is an index including items asking pride in the political system, respect in political institutions, trust in different branches of government and whether political leaders are interested in what people think. More information about the indices used in these models can be found in appendix A.5. All variables are standardized to facilitate interpretation. The BF dummy is measured at the individual level, i.e., whether respondents declare to be a beneficiary of the Conditional Cash Transfer Program *Bolada Família*. All models include state FE and CZ-level controls (share of workers in the export sector, log GDP per capita and log population) as well as pre-treatment individual-level controls (age, gender, race and education level). Data is sourced from LAPOP's AmericasBarometer 2017. Only data from Brazil is included. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.