Globalization, income inequality and political realignment: the transition from a two-party to a multi-party electoral system in Costa Rica

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March 1, 2024

Latest version available here.

Abstract

This study explores the proliferation of electoral parties in democracies globally, using the Costa Rican context as a laboratory. It seeks to understand whether the transformed political landscape in Costa Rica since 2002, marked by a shift from a two-party to a multi-party system, can be attributed to the growing disparities in income and increasing exposure to globalization. This research contributes significantly to the existing literature on globalization and its impact on electoral outcomes, particularly within the context of a developing nation with a solid democratic tradition. It uniquely combines two sets of administrative data at the individual level: electoral registries and social security employer-employee records. The study reveals a positive correlation between income and voter turnout. The primary findings related to income shocks are stable to the inclusion of immigration data. Notably, the analysis demonstrates that immigration decreases voter turnout across most specifications. However, when applying an IV strategy at the individual level, the presence of more immigrant colleagues appears to positively influence the voting behaviour of local workers, suggesting a potential buffer effect. Furthermore, our analysis at the polling station level reveals that areas with positive income gains tend to exhibit more stable voting preferences and declining support for traditional parties. Moreover, exposure to immigration appears to foster electoral volatility and, paradoxically, greater support for traditional parties, possibly as a refuge for discontented voters amidst evolving political landscapes.

JEL codes: D31, D63, D72, F16, F21, F23, F60

Keywords: Costa Rica, income inequality, growth, globalization, foreign investment, political participation.

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1 Introduction and literature review

1.1 Introduction

This project studies the interaction of globalization, income inequality, and electoral outcomes. It focuses on the effect of income inequality and globalization (*trade, FDI, international tourism, and immigration*) on electoral realignment. We are particularly interested in cases where the electoral system has changed from a two-party to a multi-party system. Figures 1 and 2 show that this transition is a global phenomenon in most democracies. Furthermore, it is also true when restricting the analysis to the oldest democratic systems, or continuous democracies (see Figure B.2). Hence, this paper is related to the literature on the effects of globalization on political polarization, which has traditionally focused mostly on developed countries.

This study combines uniquely detailed administrative data at the local and individual levels to study how globalization brings about changes in political alignments in a particular context: Costa Rica. We aim to contribute to the discussion of how globalization and income shocks affect political preferences. To understand the transition from a two-party to a multi-party system, we start by studying the effect of growing inequality on declining turnout and vote shares for traditional parties at the district level. Then, we explore other electoral outcomes and their relationship with inequality also at the district level: electoral volatility, vote shares for pro-globalization parties, and vote shares for conservative parties. We replicate this analysis at the smallest aggregate level: the polling station.

Using uniquely detailed individual-level data, we try to understand some of the mechanisms for changes in income distribution and individual income shocks, in particular the effect of new jobs in MNCs and exposure to immigration. Given the characteristics of our data, we focus on the universe of formal workers and the changes they have experienced in the last few decades. For instance, we explore changes in within/between firm-level income inequality. While other studies have already documented these changes in the income distribution in firms, we are among the first to show how they affect voting. Hence, we control and interact our inequality measures with jobs in MNCs, and account for the competition from immigrants at the employment and residential levels.
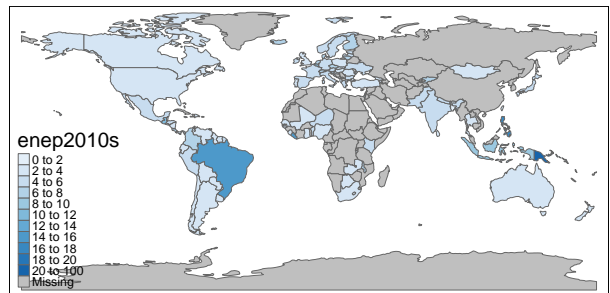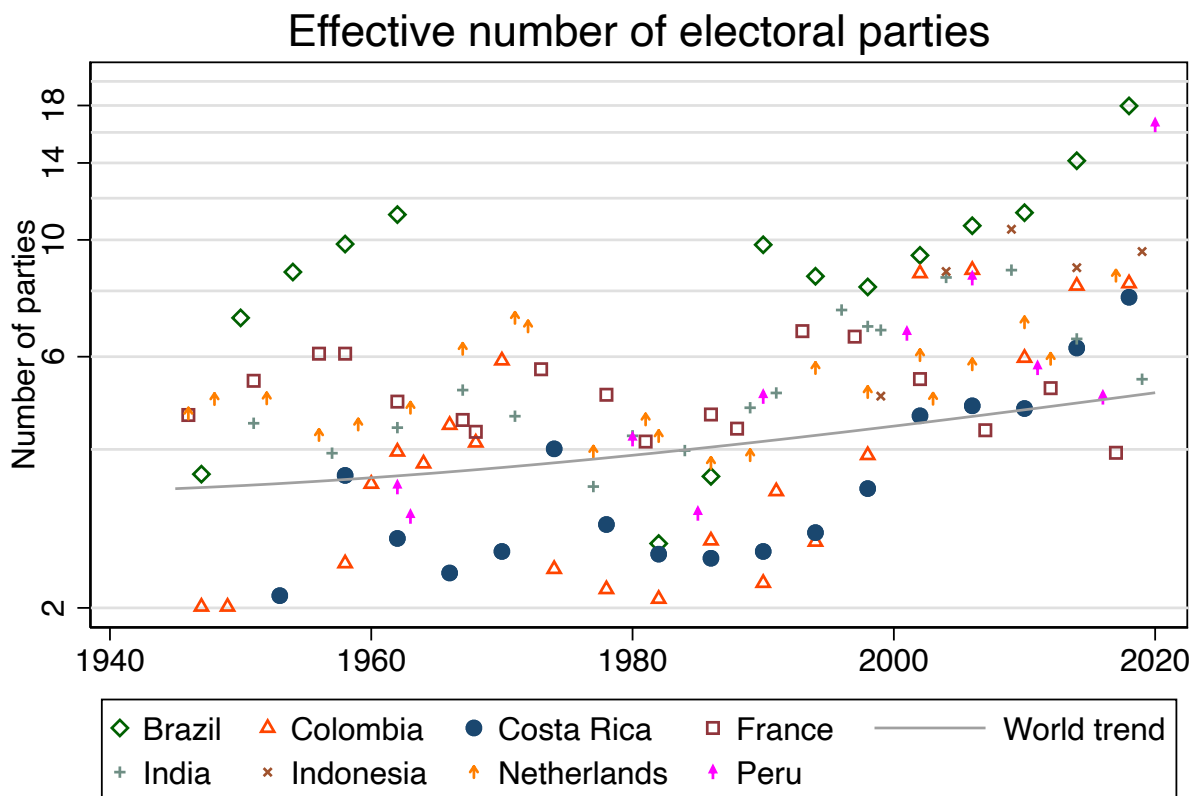
(a) 1980s
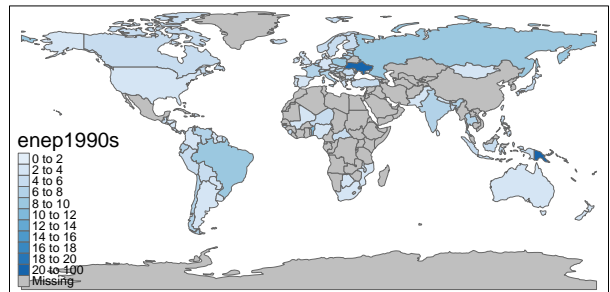
(b) 1990s
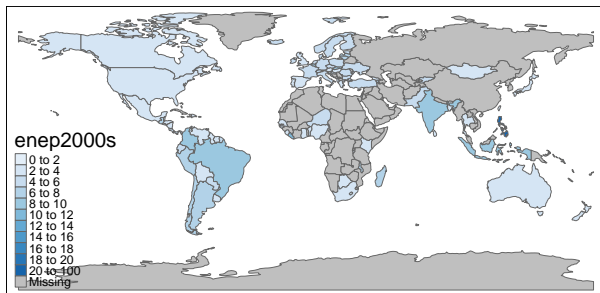
(c) 2000s

(d) 2010s

FIGURE 1: Global increase in the effective number of electoral parties

Source: authors' computation using data from Bormann and Golder (2022).

Effective number of electoral parties

Source: authors' computation using data from Bormann & Golder (2022).

FIGURE 2: Effective number of electoral parties: selected countries

How does higher exposure to globalization (trade, FDI, and immigration) contribute to the evolution of the multi-party electoral system that emerged in Costa Rica around 2000? With this research question, this project aims to test whether two major shocks contribute to the striking change in the political landscape. First, the country has signed several important Free Trade Agreements (FTA) in the last two decades (with the US, China, and the EU). Second, the country has experienced at least two immigration waves from Nicaragua in the same period (1998 and 2018). Our hypothesis states that globalization is liked by some (the *cosmopolitan*) and disliked by others (the *nativist*) Inglehart and Norris (2016). Hence, the empirical design aims to test whether there is indeed a causal link between these globalization shocks and the reconfiguration of the electoral system in Costa Rica.

Costa Rica is the oldest standing democracy in Latin America, since the re-establishment of an elected government in 1949 after the Civil War of 1948.[1] The country has had a bipolar party system since 1953 and a fully two-party system from 1983 through 2000. Starting in 2002, Costa Rican democracy transitioned to a multi-party system. Hence, to understand this stark change, we are interested in studying the determinants of electoral outcomes (turnout, voting shares, campaign contributions, etc.) and how they relate to globalization. It is important to mention that other countries in Latin America, such as Mexico and Colombia, and in other continents, for example, France, have also witnessed the emergence of new political parties that have broken the electoral equilibrium of the past. Hence, the mechanisms at play in this analysis are likely to be present in different regions of the world.

This project aims to make two main contributions. Firstly, expand the extensive literature on globalization and electoral outcomes, by exploring globalization and political realignment in a developing country with a long democratic tradition, instead of focusing on political polarization in developed countries as is usually the case in the literature (Aksoy et al. (2020), Autor et al. (2020), Fetzer (2019), Giordani and Mariani (2022), and Grossman and Helpman (2021)). Secondly, this would be the first project, to the best of our knowledge, to combine at the individual level two sets of administrative data to an-

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[1]According to World Economic Forum, Costa Rica is the oldest democracy in Latin America and the 21st in the world: `https://www.weforum.org/agenda/2019/08/countries-are-the-worlds-oldest-democracies`.

swer questions on the effect of globalization and inequality on electoral outcomes. Our analysis at the local level confirms the correlations observed at the national level in the last two decades between higher exposure to globalization (trade, FDI, tourism, and migration), higher inequality and lower electoral turnout.

Preliminary analysis using individual-level data reveals a positive but declining correlation between income levels and voter turnout. To discern the causal relationship, we employ an instrumental variable (IV) strategy to isolate exogenous changes and illustrate the link between income shifts and voting behaviour. The IV approach which leverages on another aspect of globalization – trade and international prices of agricultural products – strengthens the case for a causal link between income fluctuations and voting patterns. Moreover, the stability of the primary findings on the effects of income on voting in the face of immigration data bolsters the credibility of the analysis. We transition from the individual to the aggregate level by observing that most percentiles have lost income share, except the upper deciles. Simultaneously, most deciles are voting less now than at the beginning of the period (see Figure 15).

The study also uncovers the multifaceted impact of immigration on voter turnout, revealing a general decrease in turnout across various specifications. However, a fascinating buffer effect emerges at the individual level, where the presence of more immigrant colleagues positively influences local workers' voting behavior. This finding underscores the need for nuanced interpretations of immigration's electoral consequences. At the polling station level, areas experiencing positive income gains exhibit more stable voting preferences and a waning support for traditional parties. Paradoxically, exposure to immigration fosters both electoral volatility and increased support for traditional parties, suggesting that these parties may serve as a refuge for dissatisfied voters amid evolving political dynamics.

The remainder of this paper is structured as follows: Section 1 provides an extensive literature review, a brief theoretical framework, and a historical background, in addition to this introduction. Section 2 introduces the data sources employed, while Section 3 outlines the methodology used in the analysis. The subsequent sections are divided into two primary parts, each dedicated to presenting specific results. Section 4, Part One, delves

into the examination of turnout. This section is further divided into two subsections: Section 4.1, focusing on income shocks and their impact on electoral outcomes, and Section 4.2, which explores the relationship between exposure to immigration and electoral outcomes. Similarly, Section 5, Part Two, is dedicated to discussing vote shares and is also divided into two subsections: Section 5.1, concentrating on income shocks, and Section 5.2, which explores the influence of exposure to immigration on vote shares. Finally, in Section 6, the paper concludes its findings and insights.

1.2 Literature review

1.2.1 Effects of economic and social shocks on voting:

This project closely relates to the literature on the effects of economic and social shocks on voting. Panunzi et al. (2020) examine the relationship between economic shocks and populism. The authors argue that economic shocks, such as recessions or financial crises, can increase support for populist political parties and leaders, who often blame these shocks on specific groups, such as immigrants or elites. They propose a model of disappointed expectations (induce a preference for risk), where an individual who suffers an unexpected and large income loss is forced to consume below his reference point (in this sense he is disappointed). This makes him risk-loving and as a result, he leans towards populist candidates who are perceived as riskier. Furthermore, it is the intrinsic preference for risk of low-income and disappointed voters that induces policy divergence and gives rise to the "unwieldy" coalition supporting the populist candidate.

Bonomi et al. (2021) explore the role of identity and beliefs in political conflict. The authors argue that individuals' identities and beliefs, particularly those related to ethnicity, religion, and culture, can shape their political views and the conflicts they engage in. They develop a model of endogenous identities (associated with systematic belief distortions). Hence, to explain why cultural divisions have increased or why the redistributive conflict has not risen despite growing income inequality, they propose that when voters abandon their class identity and redefine themselves in terms of their moral or religious values, the latter become more important to explain their beliefs in several domains. In

both papers, we observe the idea that economic shocks create new cleavages in society, and these could be driven by trade and technological change. Hence, both channels are relevant to this project.

Fetzer (2019) argues that economic factors, such as the government's austerity policies and the impact of the financial crisis, may have played a role in the decision of some voters to support Brexit. Exploiting high-frequency annual election data, he shows that a significant expansion in electoral support for UKIP in places with weak socioeconomic fundamentals precipitated the EU referendum. In addition, using data from government estimates on the expected intensity of specific welfare cuts across districts, he also shows that support for UKIP started to grow in areas with significant exposure to precise benefit cuts after these became effective. Similarly, Dal Bo' et al. (2022) study the political success of Sweden's populist radical right party. The authors argue that the party, which has traditionally been a marginal player in Swedish politics, has been able to tap into public discontent with the political establishment and rising inequality to gain support.

Dal Bo' et al. (2022) provides the first comprehensive account of political selection into a major populist radical-right party: the Sweden Democrats. In a descriptive paper, using simple graphs and (reduced-form) shift-share regressions, the authors document that rising local vote shares for the party coincide with rising local disposable-income gaps between labour-market outsiders and insiders driven by a sequence of national austerity reforms. Their empirical analysis is entirely based on individual-level data (except for vote shares, at the level of the electoral precinct, and municipality). Hence, this is a steppingstone paper for the type of work this project pursues. Overall, these papers provide insight into the factors that can drive support for populism and political conflict. Economic shocks and austerity, identity and beliefs, and discontent with the political establishment are all identified as potential drivers of populism and political conflict.

1.2.2 Distributional effects of trade:

This work is also related to the extensive literature on the distributional effects of trade. Antràs et al. (2017), investigates the relationship between globalization and welfare in the presence of inequality, finding that trade raises aggregate income but also increases

income inequality. Closer to the subject of this project is the work of Alfaro-Urena et al. (2019a), and in particular, Alfaro-Urena et al. (2019b). The authors study the effects of multinational corporations (MNCs) on workers in Costa Rica. Using similar data to the one presented in this project, the authors combine microdata on all formal worker-firm and firm-firm relationships in Costa Rica with an instrumental variable approach that exploits shocks to the size of MNCs in the country. They find that as MNCs bring jobs that pay a premium, they improve outside options by altering both the level and composition of labour demand. MNCs can also enhance the performance of domestic employers through input-output linkages. Shocks to firm performance may then pass through to wages.

1.2.3 Theoretical work in sociology and social psychology:

This project also benefits greatly from past theoretical work in sociology and social psychology regarding social identity, intergroup behaviour, social dominance, and more recently, populism. These works on other social sciences have contributed to a growing literature in economics as it will be discussed in the next subsection. Tajfel (1974) seminal work, discusses the concept of social identity and how it influences intergroup behaviour. The author proposes that individuals need to form and maintain a positive social identity, which is achieved through identifying with certain groups and differentiating those groups from others. This process of group identification and differentiation leads to intergroup behaviour, such as discrimination and prejudice. This theory has been influential in understanding the psychological basis for intergroup conflict.

Sidanius and Pratto (1999) presents a theory of social hierarchy and oppression that is based on the concept of social dominance. The authors argue that social hierarchy and oppression are maintained using intergroup dynamics, such as the exploitation of disadvantaged groups by dominant groups. The theory of social dominance has been influential in understanding the factors that contribute to the maintenance of social hierarchy. More recently, Norris and Inglehart (2019) discusses the rise of populism in the United States and Europe and the factors that have contributed to this trend. The authors argue that this rise can be traced to a combination of economic and cultural factors,

including the decline of traditional industries, the increasing diversity of societies, and the increasing global interconnectedness of the world. Hence, they propose a cultural division between the social values of the so-called "nativists" (conservative) and those of more "cosmopolitan" (progressive) individuals.

1.2.4 Trade (and inequality) affect political attitudes:

As mentioned in the previous subsection, there is a growing literature in economics that focuses on the effects of trade and inequality on political attitudes. Aksoy et al. (2020) examine the relationship between globalization, government popularity, and the skill divide. The authors find that there is a negative relationship between globalization and government popularity, particularly in countries with a high skill divide. Additionally, not only the economic outcomes but also the political attitudes of skilled and unskilled workers respond differently to trade shocks. Grossman and Helpman (2021) argue that identity politics can have a significant influence on trade policy, as individuals may prioritize their identity over economic considerations when making decisions about trade. Furthermore, adverse economic shocks strengthen identification with a particular social group and a material interest in stronger trade protection. Voters' preferences over trade policy reflect not only their own material self-interests but also concerns for members of those groups in society with whom they identify.

Autor et al. (2020) examines whether the exposure of local labour markets to increased foreign competition from China has contributed to rising political polarization in the United States since 2000. The authors find that rising trade exposure is associated with increased political polarization, as individuals may be more likely to support candidates who align with their views on trade. Hence, they find a causal effect of import competition on voting for anti-globalization parties in the US. For Giordani and Mariani (2022), the lack of redistribution and a long-run process of human capital accumulation might explain the mounting hostility to free trade. This (endogenous) process, by eroding the political support for redistribution, may increase the demand for protectionism, if trade openness deepens inequality. They show how the recent resurgence of protectionism in Western democracies may be explained, at least partially, by the inability to redistribute

the gains from trade towards the losers from globalization (those exposed to import competition).

Finally, in a case closer to the one presented in this paper, Van Patten and Méndez (2022) examines the relationship between firm networks and attitudes toward openness. Focusing on a referendum on an FTA in Costa Rica, the authors find that individuals with stronger connections to firms that are more integrated into global networks are more likely to support trade agreements, while those with weaker connections are less likely to support such agreements. They identify this effect by measuring the level of exposure at the firm level of changes in tariffs if the FTA was not approved. This paper uses similar data sources to the ones discussed in this project while focusing on one single election. Concretely, they use a similar version of the employee-employer data and aggregate election results at the precinct level. However, they do not use individual-level turnout data.

1.2.5 Migration and electoral outcomes:

There is also a vast literature on migration and electoral outcomes. In the context of this project, immigration exposure is a common label for individuals who are more exposed to prospective competition from immigrants. Dustmann et al. (2019) investigate the relationship between refugee migration and electoral outcomes. The authors find that the presence of refugees is associated with a decline in electoral support for incumbent parties. Moreover, an exogenous increase in refugee allocation is associated with higher turnout and higher vote shares for anti-immigration parties in all but most urban municipalities in Denmark. Tabellini (2020) studies in a unified framework the political and economic effect of immigration across US cities between 1910 and 1930, a period when the massive inflow of European immigrants was abruptly interrupted by two major shocks, World War I, and the Immigration Acts (1921 and 1924).

Tabellini (2020) jointly investigates the political and economic effects of immigration and studies the causes of anti-immigrant sentiments. The first possible cause is economic in nature and argues that political discontent emerges from the negative effect of immigration on natives' employment and wages. The second hypothesis is that native backlash has cultural roots. This paper finds that opposition to immigration was unlikely to

have economic roots. Instead, it provides evidence that natives' political discontent was increasing in the cultural differences between immigrants and natives. Hence, this conclusion echoes that of Alesina and Ferrara (2005), where diversity can be economically beneficial, but may be politically hard to manage. Recent work on stereotypes by Bordalo et al. (2016) also provides insights on this matter. Beyond the economic dimension, people who are more than average exposed to immigration may also be more persuaded than others of a platform based on stereotypes about immigration threats.

1.2.6 Related literature in political science:

Finally, there is important literature in political science related to the broad topics discussed in this project. Hausermann and Kriesi (2015) explores the relationship between individual-level preferences and party choice in European politics. The authors argue that individual-level preferences are shaped by both economic and cultural factors and that these preferences are often organized into two broad categories: left-right positions on economic issues, and liberal-conservative positions on cultural issues. For the authors, there is a shift from an economic to a cultural basis of stratification, worldwide. The political actors who mobilize globalization losers mainly do so in identity-based and not in economic terms.

Rovny et al. (2021) discusses the concept of "cleavage" in political science, which refers to the divide between different groups in society along lines such as class, religion, or ethnicity. The authors argue that cleavages play a significant role in shaping political behaviour and party competition, and they explore the various ways in which cleavages can emerge and change over time. They find that conventional parties on the left and right have become much less socially structured. In addition, parties on the socio-cultural transnational divide—GAL (green, alternative, libertarian) and TAN (traditionalist, authoritarian, nationalist) — have sharply divergent social bases.

Hobolt and De Vries (2015) examines the role of "issue entrepreneurship" in multiparty systems. Issue entrepreneurship refers to the process by which parties or politicians seek to create or exploit new issues to gain electoral advantage. The authors argue that issue entrepreneurship is more common in multiparty systems, where there is more competi-

tion among parties and a greater need to differentiate themselves from one another. Two findings are important in the context of this project: first, political parties are more likely to become issue entrepreneurs when they are losers on the dominant dimension of contestation; and second, parties will choose which issue to promote based on their internal cohesion and proximity to the mean voter on that same issue.

De Vries (2018) discusses the concept of the "cosmopolitan-parochial divide" in political behaviour and party competition. The cosmopolitan-parochial divide refers to the distinction between parties and voters who are more open and cosmopolitan in their attitudes, and those who are more parochial and inward-looking. The author argues that this divide has become increasingly important in recent years and that it has significant implications for party competition and electoral behaviour. Moreover, the cosmopolitan–parochial divide has become largely independent of the economic left–right dimension and influences people's voting decisions independently of their left–right views.

1.3 Theoretical/conceptual framework: outsider status

Here we briefly present the theoretical framework that guides the analysis of this project. *Outsider status* is the main guiding concept: a common label for individuals with individual traits that make them marginalized in some social or economic dimension. Dal Bo' et al. (2022) presents this idea based on theoretical work in sociology and social psychology on social identity Tajfel (1974) and social dominance Sidanius and Pratto (1999), as discussed in the previous section. In general, group cleavages and conflicts can arise if a set of marginalized individuals in a certain dimension see themselves as members of an in-group and more established individuals as members of an outgroup. This is appealing for the purpose of this project because the general idea of intergroup tensions accommodates hypotheses based on economic insecurity as well as on cultural backlash, as in Norris and Inglehart (2019).

This project studies the relationship between changes in inequality (at an aggregate level) or changes in position in income distribution (at an individual level) and changes in electoral outcomes. Hence, the concept of outsider status provides a useful category

to identify those individuals whose position in the income distribution has deteriorated, consequently moving them from the outgroup to the ingroup or vice versa. At an aggregate level, it would mean changes in the composition of outsiders and insiders within a given locality or firm. Hence, the first step is to look at changes in relative income. However, the idea presented by Dal Bo' et al. (2022) also allows us to think about the mechanisms that explain these changes in relative income. We are particularly interested in the link between the labour market and immigration exposure.

Firstly, we conceptualize the idea of *labour-market outsiders*. Following Dal Bo' et al. (2022), we consider the possession of a steady job as well as the risk of losing that job. Hence, we propose the following categories: *outsiders*, loosely attached (e.g., informal workers); *insiders*, tightly attached (e.g., MNCs workers); and *vulnerable insiders*, at different risks of losing their job due to technological change, outsourcing, or general business downturns (e.g., other formal workers). Secondly, we think about *immigration exposure*: a common label for individuals who are more exposed to prospective competition from immigrants in different domains. We introduce the following dimensions, *exposure by industry* and *exposure by occupation*, referring to industries and occupations where the share of immigrants has increased; as well as *exposure by neighbourhood*, localities where the share of immigrants has increased.

1.4 Historical background

The modern political history of Costa Rica starts in the aftermath of the 1948 Civil War, triggered by the annulation of the election results of February 1948.[2] A group of rebels led by José Figueres Ferrer formed the National Liberation Army and successfully toppled the government of Teodoro Picado (1944-1948) (Molina Jiménez, 2001). Among the social and political achievements of this period were the establishment of the Supreme Electoral Court of Costa Rica (Tribunal Supremo de Elecciones, TSE), the abolishment of the army, the end of racial segregation, and women's suffrage. The outcomes of the war also included exile for the losers and the ban of communist parties to take part in elec-

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[2]For a longer discussion of the historical background and political cleavages in Costa Rica, see Barrera et al. (2021)

tions (revoked in 1974). This conflict was the last violent political episode in the history of Costa Rica, and it established a defining moment in the political, social, economic, and cultural development of the country.

The two sides of the Civil War were at the origin of the dichotomous political environment that dominated Costa Rican politics for the next five decades. The winning side, led by Figueres Ferrer, established the National Liberation Party (Partido Liberación Nacional, PLN), of centre-left social democratic orientation, which would become the dominant political party. The losing side, led by Rafael Ángel Calderón Guardia, reconstituted into a number of political parties and coalitions of centre-right Christian democratic orientation that won the presidential elections three times before establishing the Social Christian Unity Party (Partido Unidad Social Cristiana, PUSC) in 1983. The successful transfer of control to the centre-right in 1958 marked the beginning of a tradition of alternation of power that crystallized in the following decades (Solís Avendaño, 2006).

While we can only strictly define a two-party system from 1983 onwards, the alliances on the right constituted after the Civil War and the weakness of socialist parties contributed to the predominance of a bipolar party system since 1948 (Sánchez Campos, 2003). Interestingly, no political party has won the elections more than twice in a row, not even in the most dominant years of the PLN during the 1970s and 1980s. Hence, some have interpreted the political history of Costa Rica as an affair of a dominant party versus everyone else (Alfaro Redondo, 2019). However, the institutional model already started to deteriorate in the late 1970s, with the combination of economic factors (i.e., high levels of public debt, inflation, capital flight, etc.) and political violence in Central America. After the political pact between Calderón Fournier from the PUSC and his successor from PLN Figueres Olsen in 1995, which intended to continue the process of adjustment and reform of the State that started in the 1980s, social discontent mounted, breaking the basis that had supported the PLN in the construction of the Welfare State (1950-1978) (Alfaro Redondo and Alpízar Rodríguez, 2020).

The erosion process of the 1990s thus revealed growing dissatisfaction with the political system as a whole, which translated first into an increase in electoral abstention in 1998, and then with the emergence of the Citizens' Action Party (Partido Acción Ciu-

dadana, PAC) in 2002 in a process initially identified by some as partisan dealignment (Sánchez Campos, 2003). As traditional parties converged towards the centre in the 1980s and 1990s, the once centre-left PLN suffered the most (Raventós-Vorst et al., 2005). In this context, PAC took the social democratic baton and attracted many intellectuals and prominent figures from the PLN and other parties. After two PLN governments, PAC won the election for the first time in history, as the PLN collapsed in the second round in 2014 (Alfaro Redondo et al., 2015). Finally, the PLN finished third for the first time in 2018, when the PAC defeated the evangelical Christian National Restoration Party (Partido Restauración Nacional, PRN), founded in 2005.

While support for non-established parties increased, and a candidate from a previously fringe party made it to the second-round vote in 2018, established parties have survived, and the party system has not collapsed, prompting some authors to favour the concept of realignment instead (Perelló and Navia, 2021). Thus, after the appearance of the PAC in 2002, the last two decades have also seen the emergence of other parties that have played an important role in at least one election. Right-wing Libertarian Movement Party (Movimiento Libertario, ML), finished third in 2006 and 2010, with 8.5 and 21 per cent of the vote, respectively. Left-wing Broad Front Party (Frente Amplio, FA), finished third in 2014 with 17 per cent of the vote. Finally, the aforementioned right-wing evangelical Christian PRN finished first in the first round in 2018 with 25 per cent of the vote, only to lose to PAC in the second round. This paper contributes to explaining the fragmentation of the Costa Rican electorate in the last two decades (see Figures 3 and B.3 for a summary of election results).

2   Data sources

This project exploits the combination of administrative data sources, surveys, and censuses. The most innovative of these datasets are social security records and the possibility of matching them with electoral registries. The country has a unique identification number for every citizen and legal resident. Hence, it is possible to match these two data sets. The electoral registry tells us if one person voted in one election or not, and the social

Election results in Costa Rica, 1953-2022

Source: authors' computations using official election results.
Note: the figure shows the share of votes received by selected groups of Costa Rican political parties in presidential elections between 1953 and 2022. Provisional results for 2022.
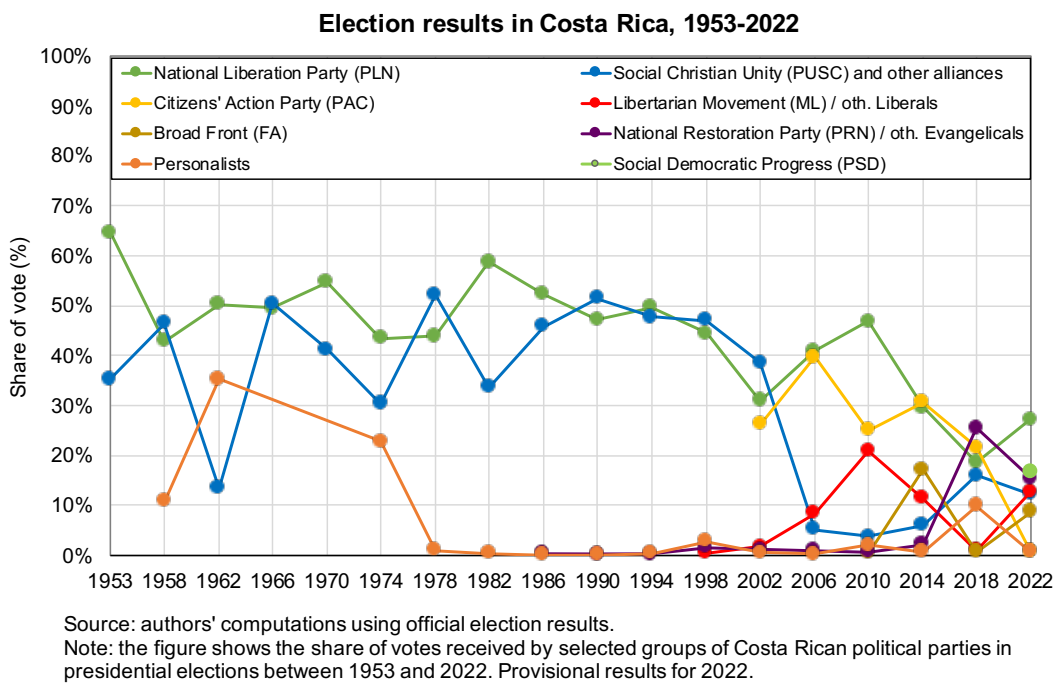
FIGURE 3: Electoral results: from two-party to multi-party system

security records offer a myriad of socio-economic variables. We have not yet been able to obtain the individual-level match, but it remains our goal. Therefore, we concentrate on aggregate results at the local level for the moment. We distinguish salient trends and plan to use individual-level data to further explore mechanisms. In doing so, this would be the first project, to the best of our knowledge, to combine two sets of administrative data to study electoral outcomes.

2.1 Administrative electoral

2.1.1 Electoral registries (micro): 1994 – 2022.

Electoral registries are the lists of eligible voters in each election. Since registration is automatic in Costa Rica, most adults over the age of 18 are systematically included in the registry. There are a few possible exceptions, for example, those who have not renewed their national identity card (*cédula de identidad*) in over 10 years. While there are probably several individuals that fall into this category, it is generally considered that this is a small number, because the national identity card is necessary for most bureaucratic and admirative procedures in the country and its renewal is free of charge. Hence, it is unlikely that someone living in the country would not be included in the electoral registry. It is a more plausible possibility for those who have migrated abroad but are not part of the adult population resident in the country. Thus, electoral registries are reliable censuses of the adult population in Costa Rica.

There are two main features of the electoral registries that are of paramount importance for this project. Firstly, the registries assign a polling station to everyone. In Costa Rica, polling stations are rooms within polling centres. For example, if the polling centre is a school, a polling station would be a classroom within the school. Thus, polling stations are the smallest level at which we can aggregate electoral results such as vote shares. In addition, since everyone is assigned to a polling station close to their residence, these centres are good proxies for individual addresses. Secondly, the electoral registries considered in this project, include individual-level turnout for each election. In other words, they record whether an individual showed up at the polling station on the day of the

election. This unique variable would allow us to study the individual-level determinants of turnout.

2.2 Administrative labor market

2.2.1 Social security (micro): 2001 – 2021.

This is probably the most fascinating data source in this project. This data is not available to the public, but it is possible to request it from the Social Security Authority of Costa Rica. With the support of *WID.World*, we purchased every month of data for every year from 2001 through 2021. This data has income information for all workers of the formal sector, as well as, important socio-economic variables: income, occupation, working hours, public/private sector, industry, geographical localization of the firm, wage/independent worker, sex, age, national/foreign and region. This information is certainly at the centre of the study presented in this paper. Its richness also motivates follow-up research projects, such as the application presented in the Fifth Section of this document: local-level inequality and electoral outcomes.

2.3 Surveys and censuses

2.3.1 National Household surveys (ENAHO): 2000 – 2022.

Costa Rica has had consistent annual Household Surveys since 1976. However, for the scope of this project, those from 1990 and especially from 2000 are the most relevant ones. The databases of these surveys are available to the public. It is important to mention that in the period considered in this paper (2000-2020), the baseline household survey changed in Costa Rica. Hence, here we use the Multi-Purpose Household Survey (*Encuesta de Hogares de Propósitos Múltiples*, EHPM) from 2000 through 2009, and the National Household Survey (*Encuesta Nacional de Hogares*, ENAHO) from 2010-2020. Although both surveys have similar objectives, they have different forms and specificities. Therefore, cleaning them in order to obtain equivalent results throughout the sample, requires an additional effort.

Descriptive Statistics: formal workers in Costa Rica, 2001, 2011 and 2021.

		2001	2011	2021
% age	**23 or -**	13.6	11.3	6.6
	24 to 34	29.9	32.6	29.5
	35 to 44	24.5	22.6	25.9
	45 or +	32.0	33.5	37.9
% educational level	**No university degree**	96.9	87.3	80.2
	University degree	3.1	12.7	19.8
% skill level	**unknown**	76.8	34.6	25.9
	unskilled	5.9	17.5	19.2
	semi-skilled	7.0	22.1	24.7
	skilled	10.3	25.8	30.1
Sex	**% Female**	31.4	36.2	40.1
Employment	**Mean monthly full time wage (100 = 2021)**	149,742	429,318	677,803
	Total number of formal workers	900,154	1,422,187	1,777,287
	% contracts public sector	26.9	23.6	21.1
	% foreigners	6.7	9.1	13.7
Voting	**Total number of voters a/**	2,279,851	2,822,491	3,541,911
	% voters in Social Security a/	38.3	44.8	48.3
	% formal workers in electoral registry a/	97.5	96.8	94.4
	Number of polling stations a/	6,681	6,617	6,847
	% turnout a/	68.8	69.1	56.8

FIGURE 4: Descriptive Statistics: Costa Rica, 2001, 2011 and 2021

a/ Presidential election years: 2002, 2010 and 2022.
Source: authors' computation using data from the Social Security Administration (CCSS) and the Electoral Authority (TSE).

3 Methodology

3.1 Aggregate analysis

Most of the aggregate results presented in the next section have the following form. These are descriptive regressions where Y_{it} represent aggregate electoral outcomes (*turnout, volatility, and vote-shares*) in district i during election t; $INEQ_{it}$ symbolizes different measures of income inequality (*Gini coefficient, Top 10, and Bottom 50*); γ_i refers to locality (district) fixed effects, and δ_t represents election (year) fixed effects. Additionally, X_{it} is a vector of district-level controls, such as the social development index (SDI), and log-average-income. Finally, u_{it} are the residuals of the model.

$$Y_{it} = \gamma_i + \delta_t + \beta INEQ_{it} + \theta X_{it} + u_{it}$$

3.2 Individual level difference-in-difference: turnout

We can quantify changes in turnout across groups by estimating a difference-in-differences specification:

$$turnout_{i,t} = \alpha O_i + E_t + \sum \beta_t \left(O_i \times E_t \right) + Z_{i,t} \gamma + E_t \times Z_{i,t} \delta + \epsilon_{i,t}$$

Here, $turnout_{i,t}$ means whether individual i voted/did-not-vote in election period t. O_i indicates whether individual i is an outsider, and E_t indicates election period t. In this specification, $Z_{i,t}$ are control variables (*e.g., age, gender, education*) and they also interact with the election-period dummies. It is important to recall that the difference-in-differences specification captures growth-rate differences. We could also examine level differences at the individual level instead, with and without controls. Finally, the idea of this specification would be to exploit the diversity of outsider status described in Section 1.3, in particular, the *labour-market* and *immigration exposure* dimensions.
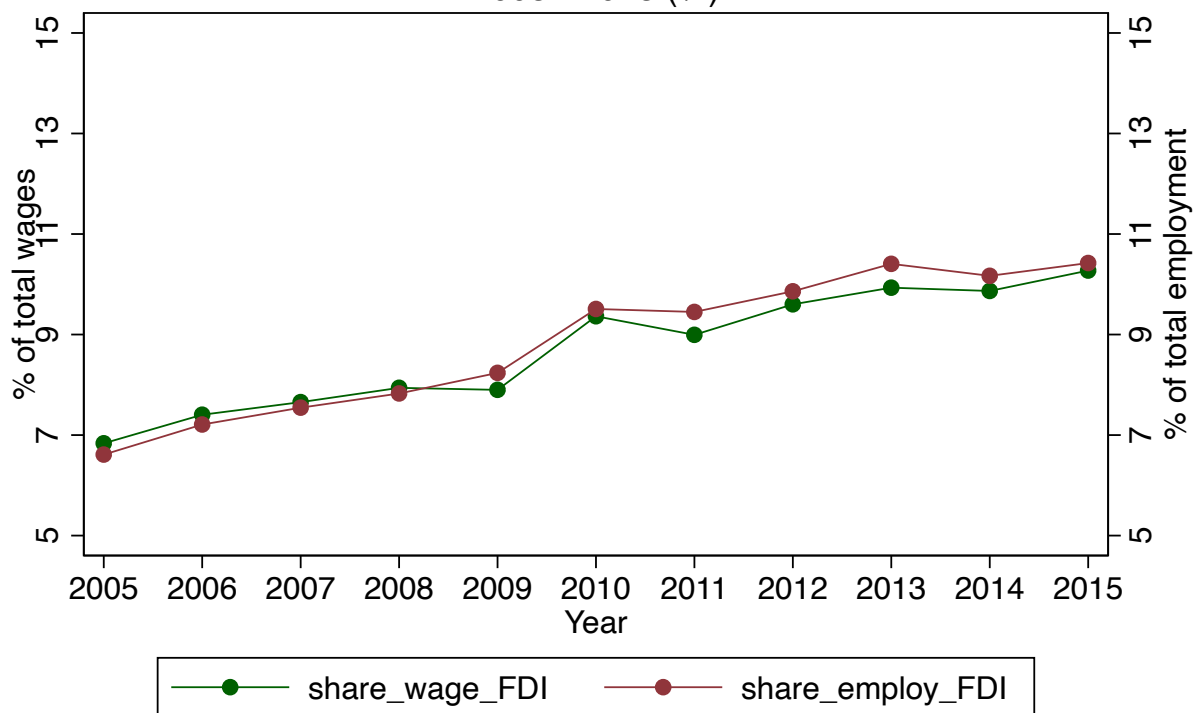
3.3 Mechanisms

3.3.1 Trade and FDI

We also aim to study the political and economic effects of increased exposure to trade and FDI in Costa Rica in the last two decades. The major events of this period were the signature of FTAs with the main economic partners of the country: the US (CAFTA, 2006), China (2011), and the EU (2012). While we have yet to show a clear shock in the trade data, we document that FDI is indeed very important in the Costa Rican labour market (see Figure 5). Nonetheless, exposure to trade has been an important topic in the political arena of the country. In 2007, before the confirmation of CAFTA by the Costa Rican Congress, a referendum was organized to give the people the chance to vote yes or no to the FTA. It was ultimately approved by 51.56 % of voters. Nonetheless, this shows how salient was the topic in the political debate at the time.

FDI: We explore the creation of FDI-jobs as the first mechanism that explains changes in the income distribution and therefore in the insider-outsider status of individuals. Based on the findings by Alfaro-Urena et al. (2019b), we know that Costa Rica has experienced a direct MNC wage premium of 9 per cent, which is consistent with MNCs paying above-market wages rather than compensating workers for *disamenities*. This premium is larger for workers with a college education (12 per cent) than for those without one (8 per cent). In addition, the growth rate of annual earnings of a worker experiencing a one standard deviation increase in either the labour market or the firm-level exposure to MNCs is one percentage point higher than that of an identical worker with no change in either MNC exposure. Hence, according to the literature, MNCs explain positive changes in income for at least part of the population. In addition, MNCs help insure people against local income shocks, and MNCs' wages do not depend on local politics.

$$turnout_{it} = \beta_w \Delta w_{it} + \beta_{LME} \Delta LME_{s(i),t} + \beta_{FLE} \Delta FLE_{j(i),t} + \theta X'_{ij,t-1}$$

$$+ \alpha_{j(i)} + \gamma_{ind(s(i)) \times t} + \mu_{reg(s(i)) \times t} + \rho_{ind(s(i)) \times reg(s(i))} + u_{it}$$

FIGURE 5: Share of workers in MNCs

We are interested in exogenous changes to MNC exposure as a possible mechanism that affects income distribution. Of course, these exogenous changes are difficult to find naturally. Hence, we propose an instrumental variable strategy à la Alfaro-Urena et al. (2019b), where changes in exposure to MNCs explain changes in the income distribution, but do not directly explain changes in voting. Here, we present a specification that combines changes in income, as well as labour market and firm-level exposure to MNCs (see, the equation above). Where the outcome $turnout_{it}$ represents vote/no-vote of worker i in election t; $\Delta LME_{s(i),t}$ / $\Delta FLE_{j(i),t}$ are labor market and firm-level exposure; $X'_{ij,t-1}$ is a vector of worker and firm characteristics; $\alpha_{j(i)}$ are firm $j(i)$ fixed effects; $\gamma_{ind(s(i))\times t}$ are controls for potential shocks to industry x region market of i; $\mu_{reg(s(i))\times t}$ are controls potential shocks to region of the same market; And $\rho_{ind(s(i))\times res(s(i))}$ are controls for differences in levels between markets.

$$\Delta \mathcal{M}_{st} \equiv \frac{M^{CR}_{s,t} - M^{CR}_{s,t-1}}{M^{CR}_{s,t-1}} \times 100$$

We define as $\Delta \mathcal{M}_{st}$ as the percentage increase between years $(t-1)$ and t in the number of MNC workers in labour market s in CR, where $M^{CR}_{s,t}$ is the number of MNC workers in market s in year t. Now, $LME_{s(i),t}$ is a sum across all labour markets s' in CR, in which market s' is weighted by its "closeness" to the market s of the worker. Moreover, $\pi_{s(i)s',t_0}$ the "closeness" measure – is the number of workers who start year t in market $s(i)$ and end t in s', divided by the total number of workers who start t in market $s(i)$.

$$LME_{s(i),t} \equiv \sum_{s'} \pi_{s(i)s',t_0} \psi_{s'} \nu_{s',t-1} \Delta \mathcal{M}_{st}$$

Finally, we propose to use the worldwide size of MNCs with subsidiaries in Costa Rica, as an IV to account for the creation of FDI jobs in the country. This idea comes from Alfaro-Urena et al. (2019b) who use Orbis and Compustat to account for the changes in the workforce of MNCs present in CR. Here, two variables are key to the construction of IVs: the main industry code of the MNC and its worldwide number of workers. This allows us to create instruments for (labour-market exposure) $\Delta LME_{s(i),t}$ and (firm-level exposure) $\Delta FLE_{j(i),t}$ using ΔO_{st} as the IV analogue of $\Delta \mathcal{M}_{st}$. The formula for ΔO_{st} is:

$$\Delta O_{st} \equiv \frac{M^{Out}_{s,t} - M^{Out}_{s,t-1}}{M^{Out}_{s,t-1}} \times 100$$

where $M^{Out}_{s,t}$ is the year-t number of workers *outside* of CR across all MNCs whose subsidiaries operate in the two-digit *industry × region* market s in Costa Rica. Importantly, the exclusion restriction for the IV of $\Delta \text{LME}_{s(i),t}$ is that changes between $(t-1)$ and t in the employment outside of CR of MNCs whose subsidiary is in labour market s in CR are not correlated with contemporaneous shocks to the productivity of workers in s in CR.

Trade: we identify the demand-driven component of American/European/Chinese exports by instrumenting for growth in exports from Costa Rica using the contemporaneous composition and growth of American/European/Chinese exports in six other Central American countries (using the *UN Comtrade Database*). Hence, we isolate the component of growth in Costa Rican trade with the US/EU/China that is driven by export-supply growth in the US/EU/China, rather than Costa Rican product-demand shocks, following the identification strategy in Autor et al. (2014), Acemoglu et al. (2016) and Autor et al. (2020). We exploit the fact that during our sample period, much of the growth in trade stems from the signature of FTAs, which is a demand shock from the perspective of Costa Rican producers.

In the analysis of local and presidential elections, as well as campaign donors, we estimate equations of the form:

$$\Delta Y_{cdj\tau} = \gamma + \beta_1 \Delta TP^{cu}_{j\tau} + X'_{cdjt}\beta_2 + e_{cdj\tau}$$

Where dependent variable $\Delta Y_{cdj\tau}$ is the change in an outcome for the period τ (2002 to 2022 in our baseline specifications) that corresponds to county/district cell cd in CZ j. To our trade-exposure measure $\Delta TP^{cu}_{j\tau}$, we pair an expanded vector of regional controls X'_{cdjt}, which includes Census-division dummies and initial Commuting Zone (CZ) economic and political conditions.

3.3.2 Migration

We aim to study the political and economic effects of Nicaraguan immigration in Costa Rica between 1998 and 2020, a period with two major shocks: (1) Mitch hurricane hit important parts of Central America in 1998, and (2) the Political Riots of 2018, which began in April 2018 when demonstrators in several cities of Nicaragua began protests against social security reforms that increased taxes and decreased benefits. In line with these events, we find evidence in the literature that xenophobic sentiment against Nicaraguans peaked in 2005-2006 (Vargas Selva et al., 2013). In 2005, congress approved a new migration law that viewed immigration as a national security issue, promoted more control of immigration flows, and a crackdown on illegal immigration, while welcoming foreign investors and retirees. This happened during a PUSC government (centre-right) and many sectors criticized it as a violation of human rights. Eventually, a more inclusive migration reform was passed in 2009.

The immigration wave of 2018 saw an increase in asylum seekers and persons with higher educational backgrounds. However, this is not necessarily reflected in the estimates from household surveys, since household surveys do not account for refugees. Instead, it is likely that those in the survey are immigrants who have settled. So, it is necessary to contrast these estimates with those from population censuses. Figure 6 shows that household surveys indeed underestimate the number of foreign-born and Nicaraguans in 2000, soon after the first shock, but not in 2011. Historical evidence suggests that migration shocks come mainly from push factors in Nicaragua, as opposed to pulling factors in Costa Rica. Of course, there are reasons to believe that the choice of where migrants settle is not exogenous. Therefore, the next sections present a full discussion of this issue and possible alternatives.

To study the political and economic effects of immigration, we focus on the period covered by social security data (2001-2020) and use the 1984 census to build our instrument. Hence, following Tabellini (2020), we propose the following specification:

$$y_{ct} = \gamma_c + \delta_t + \beta \, Imm_{ct} + u_{ct}$$

Foreigners and Nicaraguans as share of total population
2000 - 2020
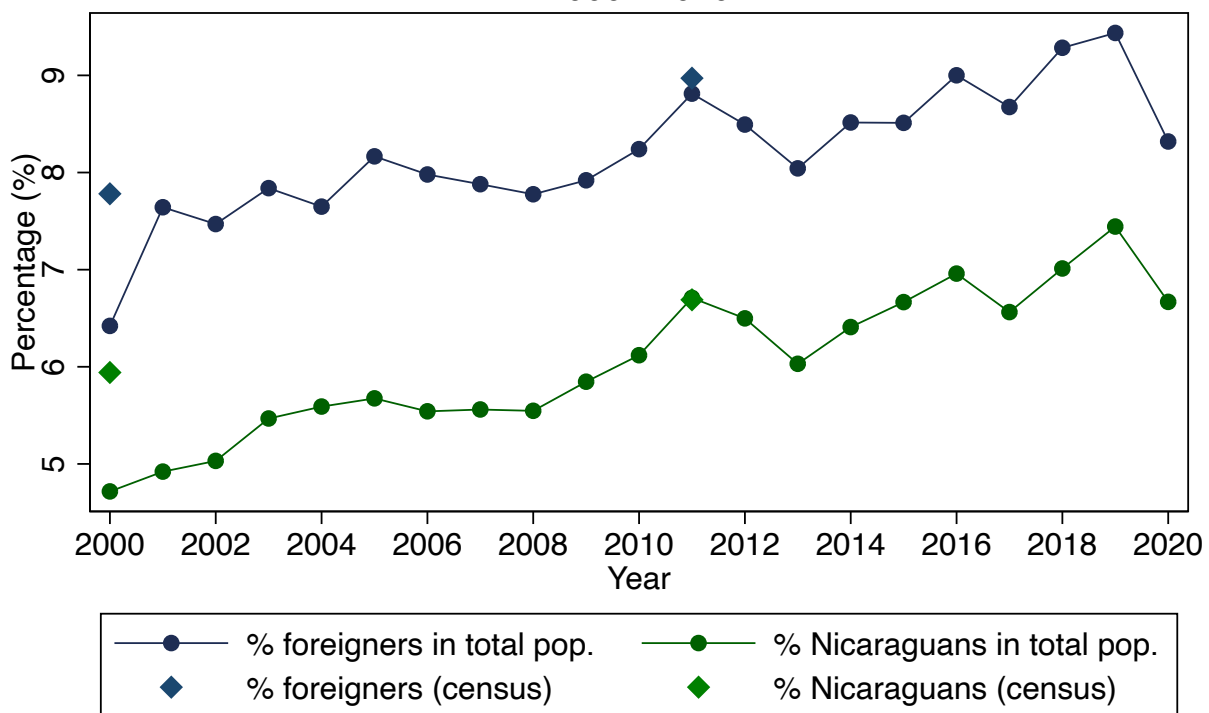
Source: authors' computation using data from national household surveys (ENAHO & EHPM) and population censuses of Costa Rica.

FIGURE 6: Share of foreigners in censuses and household surveys

Where, y_{ct} is the outcome for county c in election t, and Imm_{ct} is the fraction of immigrant workers over the total number of workers in the county. γ_c and δ_t are county and year fixed effects, implying that β is estimated from changes in the fraction of immigrants within the same county over time, compared to other counties each year.

We propose a "leave-out" version of the shift-share instrument à la Card (2001). The instrument predicts the number of immigrants received by Costa Rican counties over time by interacting with 1984 settlements of different nationality groups with subsequent migration flows from each sending country, excluding individuals that eventually settled in each county.

$$Z_{ct} = \frac{1}{P_{ct}} \sum_j \alpha_{jc} O_{jt}^{-M}$$

Where P_{ct} is the predicted county population; α_{jc} is the share of individuals of nationality group j living in county c in 1984; and O_{jt}^{-M} is the number of immigrants from country j that entered Costa Rica between t and $t-1$, net of those that eventually settled in county c.

4 Part One: Turnout

4.1 Section A: income shocks and electoral outcomes

4.1.1 Individual-level results

In this section, we present preliminary individual-level results. At the time of writing this draft, we have recently received part of the individual-level data on voting. Hence, we focus on describing this data and showing simple, but strong correlations between changes in income and turnout. We aim to subsequently identify these strong correlations following the methodology described in the previous sections. These identification exercises should be ready for the coming versions of this draft. Therefore, as stated before, our individual data consist of the exhaustive electoral registries of Costa Rica for six presidential elections (2002, 2006, 2010, 2014, 2018 and 2022), merged with the universe of

social security records for the same years. In other words, we combine all adults eligible to vote with the universe of formal workers in the country (See Tables B.11 and B.12 for descriptive statistics). While we cannot capture informality in our social security records, these two datasets allow us to study in depth the political behaviour of formal workers and how it has changed with changing socio-economic and demographic characteristics.

While the following part on aggregate results relies on the idea that inequality has increased in the country, whether we measure it at the national level (Figure 30a) or as the average of local level inequality measures (Figure 30b), this section aims to study changes in income at the individual level. These individual changes when aggregated explain, at least partially, variations in the income distribution. Hence, this section looks at the effect of levels of income on voting, as well as absolute and relative changes in income distribution. Figure 7 motivates this enquiry by showing that income inequality has increased among private sector workers. The result is less clear for public sector workers, but this finding is already a good indication of where to look at. Consequently, we are interested in studying new jobs in MNCs as one possible mechanism that explains changes in income distribution. Nonetheless, in this section and the current version of the draft, we focus on documenting the correlations between changes in income and electoral results. We will implement the proposed identification strategies in the following versions.

As in other sections of this paper, our preliminary results initially focus on wage-earners. This group is not only the most numerous among formal workers but also social security records are better at registering their income relative to other groups. Our first set of results shows that income is positively related to turnout, Figure 8. We build upon this apparently simple but salient result throughout this section. Furthermore, Figure 9 shows a strong correlation between changes in the wage of individuals and changes in their propensity to vote. In panel 9a, we observe this at the individual level, where the outcome variable is a binary (0/1) value that indicates whether an individual went to vote or did not go to vote on the day of the election. As implied before, these values come from administrative data and cover the universe of voters in a given election. In Columns 4 and 6, when we include election year and individual fixed effects and controls, we observe that the correlation is positive, which means that positive changes in income imply an

Income inequality: public & private (within-sector)
2002 - 2022
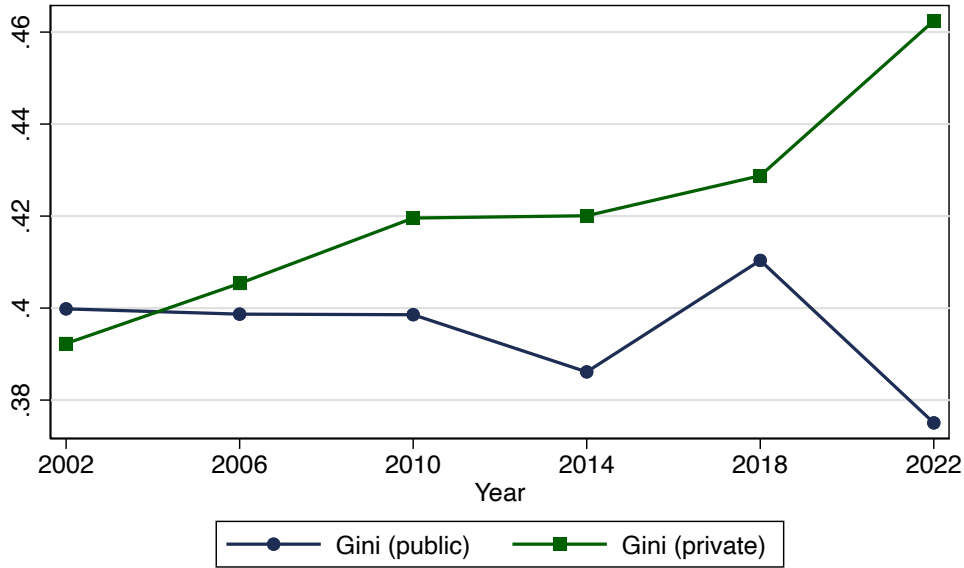
Source: authors' computation using data from the Social Security Administration (CCSS) and the Electoral Authority (TSE).

(a) Within public-private sector.

Income inequality: public & private (within-firm)
2002 - 2022
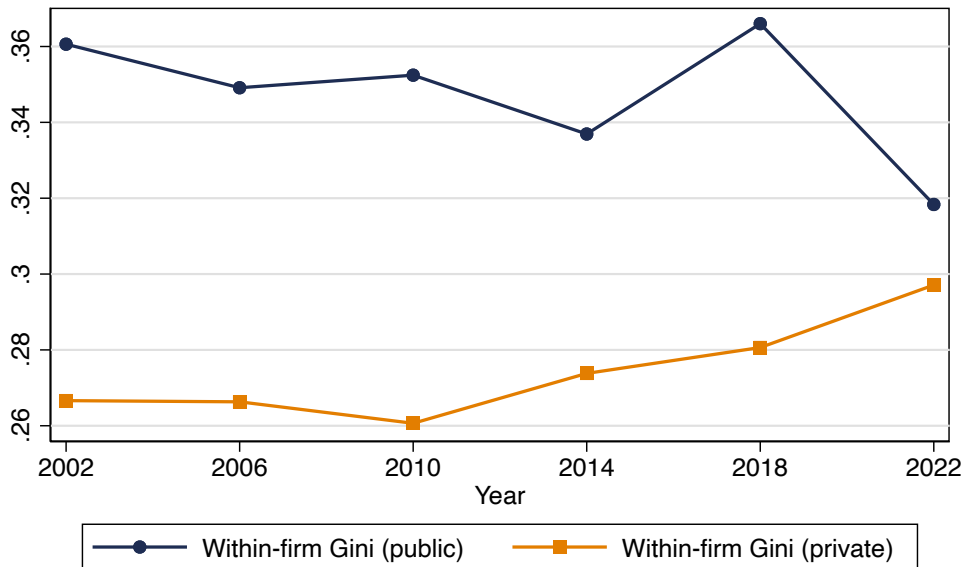
Source: authors' computation using data from the Social Security Administration (CCSS) and the Electoral Authority (TSE).

(b) Within public-private firms.

FIGURE 7: Public and private sector changes in inequality.

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increasing propensity to vote and vice versa. This result is reinforced by Panel 9b, which shows similar results when we aggregate individuals at the polling station level.

Another salient result in this section points towards a general change of behaviour in voters of all income levels. Figure 10 shows the average turnout by income percentiles, also known as the income-turnout gradient, and conveys two main messages: first, turnout increases with income in a non-monotonic way; second, the gradient is pivoting over time, which means that lower deciles vote increasingly less, and upper deciles vote increasingly more. These results are confirmed by the margins plots in Figure 11, which explores predicted turnout at different income levels. We observe that whether we consider income percentiles or log income in national currency, most individuals are increasingly less likely to vote in each new election. In Figure 11a, we observe that while the bottom half of the income distribution votes less in each election, the upper part of the distribution seems to be voting more. In Figure 11b, we notice that most income levels are voting less, except for the extreme values on the right. This result contributes to identifying which income groups are voting less. Although the upper percentiles might be voting more, most of the population is voting less, which explains the general trend of decreasing turnout at the aggregate level. This finding also speaks to the literature that finds that voters are increasingly skewed towards the upper part of the income distribution Bonica et al. (2013).

4.1.2 IV: international prices of agricultural products (preliminary)

The agricultural sector plays a crucial role in Costa Rica's economy. Hence, we identify the effects of wage changes within this sector as a first approach to causality in our study of income and turnout. To investigate this phenomenon, we employ international prices of agricultural products as an exogenous instrument. Since economic conditions in the country have no effect on international prices, we consider that his instrument does not violate the exclusion restriction.

The percentage of agricultural workers experienced notable fluctuations, peaking at 12.5 per cent in 2006 and declining to 8.4 per cent in 2018. Subsequently, a further decline was observed, reaching as low as 6 per cent in 2022. To identify agricultural workers in

Effects of income on turnout in presidential elections, 2002-2018 (individual level)

	(1) OLS	(2) FE	(3) FE controls	(4) FE controls	(5) FE controls
logwage	0.068***	0.019***	0.061***	0.003***	0.038***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
L.turnout			0.225***		0.232***
			(0.001)		(0.001)
Observations	4,452,700	4,452,700	3,340,227	3,030,195	2,452,222
r2_o	0.022	0.022	0.171	0.016	0.175
Individual level controls				YES	YES
Turnout presidential (t-1)			YES		YES
Year FE		YES	YES	YES	YES
Individual FE		YES		YES	

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Controls: public sector, age, skilled and unskilled.

FIGURE 8: Income and turnout at the individual level.

Effects of changes in income on turnout in presidential elections, 2002-2018 (individual level)

	(1) OLS	(2) FE	(3) FE controls	(4) FE controls	(5) FE controls
D.logwage	0.017***	-0.004***	0.008***	0.001**	0.004***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
L.turnout			0.251***		0.246***
			(0.001)		(0.001)
Observations	2,498,467	2,498,467	2,498,467	1,799,021	1,799,021
r2_o	0.001	0.001	0.171	0.009	0.179
Individual level controls				YES	YES
Turnout presidential (t-1)			YES		YES
Year FE		YES	YES	YES	YES
Individual FE		YES		YES	

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Controls: public sector, age, skilled and unskilled.

(a) Individual level.

Effects of changes in income on turnout in presidential elections, 2002-2018 (polling station level)

	(1) OLS	(2) FE	(3) FE controls	(4) FE controls	(5) FE controls
D.logaveragewage	0.159***	0.154***	0.174***	0.225***	0.243***
	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
L.share_turnout			0.489***		0.452***
			(0.026)		(0.023)
Observations	31,919	31,919	31,919	31,919	31,919
r2_o	0.061	0.061	0.105	0.196	0.246
log average wage				YES	YES
Turnout presidential (t-1)			YES		YES
Year FE		YES	YES	YES	YES
Polling station FE		YES	YES	YES	YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01

(b) Polling station level.

FIGURE 9: Effects of changes in income on turnout in presidential elections.

our data, we harness the industry classification system of more than 300 UN ISIC codes and associate each worker with a specific subsector of agriculture based on the corresponding product.

Nine subsectors emerge as major contributors, collectively accounting for over 80 per cent of all employment in the agricultural sector. These subsectors include bananas, cereals (such as maize and rice), coffee, eggs, meat, milk, palm oil, pineapples, and sugar cane. Not only do these products dominate agricultural production in terms of harvested area and units/tons, but they also serve as the primary agricultural exports for the country.

For the remaining workers in the agricultural sector, an index of prices for the entire agricultural industry was employed. This comprehensive index encompassed various agricultural products beyond the nine significant subsectors. By doing so, we ensure that our instrument identifies all agricultural workers and thus explains wage-change effects across the entire sector. At the time of writing this draft, we are working on expanding this identification strategy to more sectors.

Figure 12 shows equivalent results to Figure 8 but focuses exclusively on agricultural workers. While the number of observations evidently drops, the strong positive relationship between income changes and turnout remains. Hence, we have strong reasons to believe that agricultural workers behave similarly to the rest of the population. Therefore, we can focus on them as a first approach to developing our identification strategy.

Figure 13 shows the first and second stages of the 2SLS regression in Panel 13a and Panel 13b, respectively. The first stage shows a strong positive and statistically significant correlation between changes in international prices of agricultural products between electoral periods and changes in the wages of agricultural workers. Moreover, the second stage shows that the effect of changes in wages on turnout remains significant when using changes in international prices as instruments. Therefore, we conclude that while incomplete, this instrument represents the first attempt at the identification strategy that we want to pursue.

4.1.3 From individual-level income changes to inequality at the local level

We expand our analysis with a series of fixed effect regressions -also at the individual and polling station level- where we try to identify the effects of worsening or improving one's position in the income distribution. Of course, these changes are always relative to others. Hence, we call "climbers" those who improve their position from one election to the other and "droppers" those who worsen their position from one period to the next one. In addition, we study the effect of changes in three magnitudes: 10 percentiles, 20 percentiles and 30 percentiles. In other words, we are trying to understand what happens with the propensity to vote when individuals gain/lose 10, 20 or 30 percentiles in their position in the income distribution. Figure 14 shows that the "share of droppers" is negatively correlated, and the "share of climbers" is positively correlated with the share of turnout at the polling station level. The whole set of results for 10, 20 or 30 percentiles is in the Appendix. Table B.13, shows that both effects are negative and significant, but surprisingly, climbing the income distribution reduces the propensity to vote more than dropping it. As previously mentioned, the polling station level results, Table B.14, are much more intuitive. Naturally, more work is required to conciliate these two results.

We continue with a descriptive approach in which we analyze the percentage change in come share and voters' turnout by income decile. Hence, in Figure 15, we observe that all income groups have lost income share in the period from 2002 through 2018, except the two upper deciles. In the same fashion, all income groups are voting less in the last election with respect to the first one, except for the two upper deciles. Therefore, there are two conclusions to draw from these results. In the first place, since most groups are losing income share and only a few are gaining it, there is an increase in inequality. In the second place, since most groups are voting less, there is a decrease in aggregate turnout. These two results explain, at least partially, the correlation observed between increasing inequality and decreasing electoral turnout. These types of aggregate results will be explored in the next section. Of course, the objective of this paper remains to find a causal relationship at the individual level between changes in income and electoral results.

4.2 Section B: exposure to immigration and electoral outcomes

4.2.1 Individual-level results

This section delves into a crucial aspect of globalization—international immigration. Figure 16a illustrates the dynamic evolution of immigrant proportions across various data sources, encompassing population censuses, household surveys, and social security registries. Notably, all these sources reveal a consistent upward trajectory in the share of immigrants. However, it is particularly noteworthy that the most substantial surge is observed within the domain of social security data, which serves as our primary data source for empirical analysis. This administrative dataset indicates a notable transformation in the composition of foreign workers within the formal workforce. Beginning at roughly 7 per cent in 2002, the proportion of foreigners steadily climbed to its zenith, reaching approximately 11 per cent in 2018. A slight downturn in 2022 is discernible, likely attributed to the economic downturn stemming from the COVID-19 pandemic.

Figure 16b provides a valuable perspective on the income distribution of foreign workers. It reveals that a significant portion of foreign workers occupies the Bottom 50 per cent of the income distribution, while another noteworthy segment features prominently in the upper percentiles, even surpassing the Top 1 per cent. This intriguing observation may be elucidated by the occupational distribution among foreign workers. A plausible explanation lies in the fact that most foreign workers are engaged in low-skill occupations, while a prominent minority assumes roles in executive management within multinational corporations (MNCs). In essence, the highest income earners within this demographic are probably managers or personnel within foreign direct investment (FDI) firms. This finding illustrates an interesting segregation between foreign workers in Costa Rica which underlies the importance of studying this dimension of globalization.

Our initial analysis focuses on quantifying the impact of the share of immigrants at the firm level on individual-level voter turnout. We also conduct a comparative examination by juxtaposing these findings with the effects of income changes discussed in the preceding section. Essentially, we aim to understand how exposure to immigrants in the workplace, measured as the proportion of immigrants among the total workforce of a

firm, influences voter turnout. Furthermore, we scrutinize how this variable may influence the conclusions we drew in Part A of our study. Table 17a not only demonstrates the statistical significance of the share of foreigners at the firm level but also underscores that its inclusion in our models does not substantially alter the coefficients of *logwage*, which represents individual income.

Our findings reveal a noteworthy relationship: an increase in the share of foreigners at the firm level has a consistent, negative, and statistically significant impact on voter turnout. However, individual-level income changes maintain their positive, meaningful, and statistically significant influence even when we account for the share of foreigners in our models. This suggests two important takeaways: firstly, income and the share of immigrants exert opposing effects on voter turnout in our models, and secondly, these two influences do not nullify each other. Table 17b reinforces these findings when we employ the first difference of *logwage* as the dependent variable in our models. Nevertheless, it is essential to exercise caution in interpreting these differences alongside individual-level fixed effects, as they may require nuanced consideration.

4.2.2   IV 1: International prices of agricultural products (individual-level)

In this section, we revisit the instrumental variable (IV) analysis introduced in section 4.1.2, this time incorporating the variable of immigration. To begin, we reaffirm the consistency of our findings concerning both *logwage* and the share of foreign workers within a firm. Their direction, magnitude, and statistical significance remain intact even when we narrow our focus exclusively to the agricultural sector, as depicted in Figure 18. This outcome serves as a crucial validation for our decision to concentrate on the agricultural sector for our IV analysis in Section 4.1. Despite a reduction in the volume of observations compared to the general sample, we consistently observe the same patterns and dynamics, bolstering the robustness of our results.

In our instrumental variable (IV) analysis incorporating immigration, we uncover an intriguing result: changes in international prices of agricultural products exhibit a statistically weak and negative relationship with the share of immigrants within firms. This may come as a surprise, as one might intuitively assume that rising international prices would

attract more immigrants to the agricultural sector. This finding constitutes the first stage of our IV strategy with immigration, illustrated in Figure 19a. One plausible explanation for this counterintuitive observation is that improved international prices tend to draw a more significant proportion of local individuals into the agricultural sector. Consequently, this influx of domestic workers may dilute the overall share of immigrants within a firm.

This initial result holds significance as it addresses a key concern before integrating immigration into our analytical framework: changes in prices might not only impact voter turnout by affecting their wages but also by attracting more immigrants into an industry, potentially confounding our analysis. Moving on to the second stage of our IV analysis, we find that positive changes in the share of immigrants within a firm decrease voter turnout, as demonstrated in Figure 19b. Yet, a lingering question remains about the suitability of using changes in international prices as an instrument for the share of immigrants.

While our IV strategy for immigration is still evolving, we have garnered valuable insights from this initial specification. Firstly, the inclusion of the share of immigrants does not compromise our primary findings concerning income shocks. Secondly, it appears that migration dynamics in Costa Rica do not significantly respond to changes in international prices. However, our analyses also confirm the broader belief that immigration does indeed influence electoral outcomes. Across all our specifications, we consistently observe a strong and statistically significant negative correlation between the share of immigrants within a firm and lower voter turnout. As we proceed in this section of the paper, the next logical step will involve developing a specific IV strategy for immigration, likely incorporating the share of past immigrants by locality and industry. We plan to introduce a shift-share instrument into our migration analysis to further elucidate this complex relationship.

4.2.3   IV 2: Share of immigrants by locality in 1984 (polling station-level)

In this subsection, we shift our focus to an examination of our data at the polling station level. Our initial objective is to reaffirm the relationship we observed at the individual level, particularly regarding the connection between the share of foreigners within firms

and voter turnout. As illustrated in Figure 20a, we discern a robust and statistically significant relationship between the average share of foreigners in firms and turnout at the polling station level. This relationship persists even when we introduce year and polling station fixed effects (Columns 2 and 5) and account for lag effects in turnout at the polling station level (Columns 4 and 6). Additionally, our analysis incorporates controls for the share of the public sector, as well as the proportions of skilled and unskilled workers (with semi-skilled workers as the omitted group). Essentially, at the aggregate level, we validate our earlier individual-level observations: a higher presence of foreigners correlates with lower turnout.

Our next objective is to transition toward an Instrumental Variable (IV) Analysis at the polling station level. To achieve this, we employ the share of immigrants per district in the past as an instrument for the changes in the share of immigrants at the polling station level during each period, in line with the methodology introduced in Section 3.3.2. This instrument, inspired by the "leave-out" version of the shift-share instrument proposed by Card (2001), utilizes data from the 1984 census. Figure 20b demonstrates a robust First Stage relationship between our instrument (Z_{dt}) and the average share of immigrants in firms.

While we primarily use the share of immigrants residing in district d in 1984 for our main specification, we also present the First Stage results using shares from the year 2000. Regarding the exclusion restriction, we posit that the shares of immigrants in 1984 offer a more fitting instrument. While both sets of shares (1984 and 2000) could explain immigrant shares during our elections of interest (2002-2022), it is improbable that the 1984 shares still exert influence on electoral outcomes in 2002 and beyond. Consequently, we retain the 1984 shares for our second-stage analysis. In summary, our instrument (Z_{dt}) exhibits a positive correlation with the shares of immigrants at the firm level in our dataset.

Figure 21 presents various specifications for our Second Stage analysis. Columns 1 and 2 provide estimates with clustered standard errors without fixed effects, while Columns 3 and 4 display estimates with Year and Polling Station Fixed Effects alongside robust standard errors. Columns 5 and 6 offer results with Fixed Effects and clustered standard errors. Moreover, Columns 2, 4, and 6 include lag effects in turnout at the polling station.

While certain specifications yield positive estimates for *firmsharef oreign*, our over-arching conclusion points to a negative relationship between the share of immigrants in firms and turnout at the polling station level. This finding is validated by our preferred specifications in Columns 5 and 6, which employ extended instrumental variable regressions incorporating multiple levels of fixed effects. [3]

Hence, we establish that polling stations where voters are exposed to a higher presence of immigrant colleagues in the workplace tend to exhibit lower voter turnout in presidential elections. However, it's crucial to note that this result is an aggregation, influenced by both formal workers and non-formal workers/non-workers. To differentiate between the voting behaviours of those working alongside foreigners and those geographically close to such workplaces, we compare this result with our individual-level specifications in the subsequent section (4.2.4).

4.2.4   IV 3: Share of immigrants by locality and industry in 1984 (individual level)

In this section, we return to the individual-level analysis, encompassing the entire sample of formal workers, diverging from Section 4.2.2, where our focus was on agricultural sector workers. Figure 22a provides further confirmation of the negative and statistically significant relationship between the share of foreign workers within a firm and individual-level voter turnout. Notably, when compared to Figure 17a, these estimates align in sign and magnitude within a specification that also includes income logarithm, reaffirming our previous findings.

This section introduces a new instrumental variable to gauge the share of foreign workers within firms. Our choice for this instrument centres on the share of immigrants by industry and district in 1984. We believe this variable provides a more accurate prediction of the number of foreign coworkers that natives would encounter in workplaces during 2002 and subsequent years. The practical impossibility of discerning the precise shares of foreign workers per firm in 1984, led us to rely on the share of foreign workers per district and industry as the most suitable approximation. Specifically, data from the 1984 Census disaggregates the working population by nationality for each of the

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[3]We use the *ivreghd f e* command in *STATA*.

420 administrative districts at that time, utilizing the ISIC2 UN classification for industries. These districts are then mapped to districts in 2002 and subsequent years, and the ISIC2 codes are merged with their corresponding ISIC3 codes in our administrative data sourced from Social Security.

Moving to the First Stage of our IV analysis, Figure 22b reveals a statistically robust and positive correlation between both the share of foreign workers per district and industry in 1984 and our new instrumental variable, denoted as Z_{dt}, with the share of foreign workers at the firm level. Here, Z_{dt} is defined by $\alpha_j d$ as the share of foreign nationals working in industry j in district d in 1984. Although we present First Stage results for $share_i industry_f oreign_1 984$, our preferred instrument for the Second Stage analysis becomes this new iteration of Z_{dt}.

Figure 23 presents our Second Stage results. Analogous to Section 4.2.3, Columns 1 and 2 exhibit estimates with clustered standard errors and no fixed effects, while Columns 3 and 4 feature estimates with Year and Individual Fixed Effects alongside robust standard errors. Columns 5 and 6 showcase results with Fixed Effects and clustered standard errors. Additionally, Columns 2, 4, and 6 integrate lag effects in turnout at the individual level. The most salient finding in this table is that most specifications (Columns 2 through 6) show a positive sign in the effect of the share of foreign workers in firms on individual-level voter turnout. While this may seem surprising, one potential explanation lies in the distinction between those who work alongside foreigners and those geographically proximate to workplaces with foreign colleagues, as discussed in Section 4.2.3.

Figure 23 allows us to delve deeper into the dynamics of those who work with foreigners. Initially, our correlations suggested that a higher number of foreign colleagues correlated with reduced voter turnout. However, after accounting for the historical share of foreigners in each industry and locality, we identify a positive relationship between working with foreigners and voter turnout. In essence, it appears that a higher presence of immigrant workers negatively affects the overall voter turnout at the locality level. However, among formal workers, a greater number of immigrant colleagues seems to positively influence their inclination to vote. Consequently, if lower voter turnout indeed results from migration flows, these findings suggest that individuals more exposed to

immigrants, such as those working alongside them, are less affected by this negative externality. While further analysis is necessary, these results offer initial insights into the effects of contact with foreigners within a significant dimension of the working-age population's lives: the workplace.

5 Part Two: Vote shares

In this second part of our paper, we shift our focus from voter turnout, the primary concern of Part One, to explore vote shares and various other electoral outcomes. Since our administrative data naturally lacks individual-level voting choices, we conduct this analysis at the most granular aggregate level available, the polling station, of which there are approximately 6500 in Costa Rica. It's worth noting that this examination could be extended to larger aggregated levels, such as the electoral district (2500), the administrative district (500), or even the county (82 *cantones*). A noteworthy aspect of the Costa Rican context and our dataset is the relatively small size of polling stations, with an average of around 500 voters per station. This granularity allows us to derive valuable insights about these 500 individuals by aggregating variables from our Social Security registries and other sources, such as income, at the polling station level.

5.1 Section A: income shocks and electoral outcomes

In this section, we delve into one of the central themes of this paper: the impact of income changes on voting behavior. While we previously examined the relationship between income and voter turnout in Section 4.1, our focus here shifts to the analysis of vote shares for specific political parties or groups of parties. At this juncture, we will primarily concentrate on two key electoral outcomes: electoral volatility and vote shares for traditional parties, specifically the National Liberation Party (PLN) and the Social Christian Unity Party (PUSC).

Our rationale for choosing these particular outcome variables stems from their significance in shedding light on our overarching research question: to what extent do increas-

ing income inequality and exposure to globalization elucidate the shift from a two-party to a multi-party system? Electoral volatility, characterized by a rise in the number of political parties and the emergence of short-lived but occasionally influential political entities, directly reflects the growing complexity of the political landscape in our dataset. Simultaneously, the waning support for traditional parties that dominated the two-party era holds intrinsic value in deciphering the factors compelling voters to move away from the established political cleavages of the past.

5.1.1 Electoral volatility:

Figure 24 delves into the relationship between average income at the polling station level and the Pedersen Index, which quantifies the net change in individual votes for various political parties within the electoral system (Pedersen, 1979). The Pedersen Index serves as a key indicator of electoral volatility (for additional details, see Section A.2 in the Annex). While the direction of the coefficient varies across different model specifications, we find the most robust evidence in favor of a statistically significant negative association between income and electoral volatility in the more constrained models, those incorporating fixed effects and turnout lags (Columns 3 and 7). However, it's noteworthy that the magnitude of these coefficients is relatively modest.

This finding carries significant implications for understanding the factors underpinning the unexpected support garnered by some emerging political parties. For instance, it may help elucidate the rise and subsequent electoral success of the Social Democratic Progress Party (PPSD), an outsider, in the 2022 election. In essence, the uptick in electoral volatility, driven by social dissatisfaction stemming from adverse income shocks, may partially account for the emergence of new political forces and the diminishing influence of established parties. This phenomenon aligns with the research conducted by Eichengreen et al. (2021) in a distinct context.

Figure B.4 further illustrates the trajectory of aggregate volatility in Costa Rica, as measured by the Pedersen Index. Notably, volatility has been on an upward trajectory since the 2000s, following a period of exceptionally low values during the 1980s and 1990s. This temporal pattern in electoral volatility coincides with the advent of the multi-party sys-

tem in 2002, marking a significant departure from the previously entrenched two-party system over the preceding two decades. Our findings suggest that polling stations experiencing positive income gains from one election to the next tend to exhibit relatively stable voting preferences. In a future iteration of this paper, we intend to introduce a Bartik instrument that leverages polling station-level industry shares and international prices of agricultural products, akin to Section 4.1.2. This instrumental variable approach will enable us to draw causal inferences regarding the impact of income changes on electoral volatility.

5.1.2 Vote shares for traditional parties:

Figure 25 illustrates a robust negative correlation between average income at the polling station level and vote shares garnered by traditional parties. In essence, the data reveals that when accounting for polling station fixed effects (as evidenced in Columns 2, 3, 5, and 7), an upswing in income at the polling station level corresponds to a decline in support for the traditional parties of the two-party era, namely, the National Liberation Party (PLN) and the Social Christian Unity Party (PUSC). This pattern holds steady across all model specifications and exhibits particular strength in Column 7, which includes fixed effects, a lagged turnout variable, and polling station-level controls. These findings allude to a significant political transformation in areas experiencing income growth, as voters increasingly turn away from the political stalwarts of the past. It is important to underscore that while these results are intriguing, further analysis is warranted to establish causal relationships in this context. As previously mentioned, our forthcoming work will introduce a Bartik instrument to facilitate a more nuanced exploration of the causal linkages between income changes and voting patterns, specifically, votes for traditional parties.

5.2 Section B: exposure to immigration and electoral outcomes

This section delves into the influence of immigrants within firms on electoral outcomes, shifting our focus from voter turnout in Part One (as detailed in Section 4.2) to vote shares. To facilitate this analysis, we incorporate the shift-share instrument previously

introduced for polling station-level examination in Section 4.2.3, albeit with distinct outcome variables. Our scrutiny begins with the First Stage of our instrument, which remains consistent with Section 4.2.3. Consequently, our exploration centers on naïve regression results and the specification of Second Stages.

5.2.1 Electoral volatility:

Figure 26 illustrates a generally positive correlation between the average share of foreign workers in a firm and electoral volatility. In other words, an increase in foreign workers corresponds to more significant shifts in voting preferences among local colleagues between elections. At this stage, the underlying mechanism remains ambiguous. One possible explanation could be workplace-related discontent, motivating local workers to opt for new parties, possibly those advocating anti-immigration policies. Alternatively, foreign colleagues might influence new political preferences among local counterparts, thereby altering their electoral choices. While we have yet to pinpoint the precise mechanism, we have initiated the examination of the causal link between foreign workers and electoral volatility.

Figure 27 presents the Second Stage of our instrumental variable (IV) strategy. Columns 1 and 2 incorporate clustered standard errors along with polling station-level controls, Columns 3 and 4 introduce year and polling station fixed effects while estimating robust standard errors, and Columns 5 and 6 include fixed effects and clustered standard errors. Additionally, Columns 2, 4, and 6 incorporate lags of turnout at the polling station level. Despite a loss of statistical significance in the latter part of the table, our overarching finding indicates that the positive relationship observed in the naïve regressions between foreign workers in firms and electoral volatility persists when we employ instrumental variables to address endogeneity concerns.

5.2.2 Vote shares for traditional parties:

Figure 28 displays various naive specifications, revealing a robust negative correlation between the share of foreigners in a firm and vote shares for traditional parties. These

findings suggest that as the average presence of foreigners in a firm increases, local workers are less inclined to vote for the traditional parties that dominated the two-party era. This aligns with our initial hypothesis that greater exposure to globalization, in this case through immigration, may partially elucidate the shift away from the two-party system.

However, the Second Stage results present a different narrative. Figure 29 consistently demonstrates strong positive estimates for the coefficients of the average share of foreign workers as an explanatory variable for vote shares of traditional parties. This discrepancy likely arises from endogeneity issues between the explanatory and outcome variables and the presence of potentially influential omitted variables. The purpose of employing the instrumental variable (IV) strategy is precisely to address these issues.

The mechanism proposed in Section 5.2.1 could come into play here. If immigrant workers do indeed have a positive effect on votes for traditional parties, the hypothesis of workplace discontent seems more plausible than the notion of foreign coworkers inspiring new political demands among their local counterparts. Since traditional parties are generally more conservative than newer political forces (although conservative new parties exist as well), it's possible that dissatisfied voters turn to them as a refuge rather than opting for the more globalist newcomers (e.g., PAC) in search of alternative political options.

6   Concluding remarks

Confident in the promise of our ongoing individual-level analysis to elucidate the complex interplay between increasing inequality and electoral outcomes, we acknowledge that, as of this draft, we have not fully capitalized on the potential of our new dataset. Nevertheless, preliminary findings align with existing literature, highlighting a strong positive correlation between income and individual-level voter turnout. Additionally, we observe a positive link between changes in income and turnout at both individual and polling station levels. Our initial instrumental variable (IV) strategy enables us to establish a causal relationship between income fluctuations and voter turnout. By employing international prices of agricultural products as instruments for income changes

among agricultural workers, we validate the positive correlation between income levels and voter participation.

The most intriguing insights emerge when examining relative changes in individuals' positions within the income distribution. At the polling station level, an increase in the percentage of upwardly mobile individuals ("climbers") significantly boosts voter turnout in the locality, whereas, at the individual level, both improvements ("climbers") and deteriorations ("droppers") in income position negatively affect the probability of voting, with a more pronounced effect for "climbers". While requiring further exploration, one plausible explanation is that improved income positions may lead to reduced political engagement, potentially driven by complacency. However, it's worth considering that positive spillover effects within families or communities could contribute to increased turnout at the polling station level despite individual-level variations, emphasizing the need for more in-depth research into these intriguing dynamics.

Regarding migration, our analysis yields two crucial insights. Firstly, the inclusion of the share of immigrants in our study does not undermine the robustness of our primary findings regarding income shocks. This reaffirms the stability of our core results. Secondly, our examination of migration dynamics in Costa Rica reveals an intriguing trend: immigration patterns do not appear to be significantly influenced by changes in international prices. This suggests that factors beyond local economic shifts play a more prominent role in shaping migration patterns between the country and its neighbours. This discovery validates the initial motivation to incorporate the impact of migration on electoral outcomes within this paper. The two migration waves of 1998 and 2018 can be regarded as exogenous shocks for local workers – one driven by climatic factors and the other by political events – further amplifying their exposure to globalization.

We observe a strong and statistically significant negative correlation between the share of immigrants within a firm and lower voter turnout in most specifications. In addition to examining the impact of international agricultural product prices, we employ two alternative IV strategies. Firstly, at the polling station level, we utilize a shift-share instrument based on the distribution of immigrants per district. This reinforces the inverse relationship observed between the presence of immigrants in firms and voter turnout. Secondly,

at the individual level, we construct another IV specification using the distribution of immigrants across districts and industries. Here, our findings diverge: increased interaction with foreigners in the workplace corresponds to higher voter turnout. Consequently, if reduced voter turnout indeed results from migration flows, these results suggest that individuals with greater exposure to immigrants, such as those working alongside them, might be less affected by this negative electoral impact.

In our examination of vote shares and other electoral outcomes, particularly at the polling station-level, several noteworthy findings have emerged. First, concerning income and electoral outcomes, we show that polling stations experiencing positive income gains tend to exhibit more stable voting preferences from one election to another (less electoral volatility). Moreover, areas experiencing such income gains tend to show a declining inclination to support the traditional political parties of the past, such as PLN and PUSC. To further strengthen these findings and delve into the causal relationship between income changes and electoral volatility, our next steps will incorporate a Bartik instrument that considers polling station-level industry shares and international prices of agricultural products.

Regarding the influence of exposure to immigration on electoral outcomes, our general conclusion points to a consistent positive relationship between the presence of foreign workers in firms and electoral volatility, even when we account for endogeneity using our IV strategy. Additionally, we observe a similar positive relationship between the share of foreigners in the firm and vote shares for traditional parties. This outcome raises the possibility that traditional parties, which tend to be more conservative in nature compared to newer political forces, offer a refuge for discontented voters in response to immigration-induced shifts, as opposed to the more globalist alternatives such as PAC. These dynamics require further exploration in future versions of this paper to understand the mechanisms of electoral outcomes in the context of income changes and immigration exposure.

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A Annex

A.1 Effective number of electoral parties

The effective number of electoral parties is calculated as:

$$\frac{1}{\sum v_i^2}$$

- where vi is the percentage of the vote received by the ith party Laakso and Taagepera (1979).

- The "corrected" effective number of electoral parties is based on the methods of bounds suggested by Taagepera (1997).

A.2 Pedersen Index

→ Following Pedersen (1979):

$$V = \frac{\sum_{i=1}^{n} |P_{i,t+1} - P_{i,t}|}{\sum_{i=1}^{n} P_{i,t+1} + \sum_{i=1}^{n} P_{i,t}}$$

- It is the sum of the net change of party vote shares (before to after) divided by the sum of all party votes (before and after).

- The formula can therefore be simplified to:

$$V = \frac{\sum_{i=1}^{n} |P_{i,t+1} - P_{i,t}|}{2}$$

- Or simply:

$$V = \frac{\sum_{i=1}^{n} |\Delta P_i|}{2}$$

B Appendix

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Average turnout by income percentiles (individual-level)
Costa Rica: presidential elections 2002 - 2018
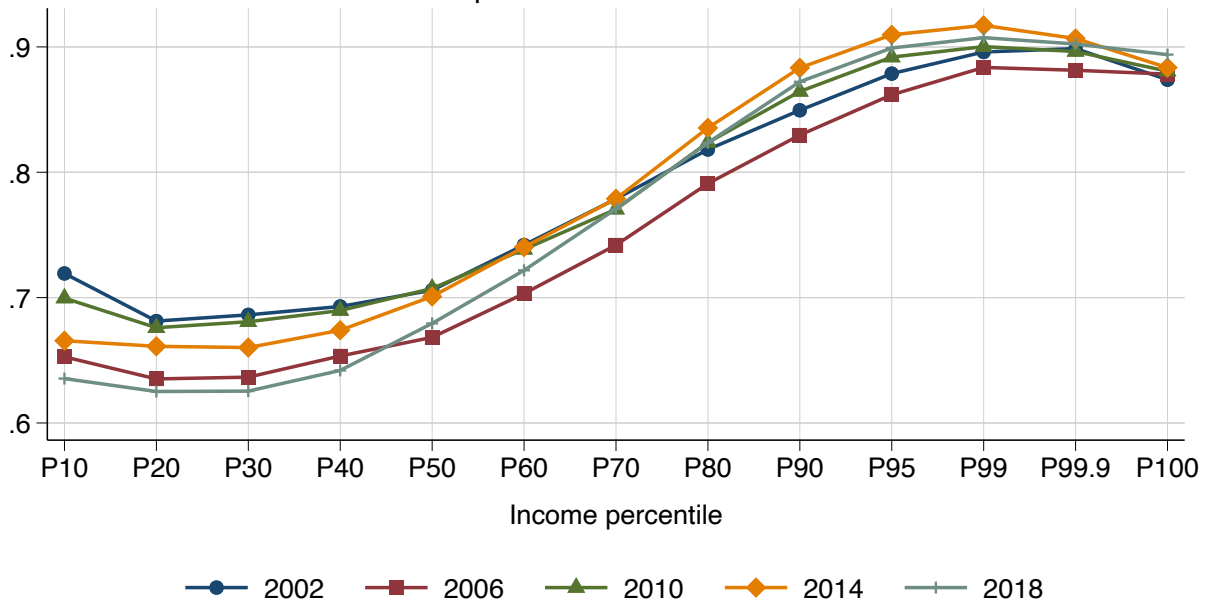
FIGURE 10: Average turnout by income percentiles.

Presidential: predicted turnout by income (percentiles)

(a) Predicted turnout by income percentiles.
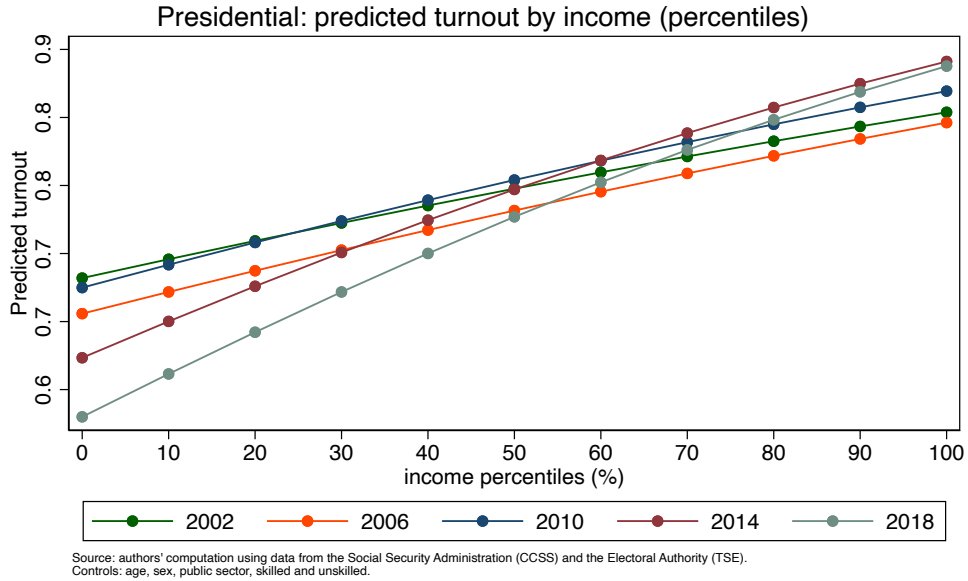
Presidential: predicted turnout by income
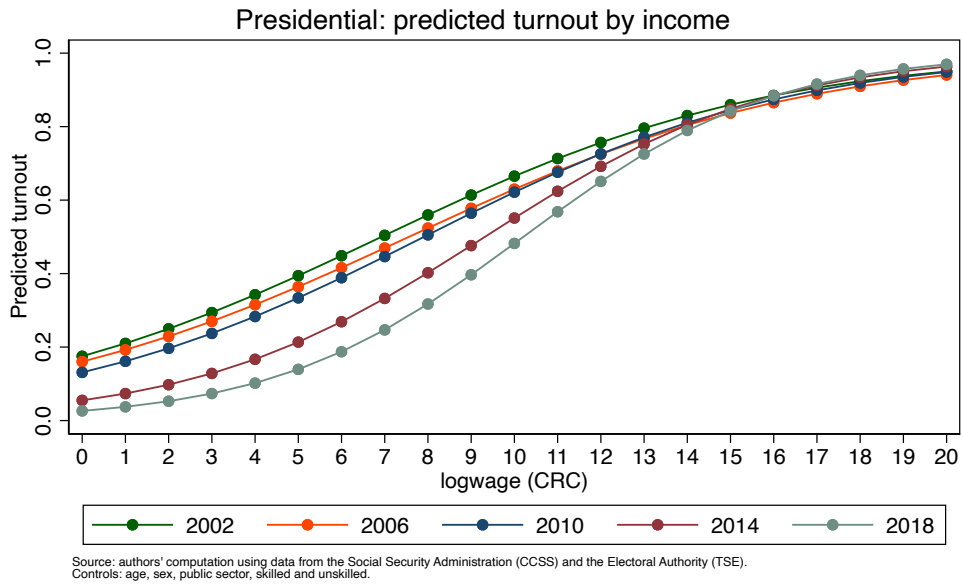
(b) Predicted turnout by log income (national currency).

FIGURE 11: Predicted turnout by income levels.

Effects income on turnout in presidential elections, 2002-2018 (individual level)
Agricultural Sector

	(1) OLS	(2) FE	(3) FE controls	(4) FE controls	(5) FE controls
logwage	0.033***	0.023***	0.049***	-0.001	0.027***
	(0.009)	(0.003)	(0.004)	(0.002)	(0.004)
L.turnout			0.280***		0.268***
			(0.011)		(0.011)
Observations	440,758	440,758	181,893	308,115	142,759
r2_o	0.003	0.003	0.176	0.017	0.179
Individual level controls				YES	YES
Turnout presidential (t-1)			YES		YES
Year FE		YES	YES	YES	YES
Individual FE		YES		YES	

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Controls: age, skilled and unskilled.

FIGURE 12: Income and turnout at the individual level: agricultural sector only.

Effects of changes in international prices on wages, 2002-2018 (individual level)
First stage (agricultural sector)

	(1) OLS	(2) OLS controls	(3) OLS	(4) OLS controls
diff_price_L3	0.007*** (0.002)	0.002*** (0.001)		
diff_log_price_L3			0.533*** (0.141)	0.167*** (0.061)
Observations	283,623	232,601	283,623	232,601
r2_o	0.020	0.008	0.025	0.008
Individual level controls		YES		YES
Clustered SE	YES	YES	YES	YES
Year FE		YES		YES
Individual FE		YES		YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Clustered standard errors by year*product.

(a) IV: first stage.

Effects of changes in income on turnout in presidential elections, 2002-2018 (individual level)
Second stage (agricultural sector)

	(1) 2SLS clustered SE	(2) 2SLS clustered SE	(3) 2SLS FE robust SE	(4) 2SLS FE robust SE
D.logwage	0.082** (0.040)	0.112*** (0.036)	0.246*** (0.051)	0.156*** (0.048)
L.turnout		0.393*** (0.007)		-0.268*** (0.004)
Observations	142,757	142,757	142,759	142,759
r2_a	0.018	0.163		
r2_o			0.003	0.060
KPLM	11.442	11.453		
CDWald	3390.011	3393.811		
KPWald	21.576	21.541		
Individual level controls	YES	YES	YES	YES
Turnout presidential (t-1)		YES		YES
Clustered SE	YES	YES		
Year FE			YES	YES
Individual FE			YES	YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Clustered standard errors by year*product.
Controls: age, skilled and unskilled.

(b) IV: second stage.

FIGURE 13: Effects of changes in income on turnout in presidential elections (IV strategy).

Effect of movements in the income distribution on turnout in presidential elections, 2002-2018 (polling station level)
(30 percentiles)

	(1) OLS	(2) FE	(3) FE controls	(4) FE controls	(5) FE controls
share_climb30	8.655***	4.746***	4.656***	8.752***	9.788***
	(0.316)	(0.402)	(0.440)	(0.394)	(0.437)
share_drop30	-20.839***	-24.167***	-24.696***	-15.070***	-15.392***
	(0.340)	(0.400)	(0.418)	(0.427)	(0.450)
Observations	32751	32750	31966	32720	31939
r2_o	0.103	0.096	0.118	0.150	0.160
log Income				YES	YES
Turnout presidential (t-1)			YES		YES
Year FE		YES	YES	YES	YES
Polling station FE		YES	YES	YES	YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01

FIGURE 14: Income and turnout at the individual level: agricultural sector only.

Aggregate change income shares and turnout by deciles
Costa Rica: 2002 - 2018
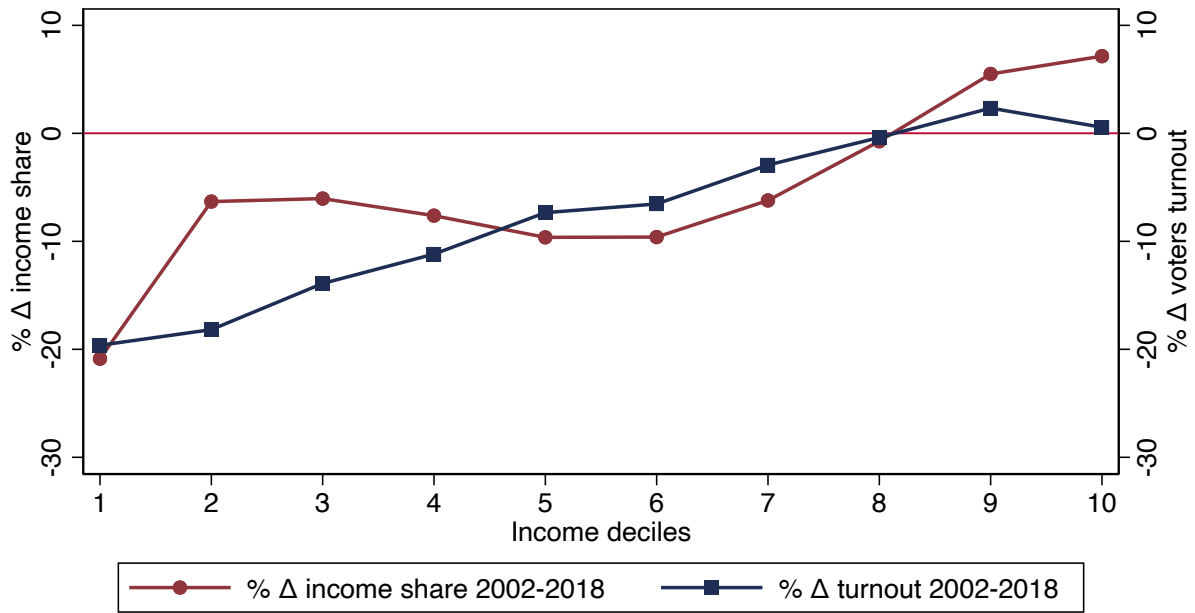
Source: authors' computation using data from the Social Security Administration (CCSS) and the Electoral Authority (TSE).

FIGURE 15: Aggregate change in income shares and turnout by deciles.

Foreign born as share of total population
Costa Rica: 2000 - 2022

Legend: % total pop surveys — % formal workers SS — ▲ % total pop census
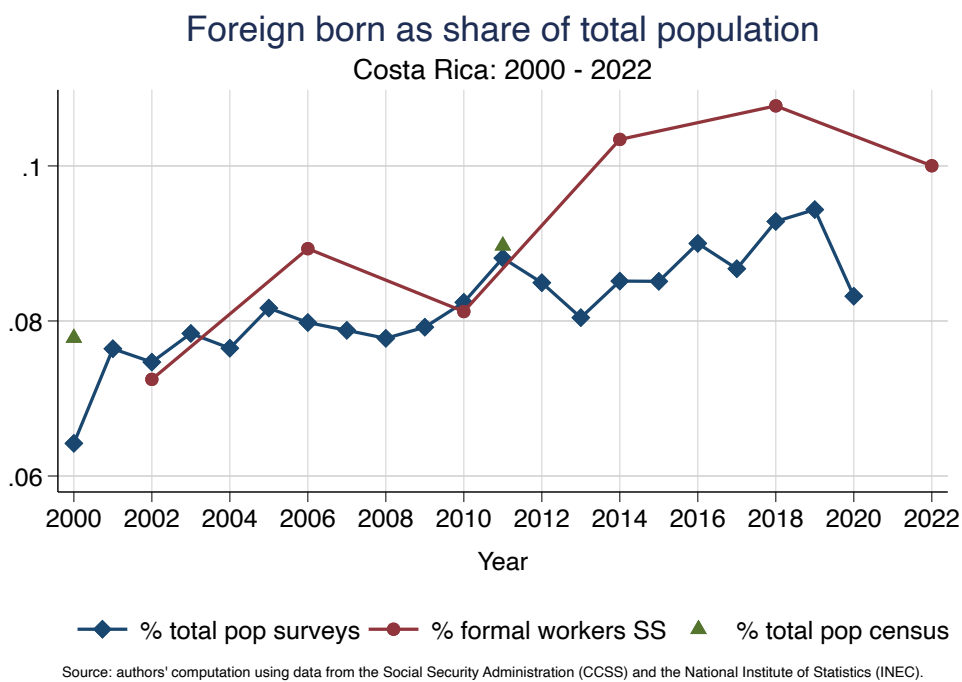
(a) Share of foreign born in different data sources.

Share of foreigners by income percentiles (individual-level)
Costa Rica: presidential elections 2002 - 2018

Legend: 2002 — 2006 — 2010 — 2014 — 2018 — 2022
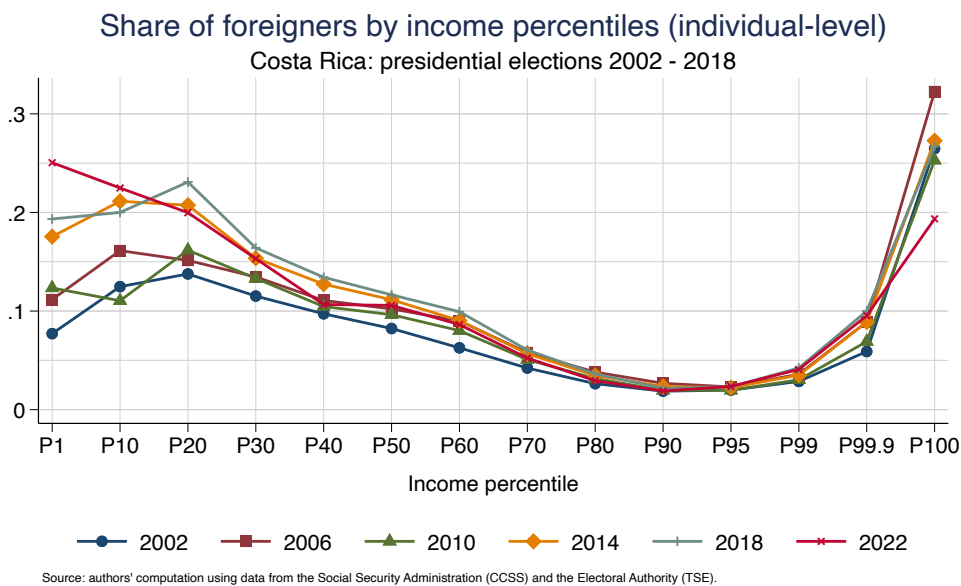
(b) Share of foreigners by income percentiles in Social Security.

FIGURE 16: Share of foreigners, different sources and income percentiles.

Effects of income & immigration on turnout in presidential elections, 2002-2018 (individual level)

	(1) OLS	(2) FE	(3) FE controls	(4) FE controls	(5) FE controls
logwage	0.060***	0.019***	0.054***	0.003***	0.036***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
firm_share_foreign	-0.508***	-0.066***	-0.318***	-0.063***	-0.245***
	(0.002)	(0.003)	(0.002)	(0.004)	(0.003)
L.turnout			0.221***		0.229***
			(0.001)		(0.001)
Observations	4,451,747	4,451,747	3,338,994	3,029,745	2,451,591
r2_o	0.037	0.033	0.175	0.019	0.178
Individual level controls				YES	YES
Turnout presidential (t-1)			YES		YES
Year FE		YES	YES	YES	YES
Individual FE		YES		YES	

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Controls: public sector, age, skilled and unskilled.

(a) Levels.

Changes income & immigration on turnout in presidential elections, 2002-2018 (individual level)

	(1) OLS	(2) FE	(3) FE controls	(4) FE controls	(5) FE controls
D.logwage	0.017***	-0.004***	0.008***	0.001**	0.004***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
D.firm_share_foreign	-0.040***	-0.017***	-0.038***	-0.011***	-0.023***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
L.turnout			0.251***		0.246***
			(0.001)		(0.001)
Observations	2,497,775	2,497,775	2,497,775	1,798,805	1,798,805
r2_o	0.001	0.000	0.171	0.009	0.179
Individual level controls				YES	YES
Turnout presidential (t-1)			YES		YES
Year FE		YES	YES	YES	YES
Individual FE		YES		YES	

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Controls: public sector, age, skilled and unskilled.

(b) Differences.

FIGURE 17: Changes in income and immigration and turnout in presidential elections.

Effects income & immigration on turnout in presidential elections, 2002-2018 (individual level)
Agricultural Sector

	(1) OLS	(2) FE	(3) FE controls	(4) FE controls	(5) FE controls
logwage	0.034***	0.023***	0.047***	-0.001	0.027***
	(0.007)	(0.003)	(0.004)	(0.002)	(0.004)
firm_share_foreign	-0.277***	-0.073***	-0.156***	-0.062***	-0.127***
	(0.029)	(0.011)	(0.015)	(0.012)	(0.015)
L.turnout			0.278***		0.266***
			(0.011)		(0.011)
Observations	440,743	440,743	181,893	308,096	142,759
r2_o	0.011	0.011	0.011	0.011	0.011
Individual level controls				YES	YES
Turnout presidential (t-1)			YES		YES
Year FE		YES	YES	YES	YES
Individual FE		YES		YES	

Standard errors in parentheses   * $p<0.1$ ** $p<0.05$ *** $p<0.01$
Controls: age, skilled and unskilled.

FIGURE 18: Income, immigration & turnout at the individual level: agricultural sector only.

Effects of changes in international prices on share of immigrants, 2002-2018 (individual level)
First stage (agricultural sector)

	(1) OLS	(2) OLS controls	(3) OLS	(4) OLS controls
diff_price_L3	-0.000*	-0.000**		
	(0.000)	(0.000)		
diff_log_price_L3			-0.008	-0.017**
			(0.006)	(0.007)
Observations	283,626	232,594	283,626	232,594
r2_o	0.000	0.000	0.000	0.000
Individual level controls		YES		YES
Clustered SE	YES	YES	YES	YES
Year FE		YES		YES
Individual FE		YES		YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Clustered standard errors by year*product.

(a) IV: first stage.

Effects of changes in share of immigrants on turnout in presidential elections, 2002-2018 (individual level)
Second stage (agricultural sector)

	(1) 2SLS clustered SE	(2) 2SLS clustered SE	(3) 2SLS FE robust SE	(4) 2SLS FE robust SE
D.firm_share_foreign	-4.568	-6.293	-3.921***	-2.534**
	(3.948)	(4.275)	(1.275)	(1.022)
L.turnout		0.411***		-0.260***
		(0.014)		(0.007)
Observations	142,757	142,757	142,759	142,759
r2_a	-1.280	-2.288		
r2_o			0.000	0.023
KPLM	1.520	1.509		
CDWald	25.543	24.978		
KPWald	2.242	2.243		
Individual level controls	YES	YES	YES	YES
Turnout presidential (t-1)		YES		YES
Clustered SE	YES	YES		
Year FE			YES	YES
Individual FE			YES	YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Clustered standard errors by year*product.
Controls: age, skilled and unskilled.

(b) IV: second stage.

FIGURE 19: Changes share of immigrants on turnout in presidential elections (IV strategy).

Effects of immigration on turnout in presidential elections, 2002-2018 (polling station-level)

	(1) OLS	(2) FE	(4) cluster lag	(5) FE controls	(6) lag controls
firm_share_foreign	-0.686***	-0.645***	-0.639***	-0.522***	-0.374***
	(0.011)	(0.017)	(0.017)	(0.020)	(0.020)
L.turnout			0.303***		0.173***
			(0.008)		(0.007)
Observations	32,393	32,393	25,173	32,393	25,173
r2_o	0.099	0.099	0.171	0.259	0.372
Polling station-level controls				YES	YES
Turnout presidential (t-1)			YES		YES
Year FE		YES	YES	YES	YES
Polling station FE		YES		YES	

Standard errors in parentheses   * $p<0.1$ ** $p<0.05$ *** $p<0.01$
Controls: public sector, skilled and unskilled.

(a) Average share of foreign in the firm and turnout (polling station-level).

Effects of previous shares of immigrants at the district level on average share of immigrants at firm level, 2002-2018
First stage (polling station-level)

	(1) OLS	(2) OLS controls	(3) OLS	(4) OLS controls
Z_dt_alpha1984	-0.053***	0.232***		
	(0.018)	(0.021)		
Z_dt_alpha2000			0.270***	0.396***
			(0.018)	(0.017)
Observations	36,675	36,675	38,312	38,312
r2_o	0.000	0.279	0.014	0.297
Polling station-level controls		YES		YES
Clustered SE	YES	YES	YES	YES
Year FE		YES		YES
Polling station FE		YES		YES

Standard errors in parentheses   * $p<0.1$ ** $p<0.05$ *** $p<0.01$
Clustered standard errors by year*product.

(b) IV: first stage (polling station-level).

FIGURE 20: Share of immigrants and turnout in presidential elections.

Effects of changes in share of immigrants on turnout in presidential elections, 2002-2018 (polling station-level)

Second stage: IV share of immigrants per district in 1984

	(1) 2SLS clustered SE controls	(2) 2SLS clustered SE controls lag	(3) 2SLS FE controls robust SE	(4) 2SLS FE controls lag robust SE	(5) 2SLS FE clustered SE	(6) 2SLS FE lag clustered SE
firm_share_foreign	2.152***	-0.624***	3.970***	-0.428***	-0.227**	-0.388***
	(0.208)	(0.046)	(0.534)	(0.055)	(0.109)	(0.055)
L.turnout		0.183***		-0.199***		-0.190***
		(0.007)		(0.008)		(0.008)
Observations	30,501	23,323	30,501	23,323	30,425	23,204
r2_a	-0.801	0.360			0.202	0.277
r2_o			0.003	0.214		
KPLM	225.424	589.990			176.489	447.177
CDWald	272.103	1401.866			279.237	1014.082
KPWald	270.266	274.439			211.652	202.803
Polling station-level controls	YES	YES	YES	YES	YES	YES
Turnout presidential (t-1)		YES		YES		YES
Clustered SE	YES	YES			YES	YES
Year FE			YES	YES	YES	YES
Polling station FE			YES	YES	YES	YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Clustered standard errors by polling station.
Controls: share skilled and share unskilled.

FIGURE 21: IV second stage (polling station-level).

Effects of share of immigrats in the firm on turnout in presidential elections, 2002-2018
(individual level)

	(1) OLS	(2) FE	(3) FE controls	(4) FE controls	(5) FE controls
firm_share_foreign	-0.584***	-0.066***	-0.385***	-0.071***	-0.319***
	(0.002)	(0.004)	(0.006)	(0.004)	(0.006)
L.turnout			0.230***		0.234***
			(0.002)		(0.002)
Observations	4,451,747	4,451,747	3,338,994	3,029,723	2,451,591
r2_o	0.021	0.021	0.168	0.011	0.174
Individual level controls				YES	YES
Turnout presidential (t-1)			YES		YES
Year FE		YES	YES	YES	YES
Individual FE		YES		YES	

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Controls: public sector, age, skilled and unskilled.

(a) Share of foreign in the firm and turnout (individual level).

Effects of share of immigrants by industry and district in 1984 on share of immigrants at firm level, 2002-2018
First stage (individual level)

	(1) OLS	(2) OLS controls	(3) OLS	(4) OLS controls
share industry foreign 1984 (alpha)	0.033***	0.010***		
	(0.006)	(0.003)		
Z_dt_alpha1984			0.464***	0.288***
			(0.088)	(0.054)
Observations	4,389,214	3,126,615	4,389,214	3,126,615
r2_o	0.015	0.011	0.109	0.021
Individual level controls		YES		YES
Clustered SE	YES	YES	YES	YES
Year FE		YES		YES
Individual FE		YES		YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Clustered standard errors by district.

(b) IV: first stage (individual level).

FIGURE 22: Share of immigrants and turnout in presidential elections.

Effects of changes in share of immigrants on turnout in presidential elections, 2002-2018 (individual level)

Second stage: IV share of immigrants per district-industry in 1984

	(1) 2SLS clustered SE controls	(2) 2SLS clustered SE controls lag	(3) 2SLS FE controls robust SE	(4) 2SLS FE controls lag robust SE	(5) 2SLS FE clustered SE	(6) 2SLS FE lag clustered SE
firm_share_foreign	-0.355***	-0.169***	0.271**	0.299**	0.239*	0.256*
	(0.062)	(0.051)	(0.124)	(0.147)	(0.125)	(0.141)
logwage	0.045***	0.037***	0.007***	0.009***	0.003***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
L.turnout		0.366***		-0.239***		-0.239***
		(0.002)		(0.001)		(0.007)
Observations	2,510,059	2,044,972	2,510,103	2,045,010	1,937,006	1,551,767
r2_a	0.055	0.183	0.000	0.132	-0.561	-0.505
r2_o						
KPLM	86.547	87.865			134.198	115.641
CDWald	3.2e+04	2.5e+04			1823.540	1353.901
KPWald	107.918	102.525			63.784	54.122
Individual level controls	YES	YES	YES	YES	YES	YES
Turnout presidential (t-1)		YES		YES		YES
Clustered SE	YES	YES			YES	YES
Year FE			YES	YES	YES	YES
Individual FE			YES	YES	YES	YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Clustered standard errors by year*district.
Controls: sex, age, skilled and unskilled.

FIGURE 23: IV second stage (individual level).

Effects of changes in income on electoral volatility in presidential elections, 2002-2018 (polling station level)

	(1) OLS	(2) FE	(3) FE lag	(4) cluster lag	(5) FE controls	(6) lag controls	(7) FE lag controls
log_PS_ave_wage	0.003***	0.001**	-0.000**	0.001***	0.001	-0.000*	-0.001***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
L.share_turnout			0.033***	0.041***		0.039***	0.033***
			(0.003)	(0.002)		(0.002)	(0.003)
Observations	25,712	25,712	25,173	25,173	25,712	25,173	25,173
r2_o	0.001	0.001	0.124	0.132	0.063	0.140	0.121
Polling station-level controls					YES	YES	YES
Clustered SE		YES	YES	YES	YES	YES	YES
Turnout presidential (t-1)			YES	YES		YES	YES
Year FE		YES	YES		YES		YES
Polling station FE		YES	YES		YES		YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01

Controls: public sector, skilled and unskilled.

FIGURE 24: Income and electoral volatility (polling station-level).

Effects of changes in income on vote shares for traditional parties in presidential elections, 2002-2018 (polling station level)

	(1) OLS	(2) FE	(3) FE lag	(4) cluster lag	(5) FE controls	(6) lag controls	(7) FE lag controls
log_PS_ave_wage	-0.079***	-0.084***	-0.054***	-0.052***	-0.014***	-0.043***	-0.040***
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
L.share_turnout			-0.132***	-0.072***		-0.072***	-0.138***
			(0.012)	(0.008)		(0.009)	(0.012)
Observations	32,393	32,393	25,173	25,173	32,393	25,173	25,173
r2_o	0.149	0.149	0.135	0.137	0.292	0.147	0.144
Polling station-level controls					YES	YES	YES
Clustered SE		YES	YES	YES	YES	YES	YES
Turnout presidential (t-1)			YES	YES		YES	YES
Year FE		YES	YES		YES		YES
Polling station FE		YES	YES		YES		YES

Standard errors in parentheses   * $p<0.1$ ** $p<0.05$ *** $p<0.01$
Controls: public sector, skilled and unskilled.

FIGURE 25: Income and vote shares for traditional parties (polling station-level).

Effects of immigration on electoral volatility in presidential elections, 2002-2018 (polling station-level)

	(1) OLS	(2) FE	(3) FE lag	(4) cluster lag	(5) FE controls	(6) lag controls	(7) FE lag controls
firm_share_foreign	-0.143***	0.113***	0.004*	-0.002*	0.078***	0.004**	-0.002
	(0.010)	(0.014)	(0.002)	(0.001)	(0.015)	(0.002)	(0.002)
L.turnout			0.033***	0.041***		0.039***	0.034***
			(0.003)	(0.002)		(0.002)	(0.003)
Observations	25,712	25,712	25,173	25,173	25,712	25,173	25,173
r2_o	0.009	0.009	0.127	0.128	0.037	0.140	0.124
Polling station-level controls					YES	YES	YES
Clustered SE		YES	YES	YES	YES	YES	YES
Turnout presidential (t-1)			YES	YES		YES	YES
Year FE		YES	YES	YES	YES	YES	YES
Polling station FE		YES	YES	YES	YES	YES	YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Controls: public sector, skilled and unskilled.

FIGURE 26: Share of immigrants in the firm and electoral volatility (polling station-level).

Effects of changes in share of immigrants on electoral volatility in presidential elections, 2002-2018 (polling station-level)

Second stage: IV share of immigrants per district in 1984

	(1) 2SLS clustered SE controls	(2) 2SLS clustered SE controls lag	(3) 2SLS FE controls robust SE	(4) 2SLS FE controls lag robust SE	(5) 2SLS FE clustered SE	(6) 2SLS FE lag clustered SE
firm_share_foreign	-0.106*** (0.037)	0.063*** (0.005)	0.112** (0.046)	0.007 (0.007)	0.044 (0.046)	0.002 (0.007)
L.turnout		0.036*** (0.002)		0.032*** (0.003)		0.033*** (0.003)
Observations	23,821	23,323	23,821	23,323	23,678	23,204
r2_a	0.069	0.094			0.006	0.065
r2_o			0.036	0.125		
KPLM	600.972	589.990			451.732	447.177
CDWald	1,537.621	1,401.866			1,187.717	1,014.082
KPWald	271.905	274.439			204.145	202.803
Polling station-level controls	YES	YES	YES	YES	YES	YES
Turnout presidential (t-1)		YES		YES		YES
Clustered SE	YES	YES			YES	YES
Year FE			YES	YES	YES	YES
Polling station FE			YES	YES	YES	YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Clustered standard errors by polling station.
Controls: share skilled and share unskilled.

FIGURE 27: IV Second Stage. Share of immigrants in the firm and electoral volatility (polling station level).

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Effects of immigration on vote shares for traditional parties in presidential elections, 2002-2018 (polling station-level)

	(1) OLS	(2) FE	(3) FE lag	(4) cluster lag	(5) FE controls	(6) lag controls	(7) FE lag controls
firm_share_foreign	-0.425***	-0.746***	-0.144***	-0.109***	-0.163***	-0.106***	-0.172***
	(0.022)	(0.030)	(0.029)	(0.022)	(0.030)	(0.026)	(0.031)
L.turnout			-0.094***	-0.143***		-0.066***	-0.128***
			(0.012)	(0.009)		(0.009)	(0.012)
Observations	32,393	32,393	25,173	25,173	32,393	25,173	25,173
r2_o	0.012	0.012	0.011	0.012	0.288	0.101	0.099
Polling station-level controls					YES	YES	YES
Clustered SE		YES	YES	YES	YES	YES	YES
Turnout presidential (t-1)			YES	YES		YES	YES
Year FE		YES	YES	YES	YES	YES	YES
Polling station FE		YES	YES	YES	YES	YES	YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Controls: public sector, skilled and unskilled.

FIGURE 28: Share of immigrants in the firm and vote shares for traditional parties (polling station-level).

Effects of changes in share of immigrants on vote shares for traditional parties in presidential elections, 2002-2018 (polling station-level)
Second stage: IV share of immigrants per district in 1984

	(1) 2SLS clustered SE controls	(2) 2SLS clustered SE controls lag	(3) 2SLS FE controls robust SE	(4) 2SLS FE controls lag robust SE	(5) 2SLS FE clustered SE	(6) 2SLS FE lag clustered SE
firm_share_foreign	11.391***	1.031***	23.300***	1.505***	1.241***	1.927***
	(0.746)	(0.091)	(2.656)	(0.133)	(0.234)	(0.138)
L.turnout		-0.105***		-0.184***		0.070***
		(0.011)		(0.015)		(0.013)
Observations	30,501	23,323	30,501	23,323	30,425	23,204
r2_a	-5.812	-0.037			-0.116	-0.433
r2_o			0.002	0.020		
KPLM	225.424	589.990			176.489	447.177
CDWald	272.103	1,401.866			279.237	1,014.082
KPWald	270.266	274.439			211.652	202.803
Polling station-level controls	YES	YES	YES	YES	YES	YES
Turnout presidential (t-1)		YES		YES		YES
Clustered SE	YES	YES			YES	YES
Year FE			YES	YES	YES	YES
Polling station FE			YES	YES	YES	YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01
Clustered standard errors by polling station.
Controls: share skilled and share unskilled.
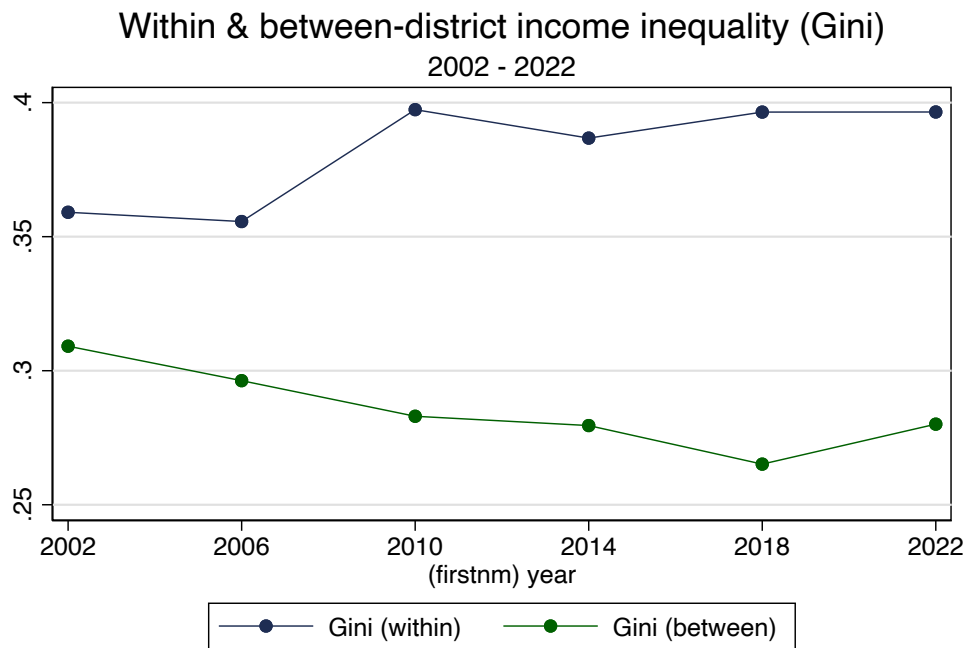
FIGURE 29: IV Second Stage. Share of immigrants in the firm and vote shares for traditional parties (polling station level).

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log real GDP per capita and Gini coefficient
Costa Rica: 1990 - 2017
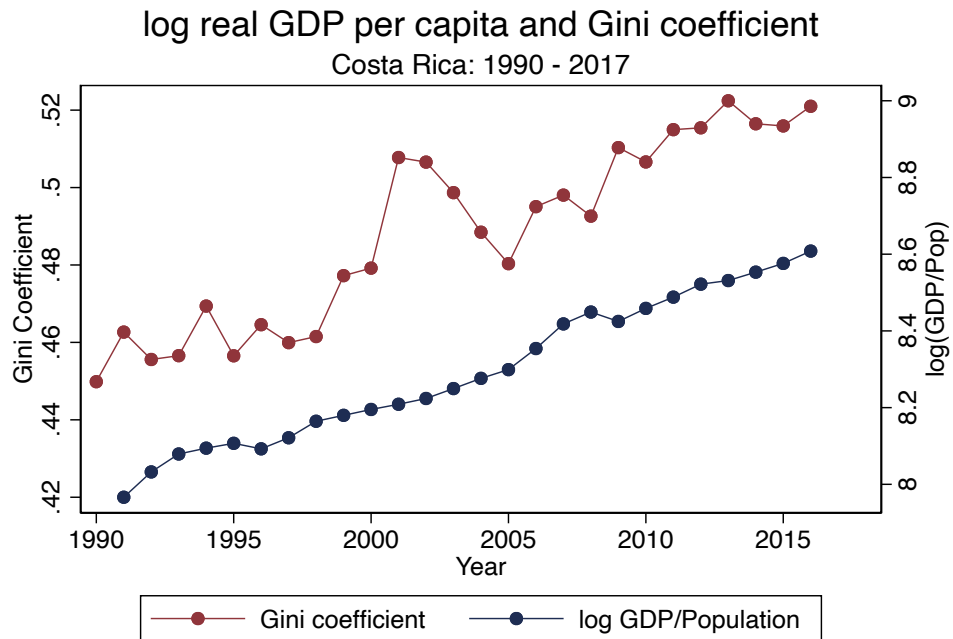
Notes: own computation on official data from Programa Estado Nacion (PEN) and Central Bank (BCCR).

(a) Income inequality at the national level.

Within & between-district income inequality (Gini)
2002 - 2022

Source: authors' computation using data from the Social Security Administration (CCSS) and the Electoral Authority (TSE).

(b) Income inequality at the local level.

FIGURE 30: Changes in income inequality at the national and local level.

	Party name	Acronym	Founded	Ideology	Political position	Won presidential elections
	National Liberation Party	PLN	1951	Social democracy Third Way Figuerism	*Currently:* Centre to centre-left *Historically:* Centre-left to left-wing	Yes
	Social Christian Unity Party	PUSC	1977*	Christian democracy Liberal conservatism Economic liberalism	Centre-right	Yes
	Libertarian Movement Party	ML	1994	Libertarian conservatism Social conservatism Catholic social teaching Economic liberalism	Right-wing	No
	Citizens' Action Party	PAC	2000	Social democracy Progressivism Anti-corruption Figuerism	Centre-left	Yes
	Broad Front	FA	2004	Democratic socialism Socialism of the 21st century Progressivism Environmentalism	Left-wing	No
	National Restoration Party	PRN	2005	Conservatism Social conservatism Christian right Anti-immigration	Right-wing	No
	Liberal Progressive Party	PLP	2016	Libertarianism Classical liberalism	Centre-right	No
	Social Democratic Progress Party	PPSD	2018	Liberalism Social conservatism Economic liberalism	Centre to centre-right	Yes
	New Republic Party	NR	2018	Conservatism Social conservatism Christian right	Right-wing to far-right	No

* PUSC is the heir of previous alliances with different names active in Costa Rican elections since 1953.

FIGURE B.1: Political Parties: Costa Rica

Box plot ENEP: 25 continuous democracies

Source: authors' computation using data from Bormann & Golder (2022).
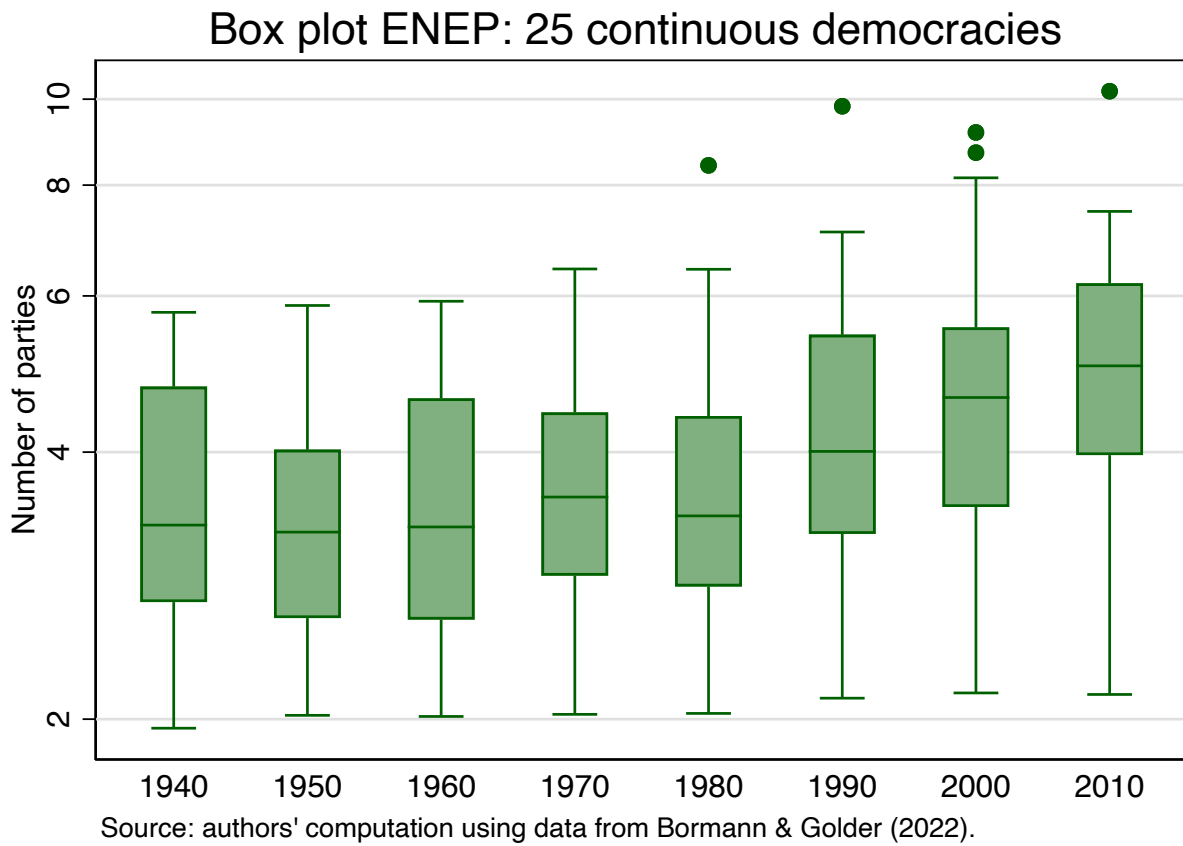
FIGURE B.2: Effective number of electoral parties: 25 continuous democracies
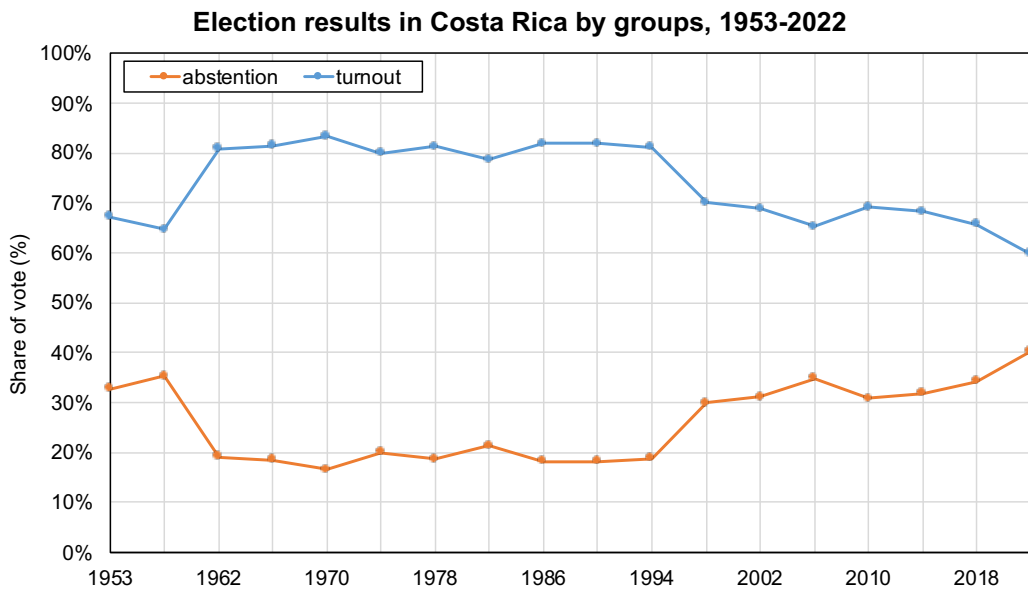
Election results in Costa Rica by groups, 1953-2022

FIGURE B.3: Electoral turnout Costa Rica: 1953 - 2022
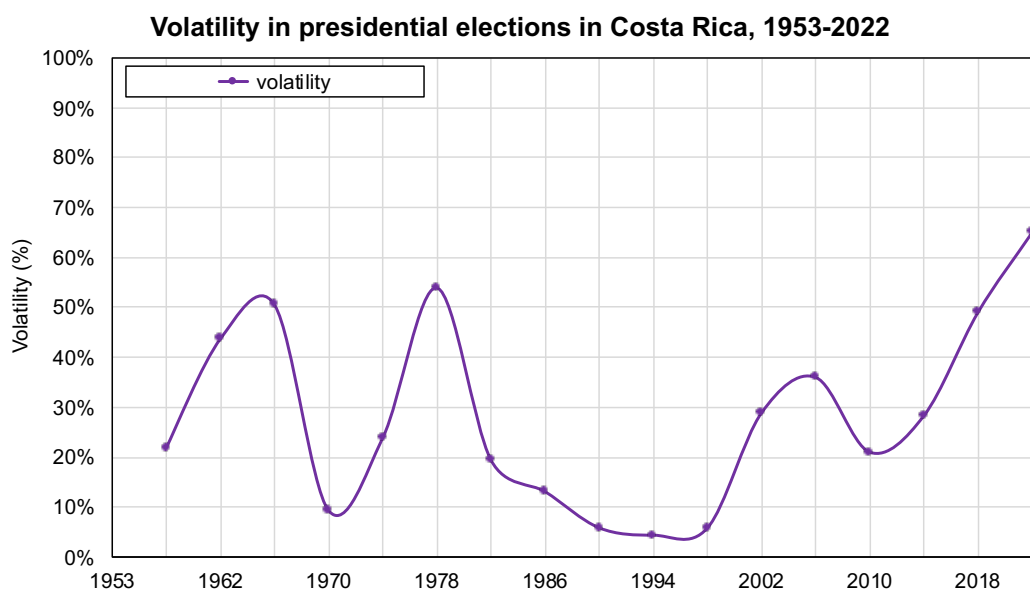
Source: author's computations using official election results.
Note: the figure shows the share of electoral turnout and abstention in presidential elections in Costa Rica between 1953 and 2022. Provisional results for 2022.

Volatility in presidential elections in Costa Rica, 1953-2022

Source: author's computations using official election results.
Note: the figure shows the share of electoral volatility in presidential elections in Costa Rica between 1953 and 2022. Provisional results for 2022.

FIGURE B.4: Electoral volatility Costa Rica: 1953 - 2022
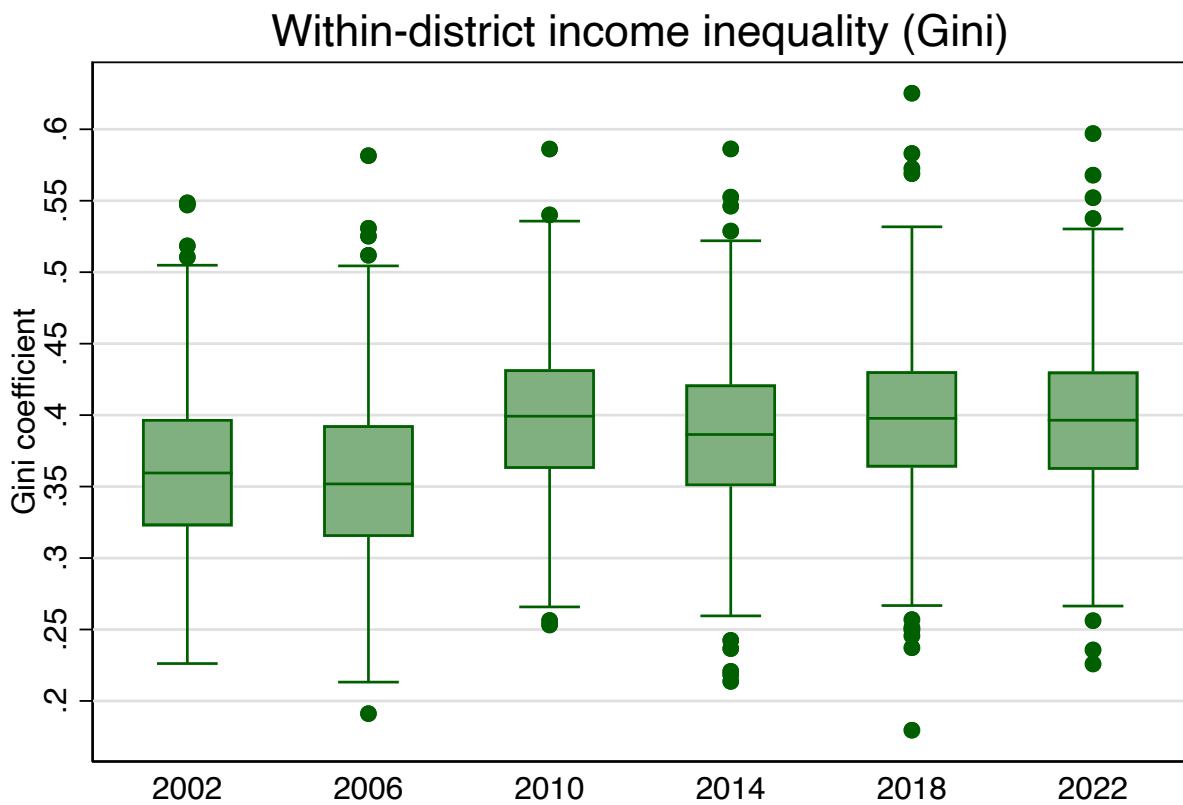
Within-district income inequality (Gini)

FIGURE B.5: Within-district income inequality (average Gini coefficient.)

Effect of inequality on turnout in presidential and local elections: 2002 - 2018

	(1) GLS	(2) GLS controls	(3) GLS FE	(4) GLS FE	(5) GLS FE	(6) GLS	(7) GLS controls	(8) GLS FE	(9) GLS FE	(10) GLS FE
Panel A: effect of inequality on turnout in presidential elections										
district gini	0.015 (0.014)	-0.103*** (0.015)	-0.104*** (0.015)	-0.029*** (0.010)	-0.015* (0.008)					
Top 10						0.049*** (0.018)	-0.096*** (0.020)	-0.120*** (0.019)	-0.030** (0.014)	-0.026** (0.012)
Observations	2338	2325	2325	2325	2325	2338	2325	2325	2325	2325
r2_o	0.000	0.240	0.325	0.861	0.907	0.002	0.236	0.321	0.861	0.907
Panel B: effect of inequality on turnout in local elections										
district gini	-0.307*** (0.023)	-0.292*** (0.030)	-0.215*** (0.029)	-0.114*** (0.024)	-0.066*** (0.020)					
Top 10						-0.398*** (0.032)	-0.360*** (0.040)	-0.242*** (0.038)	-0.124*** (0.036)	-0.048 (0.030)
Observations	1859	1843	1843	1843	1843	1859	1843	1843	1843	1843
r2_o	0.069	0.147	0.261	0.813	0.871	0.068	0.142	0.255	0.812	0.871
Social Development Index (SDI)		YES	YES	YES	YES		YES	YES	YES	YES
log Average Income		YES	YES	YES	YES		YES	YES	YES	YES
Year FE			YES	YES	YES			YES	YES	YES
District FE			YES	YES	YES			YES	YES	

Standard errors in parentheses
* p<0.1   ** p<0.05   *** p<0.01

FIGURE B.6: Inequality and turnout

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Effect of inequality on electoral volatility in presidential elections: 2002 - 2018 (district level)

	(1) GLS	(2) GLS controls	(3) GLS FE	(4) GLS FE	(5) GLS FE	(6) GLS FE
Panel A: effect of inequality (Gini) on turnout in presidential elections						
district gini	0.246***	0.204***	0.204***	0.139***	0.061	0.132***
	(0.027)	(0.028)	(0.028)	(0.024)	(0.046)	(0.042)
Observations	2328	2303	2303	2301	2303	2301
r2_o	0.022	0.010	0.222	0.419	0.486	0.562
Panel B: effect of inequality (Bottom 50) on turnout in presidential elections						
Bottom 50	-0.431***	-0.349***	-0.350***	-0.221***	-0.013	-0.170***
	(0.044)	(0.044)	(0.044)	(0.038)	(0.066)	(0.061)
Observations	2328	2303	2303	2301	2303	2301
r2_o	0.019	0.017	0.226	0.419	0.485	0.562
Social Development Index (SDI)		YES	YES	YES	YES	YES
log Average Income		YES	YES	YES	YES	YES
Turnout presidential (t-1)				YES		YES
Year FE			YES	YES	YES	YES
District FE					YES	YES

Standard errors in parentheses

* $p<0.1$ ** $p<0.05$ *** $p<0.01$

FIGURE B.7: Inequality and electoral volatility

Effect of inequality on vote share for traditional parties in presidential elections: 2002 - 2018 (district level)

	(1) GLS	(2) GLS controls	(3) GLS FE	(4) GLS FE	(5) GLS FE	(6) GLS FE
Panel A: effect of inequality (Gini) on vote share for traditional parties in presidential elections						
district gini	-0.256***	-0.309***	-0.310***	-0.197***	-0.056	-0.096**
	(0.033)	(0.037)	(0.037)	(0.031)	(0.041)	(0.040)
Observations	2317	2302	2302	2300	2302	2300
r2_o	0.006	0.193	0.665	0.765	0.894	0.901
Panel B: effect of inequality (top 10) on vote share for traditional parties in presidential elections						
top 10	-0.215***	-0.287***	-0.297***	-0.234***	-0.165***	-0.176***
	(0.033)	(0.040)	(0.039)	(0.032)	(0.042)	(0.040)
Observations	2317	2302	2302	2300	2302	2300
r2_o	0.013	0.191	0.663	0.767	0.895	0.902
Social Development Index (SDI)		YES	YES	YES	YES	YES
log Average Income		YES	YES	YES	YES	YES
Turnout presidential (t-1)			YES	YES	YES	YES
Year FE				YES	YES	YES
District FE				YES	YES	YES

Standard errors in parentheses

* $p<0.1$ ** $p<0.05$ *** $p<0.01$

FIGURE B.8: Inequality and vote for traditional parties

Effects of inequality on pro-globalization parties in presidential elections, 2002-2018 (district level)

	(1) GLS	(2) GLS controls	(3) GLS FE	(4) GLS FE	(5) GLS FE	(6) GLS FE
Panel A: Effect of inequality (Gini) on pro-globalization parties in presidential elections						
district gini	0.088***	0.105***	0.105***	0.115***	0.162***	0.151***
	(0.020)	(0.022)	(0.022)	(0.022)	(0.034)	(0.034)
Observations	2317	2302	2302	2300	2302	2300
r2_o	0.001	0.188	0.748	0.750	0.849	0.850
Panel B: Effect of inequality (Bottom 50) on pro-globalization parties in presidential elections						
Bottom 50	-0.160***	-0.176***	-0.176***	-0.197***	-0.201***	-0.179***
	(0.033)	(0.034)	(0.034)	(0.034)	(0.048)	(0.049)
Observations	2317	2302	2302	2300	2302	2300
r2_o	0.005	0.185	0.749	0.751	0.848	0.849
Social Development Index (SDI)		YES	YES	YES	YES	YES
log Average Income		YES	YES	YES	YES	YES
Turnout presidential (t-1)				YES	YES	YES
Year FE			YES	YES	YES	YES
District FE			YES	YES	YES	YES

Standard errors in parentheses

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

FIGURE B.9: Inequality and vote for pro-globalization parties

Effects of inequality on conservative parties in presidential elections, 2002-2018 (district level)

	(1) GLS	(2) GLS controls	(3) GLS FE	(4) GLS FE	(5) GLS FE
Panel A: Effect of inequality (Gini) on consevative parties in presidential elections					
district gini	0.021***	0.028***	0.028***	0.056*	0.006
	(0.006)	(0.007)	(0.007)	(0.029)	(0.009)
Observations	2822	2805	2805	2805	2805
r2_o	0.003	0.042	0.916	0.381	0.943
Panel B: Effect of inequality (Bottom 50) on conservative parties in presidential elections					
Bottom 50	-0.046***	-0.057***	-0.057***	-0.085**	-0.017
	(0.009)	(0.011)	(0.011)	(0.042)	(0.013)
Observations	2822	2805	2805	2805	2805
r2_o	0.005	0.022	0.916	0.381	0.943
Social Development Index (SDI)		YES	YES	YES	YES
log Average Income		YES	YES	YES	YES
Year FE			YES	YES	YES
District FE				YES	YES

Standard errors in parentheses

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

FIGURE B.10: Inequality and vote for conservative parties

Descriptive Statistics (individual-level data): turnout of formal workers in Costa Rica, 2010, 2014 and 2018.

Year		2010 (wage earners)	2014 (wage earners)	2018 (wage earners)
Sector	**Public Sector**	85.3%	86.1%	85.4%
	Private Sector	72.2%	72.0%	70.0%
Industry	**UNSPECIFIED ACTIVITIES**	78.5%	77.7%	80.7%
	Agriculture, hunting and forestry	64.9%	58.4%	55.7%
	Mining and quarrying	70.6%	67.7%	64.7%
	Manufacturing	75.7%	74.5%	72.4%
	Electricity, gas and water supply	84.0%	84.6%	83.6%
	Construction	64.9%	63.3%	58.0%
	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	73.7%	73.3%	70.8%
	Hotels and restaurants	60.0%	58.4%	54.2%
	Transport, storage and communications	74.7%	73.6%	70.8%
	Financial intermediation	87.1%	88.9%	87.7%
	Real estate, renting and business activities	74.5%	74.9%	73.7%
	Public administration and defence; compulsory social security	85.1%	85.3%	84.5%
	Education	89.7%	91.0%	89.7%
	Health and social work	82.2%	83.6%	83.2%
	Other community, social and personal service activities	76.9%	78.9%	76.2%
	Activities of private households as employers and undifferentiated production activities of private households	75.7%	73.0%	70.9%
	Extraterritorial organizations and bodies	88.8%	91.9%	88.9%
edu_level/occupation	**unknown**	83.4%	82.1%	83.5%
	unskilled	64.1%	60.9%	58.4%
	semi-skilled	78.1%	76.1%	73.5%
	skilled	78.8%	80.5%	79.3%
income	**bottom 50**	70.3%	67.8%	65.6%
	middle 40	80.6%	81.1%	80.0%
	top 10	89.7%	91.3%	90.2%
	top 1	89.4%	90.5%	90.1%
All workers	**Average turnout**	76.7%	76.0%	74.3%
	Observations	847,825	999,498	1,112,599

FIGURE B.11: Descriptive Statistics (individual-level data): turnout.

Source: authors' computation using data from Social Security (CCSS) and the Electoral Board (TSE) of Costa Rica.

Descriptive Statistics (individual-level data): income of formal workers in Costa Rica, 2010, 2014 and 2018.

Year		2010 (wage earners)	2014 (wage earners)	2018 (wage earners)	2022 (wage earn
Sector	**Public Sector**	664,949	918,331	997,703	1,094.
	Private Sector	330,674	443,263	528,754	608.
Industry	UNSPECIFIED ACTIVITIES	358,912	492,258	664,945	751.
	Agriculture, hunting and forestry	199,640	300,830	356,739	400.
	Mining and quarrying	317,384	397,032	440,153	494.
	Manufacturing	429,310	550,381	634,129	678.
	Electricity, gas and water supply	731,526	924,580	1,010,378	1,019.
	Construction	303,978	367,227	389,817	416.
	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	328,118	416,512	488,522	534.
	Hotels and restaurants	248,067	310,828	358,643	369.
	Transport, storage and communications	458,822	547,486	598,235	643.
	Financial intermediation	745,558	996,716	1,069,244	1,170.
	Real estate, renting and business activities	427,273	540,273	671,213	817.
	Public administration and defence; compulsory social security	648,114	902,125	971,876	1,092.
	Education	549,851	703,614	824,173	867.
	Health and social work	412,581	521,567	624,979	656.
	Other community, social and personal service activities	338,596	470,104	551,806	632.
	Activities of private households as employers and undifferentiated production activities of private households	129,084	156,835	183,626	192.
	Extraterritorial organizations and bodies	795,609	1,151,704	1,230,515	1,485.
edu_level/occupation	unknown	667,931	764,008	941,148	1,203.
	unskilled	207,924	261,340	299,212	323.
	semi-skilled	400,031	478,247	533,090	579.
	skilled	503,116	723,275	842,169	917.
income	bottom 50	177,980	238,040	266,975	298.
	middle 40	475,376	607,989	698,604	800.
	top 10	1,313,016	1,692,992	1,947,703	2,162.
	top 1	3,893,942	5,052,150	5,879,700	6,445.
All workers	**Average wage**	436,213	565,104	646,939	728.
	Observations	847,825	999,498	1,112,599	916.

Source: authors' computation using data from Social Security (CCSS) and the Electoral Board (TSE) of Costa Rica.
Note: all figures are in normal Costa Rican colones (CRC).

FIGURE B.12: Descriptive Statistics (individual-level data): income.

Effect of movements in the income distribution on turnout in presidential elections, 2002-2018 (individual level)

	(1) OLS	(2) FE	(3) FE controls	(4) FE controls	(5) FE controls	(6) FE controls
Panel A: Effect of movements in the income distriution on turnout in presidential elections (30 percentiles)						
climb_dist30	-0.028***	-0.018***	-0.021***	-0.019***	-0.014***	-0.014***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
drop_dist30	-0.066***	-0.015***	-0.017***	0.011***	-0.003	-0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Observations	2,498,467	2,498,467	2,498,467	2,498,467	1,799,021	1,799,021
r2_o	0.001	0.001	0.169	0.029	0.019	0.127
Panel B: Effect of movements in the income distriution on turnout in presidential elections (20 percentiles)						
climb_dist20	-0.041***	-0.017***	-0.020***	-0.017***	-0.013***	-0.013***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
drop_dist20	-0.079***	-0.011***	-0.014***	0.010***	0.000	-0.003*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Observations	2,498,467	2,498,467	2,498,467	2,498,467	1,799,021	1,799,021
r2_o	0.003	0.002	0.167	0.029	0.021	0.127
Panel C: Effect of movements in the income distriution on turnout in presidential elections (10 percentiles)						
climb_dist10	-0.046***	-0.014***	-0.017***	-0.013***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
drop_dist10	-0.088***	-0.009***	-0.012***	0.007***	0.001	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Observations	2,498,467	2,498,467	2,498,467	2,498,467	1,799,021	1,799,021
r2_o	0.006	0.004	0.167	0.029	0.022	0.127
Individual level controls					YES	YES
log Income				YES	YES	YES
Turnout presidential (t-1)			YES			YES
Year FE		YES	YES	YES	YES	YES
Individual FE		YES	YES	YES	YES	YES

Standard errors in parentheses   * $p<0.1$ ** $p<0.05$ *** $p<0.01$
Controls: public sector, age, skilled and unskilled.

FIGURE B.13: Movements in the income distribution and turnout (individual level).

Effect of movements in the income distribution on turnout in presidential elections, 2002-2018 (polling station level)

	(1) OLS	(2) FE	(3) FE controls	(4) FE controls	(5) FE controls
Panel A: Effect of movements in the income distriution on turnout in presidential elections (30 percentiles)					
share_climb30	8.655***	4.746***	4.656***	8.752***	9.788***
	(0.316)	(0.402)	(0.440)	(0.394)	(0.437)
share_drop30	-20.839***	-24.167***	-24.696***	-15.070***	-15.392***
	(0.340)	(0.400)	(0.418)	(0.427)	(0.450)
Observations	32751	32750	31966	32720	31939
r2_o	0.103	0.096	0.118	0.150	0.160
Panel B: Effect of movements in the income distriution on turnout in presidential elections (20 percentiles)					
share_climb20	9.954***	8.909***	9.101***	12.270***	13.627***
	(0.206)	(0.271)	(0.290)	(0.259)	(0.281)
share_drop20	-15.437***	-17.624***	-18.178***	-11.743***	-11.954***
	(0.234)	(0.282)	(0.297)	(0.280)	(0.295)
Observations	32751	32750	31966	32720	31939
r2_o	0.122	0.118	0.134	0.206	0.216
Panel C: Effect of movements in the income distriution on turnout in presidential elections (10 percentiles)					
share_climb10	8.407***	9.595***	9.778***	12.367***	13.178***
	(0.102)	(0.138)	(0.144)	(0.123)	(0.128)
share_drop10	-10.380***	-11.930***	-12.373***	-8.224***	-8.211***
	(0.147)	(0.180)	(0.190)	(0.160)	(0.168)
Observations	32751	32750	31966	32720	31939
r2_o	0.184	0.184	0.183	0.361	0.362
log Income				YES	YES
Turnout presidential (t-1)			YES		YES
Year FE		YES	YES	YES	YES
Polling station FE		YES	YES	YES	YES

Standard errors in parentheses   * p<0.1   ** p<0.05   *** p<0.01

FIGURE B.14: Movements in the income distribution and turnout (polling station level).