Recession and Credit Crunch: The Lasting Consequences of a Banking Expropriation*

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VERY PRELIMINARY - PLEASE DO NOT CIRCULATE

Abstract

This paper investigates the impacts of Brazil's Collor Plan, implemented in March 1990, which aimed to address hyperinflation through an unprecedented confiscation of over 80% of the country's liquid assets. Using a difference-in-differences approach, we exploit variation in asset exposure across municipalities to estimate the plan's causal effects. Our findings reveal that the Collor Plan led to a substantial and persistent decrease in total employment, average wages, and number of firms, with smaller firms disproportionately affected. Furthermore, we observe a marked reduction in wage inequality and a significant decrease in the skill premium, highlighting the uneven impacts on different workforce segments. Strikingly, these adverse effects have persisted even 30 years after the policy was implemented, stressing the high magnitude and long-term nature of these disruptions. We identify a significant and lasting credit crunch as the primary mechanism driving this persistence. These results provide new evidence of the severe and persistent economic disruptions caused by extreme monetary interventions, emphasizing the potential risks and trade-offs involved in such stabilization policies.

JEL codes: I38, J08, J24, J38

Keywords: Expropriation, Hyperinflation, Disinflation, Long-term Well-being

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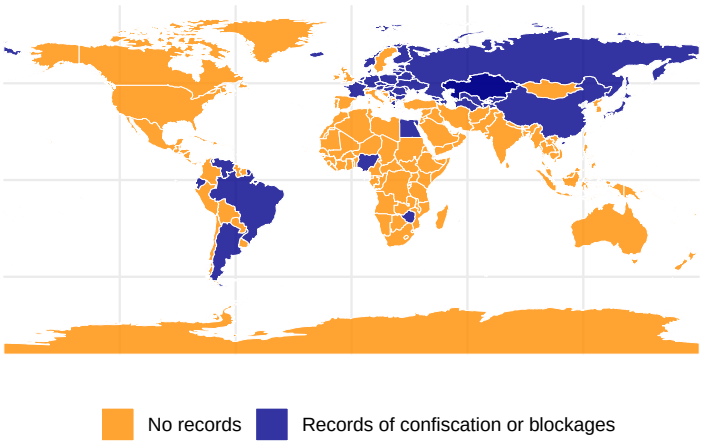
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1 Introduction

Inflation and hyperinflation have plagued many economies throughout history. Some economists argue that one approach to address this issue is through a currency reform, which essentially involves confiscating or freezing accounts denominated in bad currency to mitigate inflationary pressures. (Dornbusch and Wolf, 1990; Edwards, 1991; Calvo et al., 2004). Historical examples include several European countries during the 1940s, as well as more recent instances in Argentina, the Soviet Union, Greece, and Nigeria. [1] Despite the frequent use of such measures, the empirical evidence on their short- and long-term consequences remains surprisingly scarce. Specifically, the persistence and magnitude of these impacts are not well-documented.

Figure 1: Financial Assets Confiscations and Blockages around the world



Notes. Authors elaboration based on Dornbusch and Wolf (1990) and additional contemporary sources.

This paper provides new evidence on the impacts of these extreme monetary policies by analyzing the Collor Plan in Brazil, introduced in 1990 to address hyperinflation.(Levy and Barbosa, 2003) The policy froze financial assets in checking and savings accounts worth over $160 billion, more than 40% of Brazil's GDP at the time.[2] Though termed a freeze, it effectively acted as expropriation, as the inflation rate outpaced the interest rate adjustments on the frozen assets.[3] Named after then-President Fernando Collor de Mello, the plan aimed to stabilize the

[1] Other historical examples of countries that implemented measures like blocking deposits or confiscations include Germany (1948), Austria (1945, 1947), Belgium (1944), Bulgaria (1947, 1952), Czechoslovakia (1945, 1953), Denmark (1945), France (1945, 1948), Hungary (1945, 1946), Poland (1950), and Romania (1947, 1952). See Dornbusch and Wolf (1990) and Calvo et al. (2004) for a historical literature review.

[2] The Collor Plan received extensive international coverage due to its dramatic impact. See, Silverstein (1990); Robinson (1990b,a); Brooke (1991)

[3] Throughout this paper, the terms "Assets Freezing" and "Assets Expropriation" are used interchangeably to

economy by severely limiting access to financial resources for both individuals and businesses. To investigate the effects of the Collor Plan, we employ a difference-in-differences approach, using variation in asset exposure between different municipalities. Specifically, we generate an exposure intensity based on the amount of money in accounts frozen for each municipality one month before the expropriation. By comparing municipalities with more eligible assets to those with less, both before and after the policy implementation, we aim to estimate the causal impacts of the plan on various economic indicators, especially employment trends and wage inequality.

Our analysis reveals several significant effects of the Plan on the Brazilian economy. The movement from the 25th to the 75th quartile of treatment led to a 17.37% decrease in total employment, a 10.81% reduction in average wages, and a 31.47% drop in the overall wage bill. Additionally, there was a marked negative effect on the number of firms, which fell by 8.66%. Interestingly, the average firm size increased by 5.96%, suggesting that the reform disproportionately impacted smaller firms. Perhaps most strikingly, these effects have persisted even 30 years after the policy was implemented. These findings indicate a severe and enduring economic disruption caused by the Collor Plan, stressing even more the consequences of such drastic measures. The persistence of these negative effects raises questions about the potential risks of using expropriation as a tool for economic stabilization.

In addition to the broad economic disruptions, the Collor Plan significantly impacted wage inequality and the skill premium in Brazil. Our analysis reveals that the higher wage quartiles experienced the most profound declines, with the top wage quartile falling by up to 19.9%. In contrast, the lowest quartile saw negligible changes. These disparities suggest that higher-paid workers were more susceptible to the financial constraints imposed by the policy, likely due to their higher wage costs leading firms to lay them off first. Furthermore, the skill premium experienced a substantial reduction of 0.6346 points, which corresponds to approximately 14.75% of its mean value (4.3). The IQR (Interquartile Range) analysis indicates that wages for high-skilled workers decreased by 25.72%, while wages for low-skilled workers decreased by 6.12%. This substantial erosion in wages for more skilled workers compressed wage inequality and significantly reduced the skill premium.

The primary mechanism driving these long-term effects seems to be the policy's impact on the credit market. Our data indicate a substantial reduction in deposit levels across cities affected by the reform, an increase of one log point in the treatment measure generates a decrease of 36.33% in the total deposits. [4] This reduction in deposits led to a credit crunch, still evident three decades later, hindering economic recovery by reducing credit lending by 27.51%. This aligns with our strong effects on small firms as the existing literature on credit shocks emphasizes that small firms are particularly sensitive to changes in credit availability

refer to the same phenomenon.

[4]We believe that this long-run decline in deposits is also partially driven by a decreased trust in banks and the government. See Appendix Table A.2

(Buera et al., 2015; Bazzi et al., 2023). These results underscore the important role of credit markets in economic stability and growth. They also suggest that policies that severely affect financial intermediation can have lasting negative impacts, particularly on segments of the economy that are most reliant on credit, such as small businesses.

Our findings on the long-term effects of the Collor Plan highlight significant and lasting disruptions to local economies. While Brazil may have seen overall economic recovery, the relative differences across municipalities reveal persistent inequality. Areas more exposed to expropriation continue to suffer in terms of employment, wages, and number of firms compared to less affected regions. These persistent disparities point to inefficiencies in local labor market adjustments, suggesting that the negative impacts of the policy were unevenly distributed. This highlights the need to consider regional differences when assessing the effects of macroeconomic policies. Addressing these distributional issues is essential for ensuring more equitable economic recovery and minimizing the risks associated with such interventions.

Our study contributes to several areas of economic research. First, it adds to the discussion on inflation. A substantial body of work has investigated how inflation affects consumption, wealth distribution, immediate welfare, public perceptions, and future economic expectations. (Doepke and Schneider, 2006; Nakamura et al., 2013; Malmendier and Nagel, 2016; Nakamura et al., 2016; Coibion et al., 2018; Nakamura et al., 2018; Werning, 2022; Lorenzoni and Werning, 2023b,a; Stantcheva, 2024; Binetti et al., 2024; Malmendier and Wellsjo, 2023).[5] Traditional disinflation strategies like monetary tightening and fiscal austerity aim to stabilize prices swiftly but often result in high economic costs. (Sargent, 1983; Ball et al., 1988; Kahn and Weiner, 1990; Ball, 1994; Katayama et al., 2019; Tetlow, 2022) In extreme cases, some economists (Dornbusch et al., 1990; Dornbusch and Wolf, 1990; Edwards, 1991) even argue that drastic interventions such as generalized asset expropriations are necessary to stabilize the economy, while others emphasize significant costs in fast corrections. (Meltzer, 1980; Cochrane and Ickes, 1991; Bordo et al., 2017) Our findings highlight the severe long-term economic disruptions these policies can cause. This expands the understanding of the potential trade-offs associated with anti-inflation measures. [6]

Additionally, our study broadens the literature on monetary policy shocks, in special the analyses of the Indian demonetization (Banerjee and Kala, 2017; Lahiri, 2020; Chodorow-Reich et al., 2020; Aggarwal and Narayanan, 2021; Khanna and Mukherjee, 2023). While this other policy, which turned 86% of the currency invalid overnight, caused immediate and

[5]Specifically about perceptions, households generally view inflation negatively, associating it with reduced purchasing power, financial stress, and economic instability. Lower-income groups are particularly affected, further exacerbating economic inequality (Binetti et al., 2024; Stantcheva, 2024). For additional discussions on public attitudes toward inflation, see Easterly and Fischer (2001), Shiller (1997), Di Tella et al. (2001).

[6]Our study also contributes to the literature on persistent economic downturns following macroeconomic shocks. While previous research, such as Hershbein and Stuart (2024), has documented long-lasting declines in employment losses after recessions, we add evidence from a policy-induced shock and discuss the possible persistence mechanisms, particularly the role of credit markets.

short-term disruptions, our study examines a shock with a much longer temporal scope. In the Indian case, individuals were quickly able to replace the invalidated money, leading to short-lived effects. By contrast, the Collor Plan resulted in a permanent reduction in economic activity and credit availability. Our evaluation of the Plan over 30 years reveals persistent economic challenges arising from aggressive monetary interventions. As already noticed in the literature, direct causal inferences in macroeconomics are rare as it is difficult to find large-scale natural experiments (Nakamura and Steinsson, 2018; Chodorow-Reich et al., 2020), making our findings particularly valuable for considering the lasting impacts of such policies on economic health.

Next, this paper contributes to the discussion on the origins and consequences of credit shocks. Previous research has shown how financial frictions impact economic stability (Buera et al., 2015; Straub and Ulbricht, 2017; Bazzi et al., 2023). Our study extends this literature by showing that the Collor Plan led to a lasting reduction in credit availability, which still affects firms today.[7] This credit crunch highlights the long-term repercussions of aggressive policies on financial markets and economic activity, particularly punishing small firms. [8] Additionally, this paper examines the implications of financial frictions on wage inequality, revealing a reduction in wage inequality due to the Plan. Higher-wage workers faced more substantial wage reductions, reducing the overall wage distribution and significantly decreasing the skill premium. This reduction is consistent with the evidence that financial frictions can influence income distribution (Greenwood and Jovanovic, 1990; Giné and Townsend, 2004; Buera et al., 2021; Fonseca and Van Doornik, 2022; Fonseca and Matray, 2024). Our results highlight the importance of considering distributional effects when designing monetary policies.

Lastly, our research speaks to ongoing debates about wealth taxes by analyzing the Collor Plan's assets expropriation as an implicit wealth tax through inflationary loss. Studies by Saez and Zucman (2016); Jakobsen et al. (2020), and Saez and Zucman (2019) discuss the implications of wealth taxation on savings and economic inequality. The Collor Plan eroded the value of frozen assets due to inflation, effectively reducing savings and impacting wealth distribution. This provides new insights into the long-term economic ramifications of wealth tax-like policies and offers evidence of their potential unintended consequences.

The paper is structured as follows: Section 2 sets the scene with an overview of the Collor Plan. Section 3 introduces our data and exposure measurement methods. Section 4 explains the empirical strategy for assessing the plan's economic effects. Section 5 reports our main findings, discusses their implications, and tests their robustness. Section 6 presents the effects of wage inequality on different wage quartiles and skill premium estimates. Section 7 investigates the mechanisms behind these effects. Finally, Section 8 concludes.

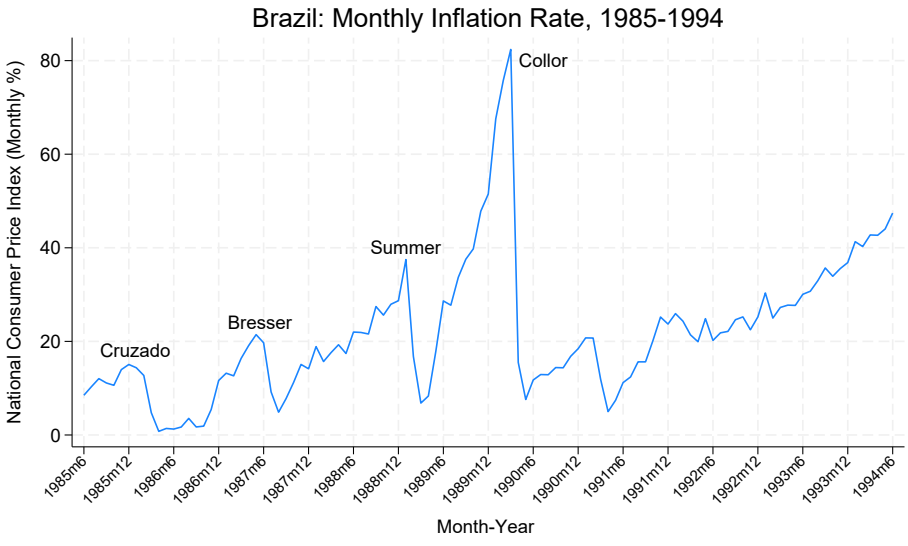
[7] We also relate to the literature highlighting the fragility of banks due to their reliance on deposit funding.(Diamond and Rajan, 2001; Song and Thakor, 2007)

[8] This aligns with Dix-Carneiro et al. (2021), who show that domestic distortions can worsen resource misallocation and potentially reduce formality.

2 Addressing Hyperinflation: The Case of the Collor Plan

In the years leading up to 1990, Brazil struggled with an escalating hyperinflation crisis, with annual inflation rates exceeding 3,000%. This period marked a decade of chronic economic instability and ineffective stabilization efforts, which failed to counter the rampant price increases that eroded the purchasing power of Brazilian consumers and businesses. One prevailing government hypothesis for this persistent issue was the idea of monetary overhang, where the amount of money in circulation far exceeded the economy's capacity to absorb it.(Levy and Barbosa, 2003) This excess liquidity was believed to exacerbate inflationary pressures, creating a vicious cycle that was difficult to break. In response, newly elected President Fernando Collor de Mello introduced an ambitious and unprecedented policy in March 1990, known as the Collor Plan. The intervention consisted of the traditional currency change (introduction of Cruzeiro Cr$ as new currency), freezing of prices and wages, and efforts to reduce fiscal evasion, however, central to the plan was the radical measure of freezing a substantial portion of private and public bank assets, effectively locking away over 80% of the country's liquid assets overnight. (Ayres et al., 2019) This move aimed to drastically reduce the money supply and stabilize the economy. Inspired by historical precedents from several European countries in the 1940s, where such measures successfully stabilized hyperinflated economies (Calvo et al., 2004; Dornbusch and Wolf, 1990), the Brazilian government adopted this approach with high hopes. However, despite these extreme measures, inflation began to rise again, suggesting that the government's hypothesis on monetary overhang may have been misplaced. (See Figure 2)

Figure 2: Inflation Dynamics and Government Stabilization Plans in Brazil (1980-1994)



Notes. This figure plots the Brazilian monthly inflation rate and the main stabilization plans implemented during the 80s.

During the Plan, checking and savings accounts were restricted, allowing individuals to access only up to Cr$50,000 (approximately US$1,300 at that time). Similarly, withdrawals from overnight applications and remunerated accounts were limited to Cr$25,000 (around US$650) or 20% of the total amount held, whichever was greater. For funds and term deposits, the policy permitted the release of 20% of their total amounts, while actual paper currency remained unaffected. The frozen assets were subjected to an 18-month lock-in period, receiving an annual interest rate of 6%. (Presidência da República, 1990) During this period, the funds were held at the Central Bank, allowing the government to use them to finance its deficits. This arrangement enabled the government to benefit from the controlled interest rate set on these frozen assets.(Ayres et al., 2019) [9] A structured release of these assets was planned to begin with 12 monthly installments starting from the 19th-month post-freeze, a strategy designed to gradually reintegrate the frozen funds into the economy, thereby avoiding a sudden increase in the money supply that could reignite inflationary pressures. By drastically reducing the money supply, the Collor Plan aimed to cease the inflationary spiral and reset economic expectations, providing a foundation for subsequent structural reforms. However, the initial stabilization was short-lived; inflation rates began to rise again soon after the implementation, suggesting that the government's hypothesis on monetary overhang may have been insufficient to tackle the underlying issues driving hyperinflation.

Table 1: Summary of Collor Plan Asset Restrictions (1990)

	Policy Details
General Duration	18 months, 6% annual interest rate.
	Released in 12 monthly installments from the 19th month.
Asset Type	
Actual Paper Currency	Not affected
Checking and Savings Accounts	Immediate release of Cr$50,000 (approx. US$1,300 as of March 13, 1990)
Overnight Applications & Remunerated Accounts	Immediate release of Cr$25,000 (approx. US$650)
	20% of the total amount, whichever is greater
Funds and Term Deposits	Immediate release of 20% of the total amount

Notes. Table 1 summarizes the key details of the asset freeze implemented under the Collor Plan, introduced in March 1990. The Table outlines the different rules applied to various asset types during the freeze period. See Appendix Figure A.2 for a newspaper article detailing the Collor Plan's implementation at the time of the policy intervention.

Following the implementation of the Collor Plan, Brazil experienced a severe economic contraction as the sudden freeze drastically curtailed access to liquid funds. This immediate liquidity restriction led to a sharp decline in both consumer spending and business investment, profoundly impacting small and medium-sized enterprises that relied on cash flow for their daily operations, with many facing bankruptcy. Households, likewise, found their purchasing power significantly diminished, fostering economic insecurity and reduced

[9] See appendix figure A.6 for the national trajectories of the operational deficits and real seigniorage during the Collor plan duration.

consumer demand. [10] [11] The banking sector encountered a crisis of confidence, as financial institutions could not meet withdrawal demands, exacerbating financial instability. Despite government efforts to mitigate these effects through the gradual unfreezing of assets, the disruptions caused by the Plan led to a prolonged period of economic hardship marked by slow growth (Real GDP reduced by 5.7% in 1990) and continued instability. Socially, the public's sudden loss of access to savings intensified discontent and skepticism towards the government's policies, contributing to widespread frustration and social unrest. Ultimately, the mounting public dissatisfaction with the economic turmoil resulted in significant political repercussions, including the impeachment of President Fernando Collor de Mello in 1992.

The immediate and long-term consequences of the liquidity-blocking measure were significant. While the Plan stipulated that the frozen funds would be returned with 6% annual interest rate correction, high inflation during the freeze severely diminished the real value of the returned money. Resulting in the returned funds having significantly less purchasing power compared to when they were initially blocked. This led to substantial financial losses for many individuals, as their savings were effectively eroded over the freeze period, and made the Plan known as a banking expropriation. Additionally, procedural conflicts, bureaucratic hurdles, and legal disputes meant that not all individuals received their funds back as promised, further exacerbating the economic hardship. The return of savings with diminished value and instances of unreturned funds contributed to widespread disillusionment with the government.

In summary, the Collor Plan's radical approach to addressing hyperinflation through an extensive asset freeze had far-reaching economic and social consequences. The immediate liquidity restrictions led to a sharp economic contraction and significant financial losses for individuals. Additionally, the plan's implementation resulted in mounting public discontent and political upheaval, culminating in President Collor's impeachment. These events emphasize the persistent impacts on economic stability. The next section will present the data utilized to analyze the consequences in greater detail.

3 Data

3.1 Matched Employer-Employee Data

Our study primarily utilizes the *RAIS* (Relação Anual de Informações Sociais) dataset to assess the impacts of the Collor Plan. Collected annually by the Brazilian Ministry of Labor, *RAIS* provides an exhaustive administrative record of the formal labor market in Brazil. This

[10] Appendix figure A.5 shows that the policy generated a sharp decrease in the gross national savings and investment, which even at the national level, persisted for years.

[11] See Appendix Figures A.3 and A.4 for newspaper articles from around the time of the intervention, discussing the predicted wave of bankruptcies among small enterprises and the impact on economic activity, respectively.

dataset includes key variables such as employment counts, firm demographics (number and size of firms), average wages, and worker characteristics (age, education, and occupation), spanning from 1987 to 2020. The reporting in *RAIS* is incentivized as workers need the register to receive government benefits, and firms face fines for non-compliance. As a result, *RAIS* covers nearly all formally employed workers, excluding only informal categories such as domestic workers and self-employed individuals. Our main sample consists of municipal-level averages, enabling us to trace shifts in employment trends, firm survival and size, and wage evolution over time.[12] This granular information allows us to analyze how these critical economic factors were reshaped following the policy intervention, providing evidence of broader economic shifts resulting from asset expropriation. The extensive range of variables in *RAIS* is vital for understanding the long-term trajectory of employment and firm-level changes in the aftermath of the Collor Plan. Additionally, we incorporate data from the 1980 census to control for pre-existing conditions and trends. This dataset provides essential baseline demographic and socioeconomic information, such as literacy rates, employment shares, median labor income, and racial composition. Including these pre-policy characteristics enhances our identification strategy, allowing us to precisely determine the specific effects of the 1990 expropriation on varied population segments.

3.2 Monthly Banking Statistics by Municipality

The *ESTBAN* dataset contains detailed financial information from all bank branches in Brazil, covering the period from 1989 to 2020. This dataset includes variables such as total deposits, loan volumes, and branch locations, allowing for a detailed examination of banking activities at the municipal level. We use *ESTBAN* to analyze the impact of the Collor Plan on banking operations and financial services access across different regions. Our primary outcomes are total deposits and total credit disbursed each year. Additionally, the dataset provides critical information on the amounts frozen in bank accounts immediately before implementing the Collor Plan. Our treatment variable is constructed based on three specific balance sheet items as of February 1990: demand deposits (*Depósitos à Vista*), savings deposits (*Poupanca*), and time deposits (*Depósitos à Prazo*). This analysis helps us understand the direct effects of the expropriation on banking operations and its broader economic consequences.

3.3 Exposition Measure

To quantify the effects of the 1990 Expropriation, we use a similar "bite" approach as Card (1992) and Derenoncourt and Montialoux (2021).[13] This method involves measuring the

[12] To examine wage dynamics, we restrict the sample to prime-age men (ages 25-50), ensuring a focus on a demographic segment with stable labor market participation(Katz and Murphy, 1992; Card and Lemieux, 2001).

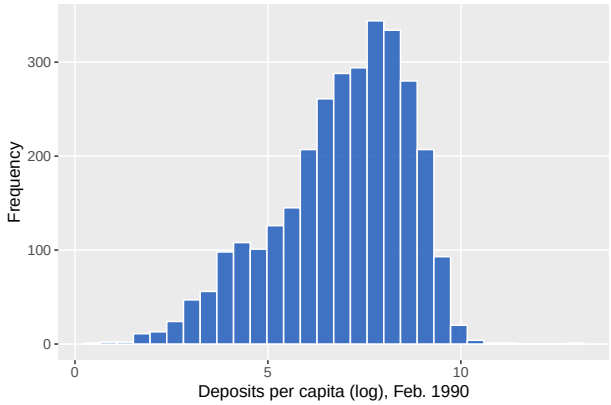
[13] This type of cross-sectional identification is becoming more common in macroeconomics, see Nakamura and Steinsson (2014); Chodorow-Reich (2019); Chodorow-Reich et al. (2020); Guren et al. (2021)

intensity of exposure by comparing cities most and least affected by the policy, based on the amount of money in blocked investment and savings accounts in the month immediately before the law changed. By employing this method, we provide a detailed view of how intensely different municipalities were impacted by the expropriation of the assets, enabling a thorough "dose-response" analysis. Our primary source for this data is the ESTBAN dataset from the Central Bank of Brazil, which records detailed financial information, including the amounts held in demand deposits (*Depósitos à Vista*), savings deposits (*Poupanca*), and time deposits (*Depósitos à Prazo*). These three balance sheet items, recorded in February 1990, form the basis of our treatment variable. Using this variable, we can construct an intensity measure that captures the degree of exposure to the Collor Plan for each municipality. By interacting this intensity measure with the timing of the policy change, our analysis covers both the immediate aftermath and its long-term effects. This analysis helps us understand the broader economic and social repercussions of the 1990 expropriation and offers valuable insights into the varying impact across different regions.

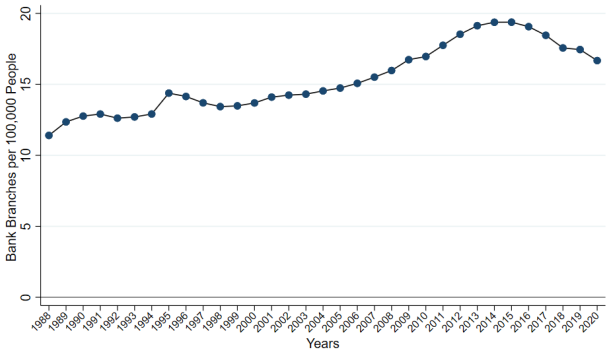
To better visualize the impact of our exposure measure, figure A.7a shows a histogram of the distribution of per capita deposits in confiscated accounts as of February 1990. Figure A.7b presents the trend in Bancarization from 1989 to 2020, defined as the number of bank branches per 1,000 people. Figure 4 explores the correlations between exposure to expropriation and deposit growth. Specifically, Figure 4a shows a slightly positive correlation of deposit growth from February to August 1989 with our measure, while Figure 4b shows a strong negative correlation from February to August 1990, supporting our hypothesis that the treatment measure induced a reduction in deposits after the shock in treated municipalities. Finally, Figure 5 visually represents the geographical variation in exposure to the 1990 Expropriation policy across Brazilian municipalities. The map highlights the extent and distribution of exposure, revealing significant regional disparities.

Figure 3: Bancarization in Brazil

(a) Deposits per capita (log)



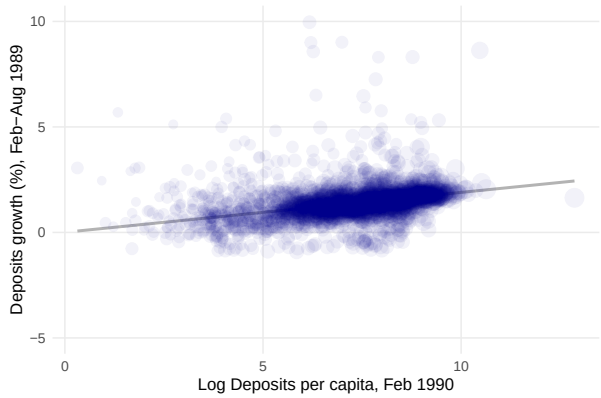
(b) Number of Bank Branches per 100,000



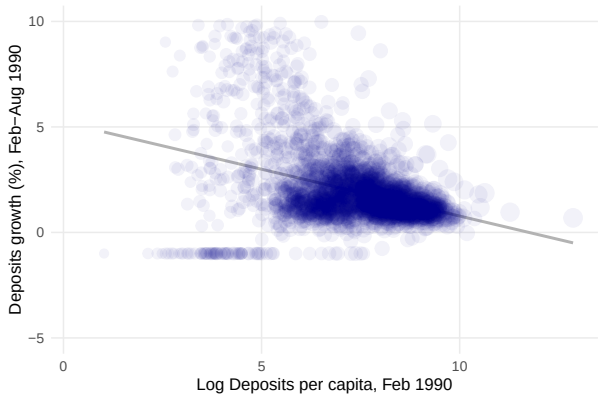
Notes. Figure A.7 visually represents the log deposits per capita in Panel A and the share of total deposits in public banks. Source: Own Calculations

Figure 4: Exposure to Expropriation and Deposits' Growth

(a) Feb–Aug 1989 (placebo)

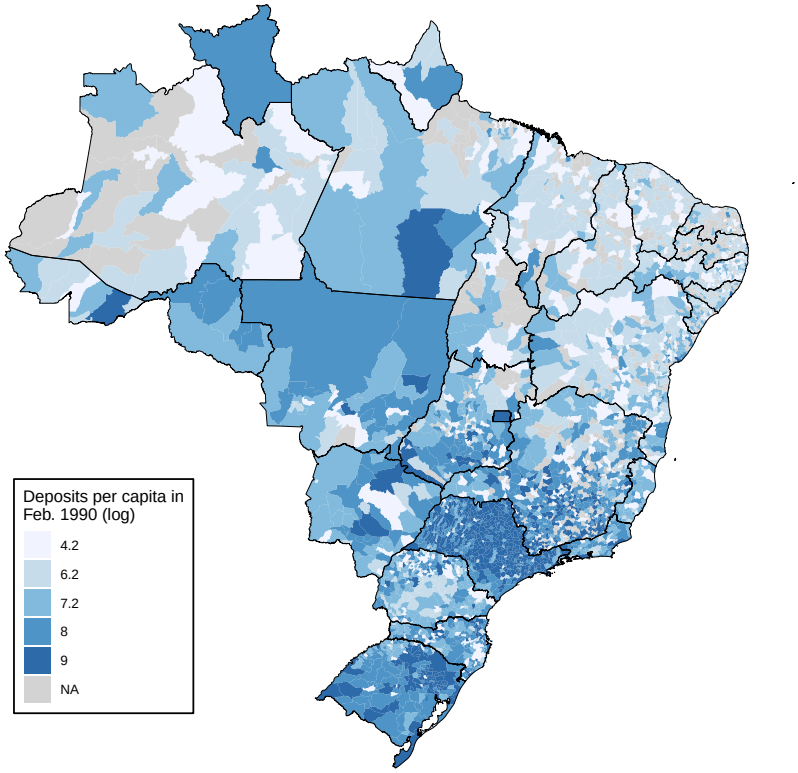


(b) Feb–Aug 1990 (expropriation)



Notes. Panel A presents the relation between our expropriation intensity and the Feb-Aug 1989 change in deposit growth. Panel B presents the relation between our expropriation intensity and the Feb-Aug 1990 change in deposit growth.

Figure 5: Geographical Variation in Exposure to the Expropriation of Bank Deposits



Notes. Figure 5 visually represents the geographical variation in exposure to the 1990 Expropriation policy across Brazilian municipalities. The map highlights the diverse range of exposure to the policy, revealing notable regional disparities in terms of confiscation of savings and investment accounts.

4 Empirical Strategy

Our empirical strategy aims to analyze the contemporary outcomes of key economic indicators, such as the total number of firms, total employment, and average firm size, to assess the long-term impact of the Collor Plan. We utilize a difference-in-differences framework to estimate the causal effect of the expropriation on these outcomes. Specifically, we employ the following model:

$$Y_{ct} = \alpha + \beta\ \textit{Post-1990} \times \textit{Seizure Intensity}_c + \mathbb{X}'_{ct}\Lambda + \tau_c + \theta_t + \xi_{ct} \tag{1}$$

Our empirical strategy models the contemporary outcomes of interest for a city c in year t,

denoted by Y_{ct}, as a function of the interaction between a *Post 1990* indicator and the *Seizure Intensity*. The model also includes baseline 1980 characteristics ($\mathbf{X}'_{ct}$) such as literacy rates, the share of the black population, the proportion of the population employed, and median labor income, each interacted with linear year trends to control for pre-existing differences and time-varying factors. All estimations include state and year fixed effects (τ_s and θ_t) and the error term ξ_{st} is clustered at the city level to account for possible serial correlation of the same city over time. In addition to our main difference-in-differences estimation, we also employ event-study analyses to capture the dynamic effects of the Collor Plan over time as described in the equation 2:

$$\begin{aligned} Y_{ct} = \alpha \; + \; \sum_{T=0}^{30} \left(\boldsymbol{I}_{t=T} \times \textit{Seizure Intensity}_c \right) \cdot \beta_T + \sum_{T=-5}^{-2} \left(\boldsymbol{I}_{t=T} \times \textit{Seizure Intensity}_c \right) \cdot \beta_T \\ + \; \mathbb{X}'_{ct}\Omega \; + \; \lambda_c \; + \; \gamma_t \; + \; \xi_{ct} \end{aligned} \tag{2}$$

The event-study framework allows us to visualize and quantify the temporal progression of the policy's impact on key economic outcomes. By plotting the coefficients for each year relative to the policy implementation, we can observe the lead and lag effects of the confiscation, providing an understanding of both the immediate and long-term consequences. Note that the main assumption behind our empirical strategy is that trends in the labor market do not differ between high-exposure and low-exposure cities. Therefore, the event-study approach allows us to validate the robustness of our common trend assumption by examining the $\beta_{T<0}$ coefficients.

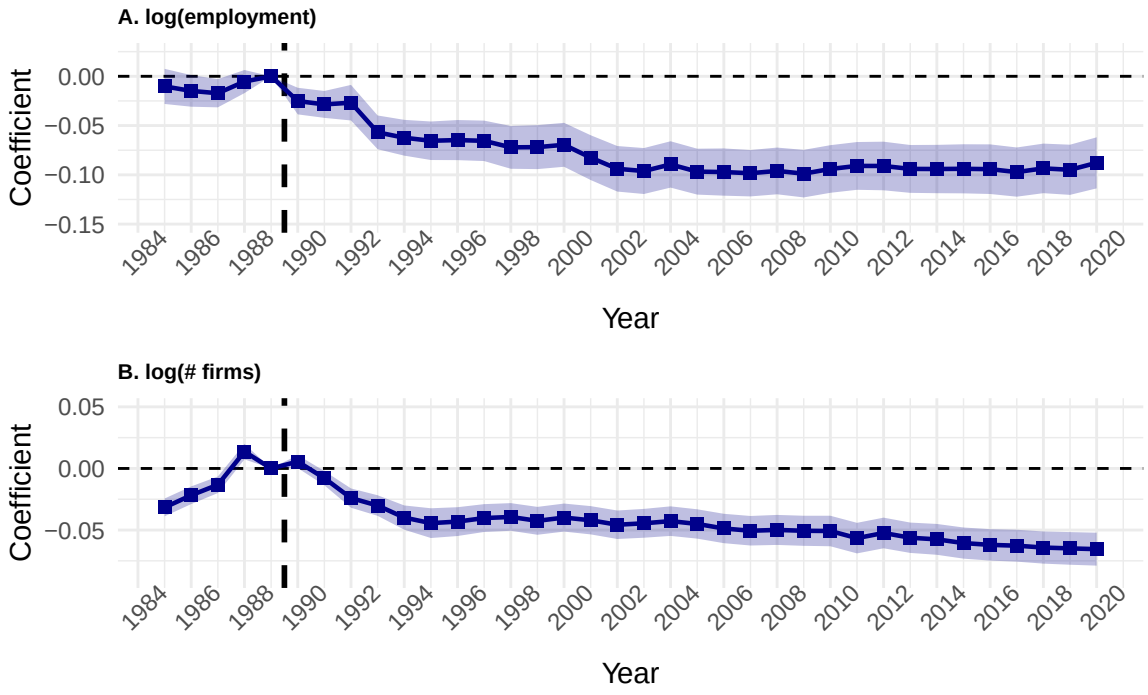
The core identification assumption of our empirical strategy is that absent the Collor Plan, key economic indicators such as total employment, average wages, and the number of firms would have evolved similarly across municipalities with varying levels of exposure to the expropriation. While this parallel trends assumption permits differences in observable and unobservable characteristics between more and less affected municipalities, it requires that these differences remain constant over time. We include municipality and year-fixed effects within our model to control for such potential confounding factors. This approach absorbs all municipality-specific, time-invariant determinants of economic outcomes, likely correlated with our exposure measure. Moreover, to address concerns about pre-existing divergent trends, we incorporate a robust set of baseline covariates—literacy rates, the share of the black population, employment shares, and median labor income—each interacting with year-fixed effects. This allows us to account for any differential pre-policy tendencies that might spuriously correlate with the policy's exposure. The event-study analysis further supports the robustness of our parallel trends assumption by showing that the pre-reform coefficients are in general statistically insignificant. By focusing on deviations in economic indicators that diverge from municipality-specific trends after accounting for common shocks

and differential trends related to initial conditions, our empirical strategy aims to isolate and identify the causal effects of the Collor Plan.

5 Main Results: The Banking Expropriation and Recession

In this section, we present the key findings on the economic impacts of the Collor Plan's banking expropriation. We start by examining the effects on total employment and the number of active firms. We then discuss the specific impacts on wages and the distribution of firm sizes, highlighting how different sectors and business types were affected. These results show the extensive and lasting economic consequences of the policy.

Figure 6: The effects of the Bank Expropriation on Formal Employment and Number of Firms



Notes. This figure plots estimates by year of equation 2. Standard errors are clustered at the AMC level. Dashed lines show 95-percent confidence intervals for each estimate. The model includes all the baseline controls.

Table 4 presents our main estimates from the difference-in-differences analysis of the Collor Plan's impact on log total employment and the number of active firms. Panel A shows the results for log total employment, while Panel B focuses on the log number of active firms. Column 1 presents the basic model with AMC and year-fixed effects. Column 2 adds state-by-year fixed effects to the model. Column 3, our baseline specification, includes controls for trends in 1980 municipality characteristics such as literacy, the share of blacks, the population employed, and median labor income. Finally, Column 4 further interacts with the year-fixed

effects with 1980 characteristics to control for differential trends. Our baseline estimates are found in Column 4. In Panel A, the coefficient on the Expropriation intensity (SI $\times$ Post) is -0.0705, indicating a 7.6% decrease in total employment following the seizure. In Panel B, the coefficient is -0.0352, suggesting a 3.52% reduction in the number of active firms. These negative effects are both statistically significant and economically meaningful. Moreover, these effects become even stronger when we consider the interquartile range (IQR), which measures the impact of moving from the 25th to the 75th quartile of treatment intensity. The estimated IQR effect in Panel A is 17.37%, and in Panel B, 8.66%. This highlights the substantial variation in impact across municipalities, with those more heavily affected by the asset freeze experiencing larger declines in employment and the number of firms. These results emphasize the significant and persistent economic disruptions caused by the Collor Plan, revealing the high magnitude of its adverse effects on Brazil's economy.

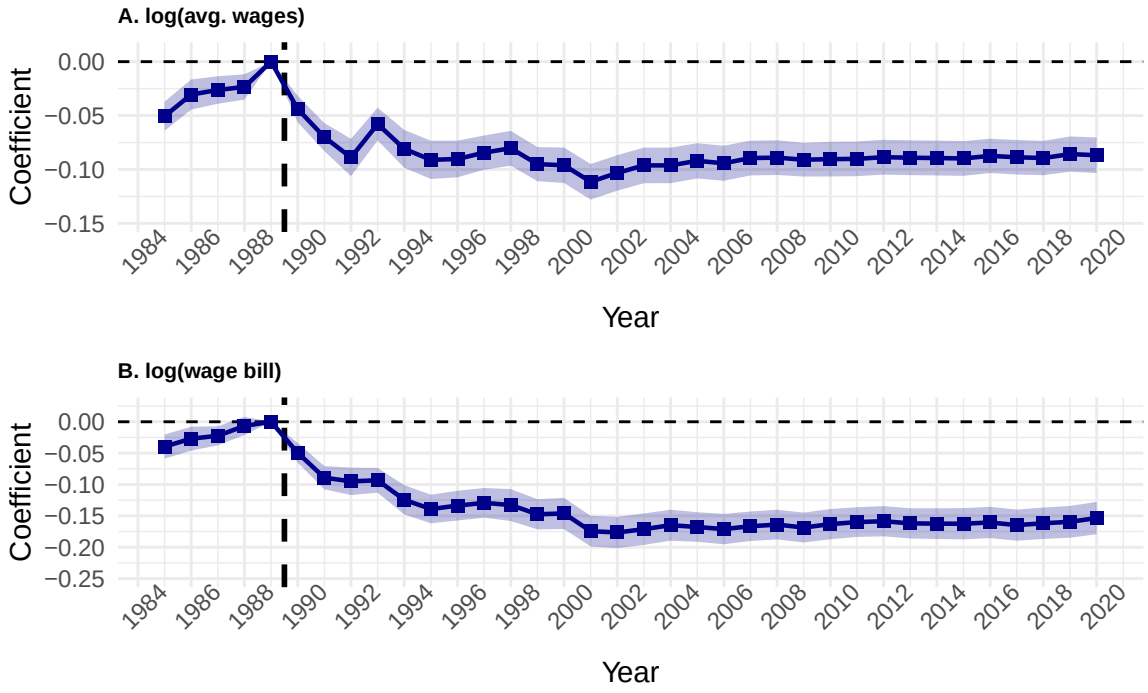
Figure 6 presents the event-study analysis of the baseline estimates for total employment. This figure plots the estimates for each year, with standard errors clustered at the AMC level. Dashed lines indicate the 95-percent confidence intervals for each estimate. The model includes all baseline controls such as AMC and year-fixed effects, state-by-year fixed effects, and trends in 1980 municipality characteristics. The results show that the negative effects on employment stabilize shortly after the policy implementation and persist for an extended period, remaining evident even 30 years after the policy change. This long-term persistence highlights the lasting economic disruption caused by the expropriation. Similarly, Figure 6 presents the event-study analysis for the number of active firms. The estimates reveal a similar pattern, with the negative effects on the number of active firms stabilizing shortly after the policy change and persisting over the long term. The ongoing adverse impact on firm activity further highlights the widespread and long-lasting economic consequences of the stabilization Plan.

Table 2: Banking Expropriation, Total Employment, and Number of Active Firms

	Panel A:			
	Log Total Employment:			
	(1)	(2)	(3)	(4)
SI $\times Post$	-0.1046	-0.0965	-0.0722	-0.0706
	[0.0071]***	[0.0077]***	[0.0075]***	[0.0080]***
Mean Dep. Variable	6.6231	6.6200	6.6226	6.6226
IQR	-0.2573	-0.2375	-0.1777	-0.1737
N	110,221	110,149	109,393	109,393
# AMCs	3069	3067	3,042	3,042
R-squared	0.9416	0.9507	0.9523	0.9528
AMC and Year FE	Yes	Yes	Yes	Yes
State by Year FE	No	Yes	Yes	Yes
Trend in 1980 Characteristics	No	No	Yes	Yes
Year FE $\times$ 1980 Characteristics	No	No	No	Yes
	Panel B:			
	Log Number of Active Firms:			
	(1)	(2)	(3)	(4)
SI $\times Post$	-0.0464	-0.0506	-0.0319	-0.0352
	[0.0042]***	[0.0047]***	[0.0047]***	[0.0050]***
Mean Dep. Variable	4.0782	4.0757	4.0777	4.0777
IQR	-0.114	-0.1246	-0.0784	-0.0866
N	110,221	110,149	109,393	109,393
# AMCs	3,069	3,067	3,042	3,042
R-squared	0.9715	0.9803	0.9814	0.9817
AMC and Year FE	Yes	Yes	Yes	Yes
State by Year FE	No	Yes	Yes	Yes
Trend in 1980 Characteristics	No	No	Yes	Yes
Year FE $\times$ 1980 Characteristics	No	No	No	Yes

Notes. Difference-in-differences estimates in all columns. Our SI variable is measured in logs. Standard errors shown in parentheses are clustered at the AMC level. The 1980 municipal controls included literacy, the share of blacks, the population employed, and the median labor income. The Interquartile Range (IQR) represents the effect of a movement from the 25th to the 75th quartile of treatment. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

Figure 7: The effect of the Bank Expropriation on the Log Average Wage and Wage Bill



Notes. This figure plots estimates by year of equation 2. Standard errors are clustered at the AMC level. Dashed lines show 95-percent confidence intervals for each estimate. The model includes all the baseline controls.

Table 3 presents the impact of the policy on total employment, average wages, and the wage bill. Column 1, which shows the already discussed decline in total employment, is followed by Columns 2 and 3 which highlight significant reductions in average wages (-4.40%) and the wage bill (-12.79%). The Interquartile Range (IQR) effects indicate that moving from the 25th to the 75th percentile of treatment intensity leads to decreases of 17.81% in total employment, 10.81% in average wages, and 31.47% in the wage bill, emphasizing substantial adverse effects in more intensely treated municipalities. Figures 7 Panels A and B further illustrate these impacts through event-study analyses, showing persistent decreases in average wages and the wage bill. Panel A demonstrates a stabilized but permanent reduction in average wages shortly after the policy implementation. Panel B, focusing on the wage bill (the product of wages and employment), reveals compounded negative effects due to the simultaneous declines in employment and wages, highlighting the lasting disruption in labor market earnings and labor supply.

Table 3: Banking Expropriation, Wages, and the Wage Bill

	Log Total Employment	Log Wages	Log Wage Bill
	(1)	(2)	(3)
SI $\times Post$	-0.0706	-0.044	-0.1279
	[0.0080]***	[0.0036]***	[0.0086]***
Mean Dep. Variable	6.6226	1.3531	7.6561
IQR	-0.1737	-0.1081	-0.3147
N	109,393	109,060	109,060
#AMCs	3,042	3,042	3,042
R-squared	0.9528	0.663	0.9388
Baseline controls	Yes	Yes	Yes

Notes. Difference-in-differences estimates in all columns. Our SI variable is measured in logs. Standard errors shown in parentheses are clustered at the AMC level. The 1980 municipal controls included literacy, the share of blacks, the population employed, and the median labor income. The Interquartile Range (IQR) represents the effect of a movement from the 25th to the 75th quartile of treatment. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

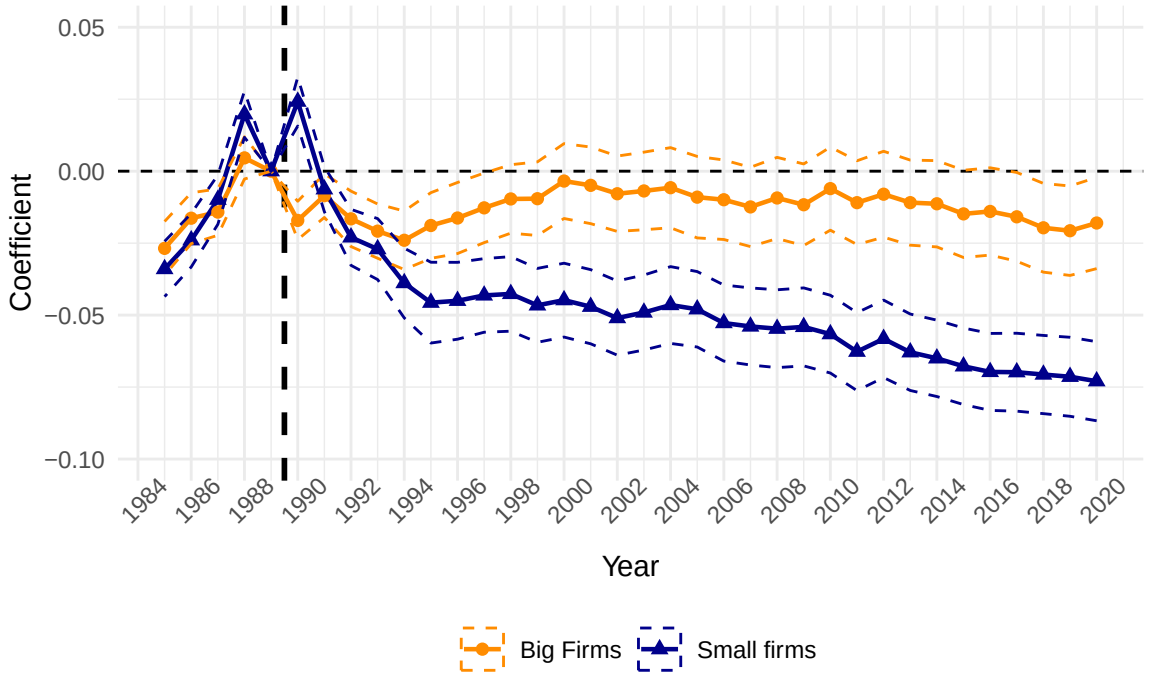
Table 4 explores the effects of the Collor Plan on firm dynamics, particularly average firm size and the number of firms of different sizes. Panel A indicates that the average firm size increased, with an increase of 2.42%. The Interquartile Range (IQR) effect reveals that a shift from the 25th to the 75th percentile of treatment intensity leads to a 5.96% increase in average firm size. This rise is attributed to a more substantial decline in the number of small firms compared to larger firms, as evidenced in Panels B and C. Panel B shows modest negative effects on the number of big firms, with a non-significant coefficient in some columns, while Panel C highlights a substantial negative impact on small firms, with a coefficient of -0.0396, translating to a 3.96% decrease. The IQR effect for small firms stands at 9.73%, underlining their vulnerability. Figures 8 Panels A and B corroborate these findings through event-study analyses. Initially, both small and big firms experience declines, but while large firms recover relatively quickly, small firms face a lasting downturn. This disparity likely stems from the credit crunch exacerbated by the expropriation: small firms, lacking internal financing, struggle to repay entry costs in a tight credit market, whereas large firms can leverage internal resources. Thus, the policy's disruptive impact on credit availability disproportionately punishes small businesses, prolonging their recovery and deepening overall economic challenges.

Table 4: Banking Expropriation, Average Firm Size, and the Number of Firms by Size

	Panel A:			
	Log Average Firm Size:			
	(1)	(2)	(3)	(4)
SI $\times Post$	0.0331	0.036	0.0204	0.0242
	[0.0047]***	[0.0054]***	[0.0055]***	[0.0059]***
Mean Dep. Variable	2.359	2.3589	2.3592	2.3592
IQR	0.0813	0.0885	0.0502	0.0596
N	110,217	110,145	109,389	109,389
# AMCs	3069	3067	3,042	3,042
R-squared	0.5153	0.5528	0.56	0.5617
AMC and Year FE	Yes	Yes	Yes	Yes
State by Year FE	No	Yes	Yes	Yes
Trend in 1980 Characteristics	No	No	Yes	Yes
Year FE $\times$ 1980 Characteristics	No	No	No	Yes
	Panel B:			
	Log Number of Big Firms:			
	(1)	(2)	(3)	(4)
SI $\times Post$	-0.0117	-0.0041	0.0032	-0.0019
	[0.0043]***	[0.0051]	[0.0051]	[0.0055]
Mean Dep. Variable	3.2579	3.2553	3.257	3.257
IQR	-0.0288	-0.0102	0.0078	-0.0046
N	110,221	110,149	109,393	109,393
# AMCs	3069	3067	3,042	3,042
R-squared	0.9717	0.9765	0.9771	0.9772
AMC and Year FE	Yes	Yes	Yes	Yes
State by Year FE	No	Yes	Yes	Yes
Trend in 1980 Characteristics	No	No	Yes	Yes
Year FE $\times$ 1980 Characteristics	No	No	No	Yes
	Panel C:			
	Log Number of Small Firms:			
	(1)	(2)	(3)	(4)
SI $\times Post$	-0.0557	-0.0594	-0.0364	-0.0396
	[0.0045]***	[0.0052]***	[0.0052]***	[0.0056]***
Mean Dep. Variable	3.5273	3.5249	3.527	3.527
IQR	-0.1371	-0.1461	-0.0895	-0.0973
N	110,221	110,149	109,393	109,393
# AMCs	3,069	3,067	3,042	3,042
R-squared	0.9629	0.9742	0.9756	0.9760
AMC and Year FE	Yes	Yes	Yes	Yes
State by Year FE	No	Yes	Yes	Yes
Trend in 1980 Characteristics	No	No	Yes	Yes
Year FE $\times$ 1980 Characteristics	No	No	No	Yes

Notes. Difference-in-differences estimates in all columns. Our SI variable is measured in logs. Standard errors shown in parentheses are clustered at the AMC level. The 1980 municipal controls included literacy, the share of blacks, the population employed, and the median labor income. The Interquartile Range (IQR) represents the effect of a movement from the 25th to the 75th quartile of treatment. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

Figure 8: The Effect of the Bank Expropriation on Number of Firms by Size



Notes. This figure plots estimates by year of equation 2. Standard errors are clustered at the AMC level. Dashed lines show 95-percent confidence intervals for each estimate. The model includes all the baseline controls

Our findings are consistent with Felix (2022), who found that increased labor market concentration can enhance firm market power. The rise in median firm size due to the Collor Plan may similarly increase market power, potentially explaining the sustained lower wages we observe. Felix (2022)'s analysis suggests that greater market power allows firms to suppress wages, offering a plausible explanation for the wage trends following our policy intervention.

6 Effects on Wage Inequality

This section examines how the banking expropriation affected wage distribution across different quartiles and between skilled and unskilled workers. By analyzing the interquartile range (IQR) in the Table 5, we can better understand the policy contributed to changes in overall wage inequality and the skill premium. Figures 9 and 10 provide visual representations of these impacts, showing clear patterns and common trends over time.

Table 5 presents the difference-in-differences estimates of the Collor Plan's impacts on the wage quartiles. The results indicate differential impacts across the wage distribution. The effects in the interquartile range (IQR) reveal that for each log point increase in the treatment intensity, the top wage quartile ([75th+]) experienced a significant decline of 19.9%, while the lowest quartile ([0-25th]) saw an insignificant change of just 0.17%. This impact

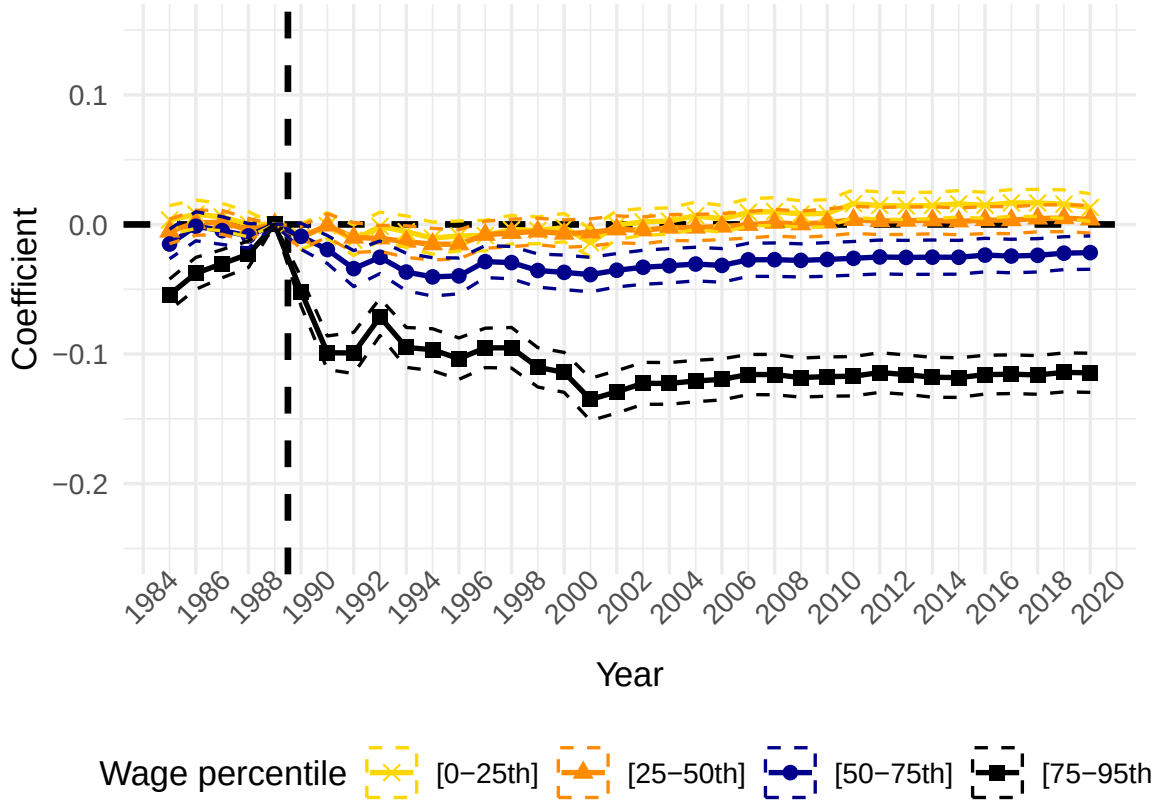
is particularly strong in both the upper ([75th+], -19.9%) and middle ([50th-75th], -5.53%) quartiles. Essentially, wage inequality decreased as the higher wage quartiles were more adversely affected. The larger decline for the upper quartiles suggests that these segments are particularly vulnerable to the liquidity constraints imposed by the financial asset freeze. This is likely because, during the shock, firms tend to lay off their more expensive, higher-paid workers first. Figure 9 provides a visual event study of these quartiles, showing the pre-trends and magnitude of these impacts over time.

Table 5: Banking Expropriation, Wage Inequality, and Skill Premium

	Log Wages	Wage Distribution Quartiles			
		[0-25th]	[25th-50th]	[50th-75th]	[75th+]
	(1)	(2)	(3)	(4)	(5)
SI $\times Post$	-0.044	0.0007	-0.0013	-0.0225	-0.0809
	[0.0036]***	[0.0028]	[0.0031]	[0.0042]***	[0.0049]***
Men Dep. Variable	1.3531	0.6012	1.0178	1.3485	2.0388
IQR	-0.1081	0.0017	-0.0032	-0.0553	-0.199
N	109,060	104,537	100,959	106,817	107,921
# AMCs	3,042	3,042	3,042	3,042	3,042
R-squared	0.663	0.4966	0.6325	0.6334	0.7121
	Log Wages		Log Wages		Skill Premium
	High Skilled		Low Skilled		
	(1)		(3)		(5)
SI $\times Post$	-0.1046		-0.0249		-0.258
	[0.0045]***		[0.0033]***		[0.0838]***
Men Dep. Variable	2.2832		1.2738		xxx
IQR	-0.2572		-0.0612		-0.6346
N	108,803		108,891		108,440
# AMCs	3,042		3,042		3,042
R-squared	0.8089		0.6501		0.1481
Baseline controls	Yes		Yes		Yes

Notes. Difference-in-differences estimates in all columns. Our SI variable is measured in logs. Standard errors shown in parentheses are clustered at the AMC level. The 1980 municipal controls included literacy, the share of blacks, the population employed, and the median labor income. The Interquartile Range (IQR) represents the effect of a movement from the 25th to the 75th quartile of treatment. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

Figure 9: The Effect of the Bank Expropriation on the Wage Distribution

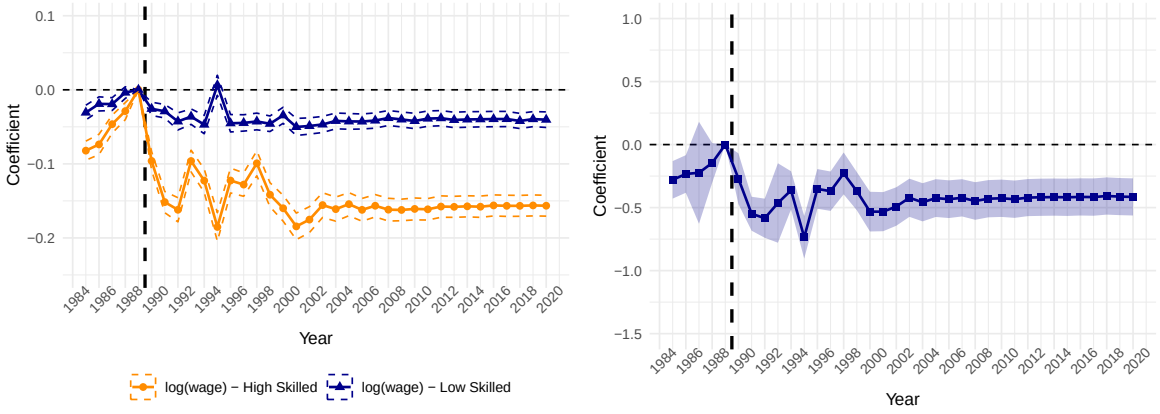


Notes. This figure plots estimates by year of equation 2. Standard errors are clustered at the AMC level. Dashed lines show 95-percent confidence intervals for each estimate. The model includes all the baseline controls.

Figure 10: The Effect of the Bank Expropriation on Log Wage by Skill and Skill Premium

(a) Log Wages by Skill

(b) Skill Premium



Notes. This figure plots estimates by year of equation 2. Standard errors are clustered at the AMC level. Dashed lines show 95-percent confidence intervals for each estimate. The model includes all the baseline controls.

Turning to the impacts on skilled versus unskilled workers, the Table shows that the Collor Plan had more pronounced effects on high-skilled wages compared to low-skilled wages. The IQR indicates a reduction of 25.72% for low-skilled workers and 6.12% for high-skilled workers. In our analysis, unskilled workers are defined as those without a high school diploma, while skilled workers are those with a high school diploma or higher education. The differential impact is further quantified by the change in the skill premium, which decreased by 0.6346 due to the disparities in wage reductions. This emphasizes that the financial asset freeze not only compressed wage inequality but also substantially reduced the skill premium, reflecting a significant erosion in wages for more skilled workers. Figures 10, panel A (high vs. low skilled wages), and panel B (the skill premium), illustrate these effects. These findings highlight that drastic economic policies like the Collor Plan can have lasting consequences that disproportionately affect different skill groups, thereby altering long-term labor market dynamics.

6.1 Heterogeneous Effects: Income and Banking Sector Analysis

This section investigates the varying impacts of the Collor Plan across different segments of the Brazilian economy. We conduct two main analyses to uncover these heterogeneities. First, we decompose our estimates based on the 1980 income levels, distinguishing between municipalities with above-median and below-median income. This approach allows us to understand how pre-existing economic conditions influenced the policy's effects. Second, we examine the impact of the expropriation by decomposing the treatment based on the type of bank holding the assets—public or private. By exploring these dimensions, we aim to shed light on the differential outcomes of the policy and the channels through which its effects are transmitted.

Table 6 explores the heterogeneity in the effects of the expropriation by decomposing the sample based on 1980s income levels, specifically comparing municipalities with below-median and above-median income. The results reveal a stronger adverse impact on higher-income cities. The Interquartile Range (IQR) effects highlight this disparity: Moving from the 25th to the 75th percentile of treatment intensity leads to a 10.45% decrease in total employment in above-median-income cities, compared to a 6.05% decrease in below-median-income cities. Similarly, the number of firms decreases by 7.35% in above-median-income cities, whereas the effect is a more modest 2.14% in below-median-income cities. These differences align with the higher probability of being treated in wealthier municipalities, which likely had more significant liquid assets subject to the freeze, thus experiencing greater economic disruptions.

Table 6: Banking Expropriation, Total Employment, and the Number of Active Firms: Heterogeneity by 1980s Income

	Log Total Employment		Log Number of Firms	
	Below Median	Above Median	Below Median	Above Median
	(1)	(2)	(3)	(4)
SI $\times Post$	-0.065	-0.0774	-0.0264	-0.0542
	[0.0105]***	[0.0115]***	[0.0062]***	[0.0080]***
Men Dep. Variable	5.9434	7.5376	3.4051	4.9881
IQR	-0.1598	-0.1903	-0.065	-0.1333
N	63,369	45,844	63,369	45,844
# AMCs	1,763	1,274	1,763	1,274
R-squared	0.9047	0.9769	0.9683	0.9872
Baseline controls	Yes	Yes	Yes	Yes

Notes. Difference-in-differences estimates in all columns. Our SI variable is measured in logs. Standard errors shown in parentheses are clustered at the AMC level. The 1980 municipal controls included literacy, the share of blacks, the population employed, and the median labor income. The Interquartile Range (IQR) represents the effect of a movement from the 25th to the 75th quartile of treatment. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

Table 7 presents the results of our heterogeneity analysis by decomposing the treatment based on the type of bank—public or private—holding the assets before the shock. Panel A focuses on total employment, while Panel B examines the number of active firms. The overall impact of the expropriation remains negative across both bank types, yet the magnitude of effects is slightly higher for assets in public banks. In Panel A, the IQR effects highlight this difference: transitioning from the 25th to the 75th percentile of treatment intensity leads to a more substantial decrease in total employment for public banks (8.61%) compared to private banks (5.51%). This disparity indicates that the economic disruption was more pronounced in municipalities where public banks held a higher proportion of the seized assets. Similarly, in Panel B, the IQR effects demonstrate a higher impact on the number of active firms for public banks (4.87%) compared to private banks (3.44%). These findings suggest that the expropriation's adverse effects on business activity were more severe in areas with greater asset exposure in public banks.

Table 7: Banking Expropriation, Total Employment, and Number of Active Firms: Heterogeneity By Bank Type

	Panel A:			
	Log Total Employment:			
	(1)	(2)	(3)	(4)
SI $\times Post$	-0.0706			
	[0.0080]***			
Public Banks SI $\times Post$		-0.0373		-0.0397
		[0.0046]***		[0.0045]***
Private Banks SI $\times Post$			-0.0225	-0.0257
			[0.0037]***	[0.0036]***
Mean Dep. Variable	6.6226	6.6226	6.6226	6.6226
N	109,393	109,393	109,393	109,393
# AMCs	3,042	3,042	3,042	3,042
R-squared	0.9528	0.9527	0.9525	0.9529
Baseline Controls	Yes	Yes	Yes	Yes
	Panel B:			
	Log Number of Active Firms:			
	(1)	(2)	(3)	(4)
SI $\times Post$	-0.0352			
	[0.0050]***			
Public Banks SI $\times Post$		-0.0237		-0.0253
		[0.0030]***		[0.0030]***
Private Banks SI $\times Post$			-0.0156	-0.0177
			[0.0026]***	[0.0026]***
Mean Dep. Variable	4.0777	4.0777	4.0777	4.0777
N	109,393	109,393	109,393	109,393
# AMCs	3,042	3,042	3,042	3,042
R-squared	0.9817	0.9817	0.9816	0.9818
Baseline Controls	Yes	Yes	Yes	Yes

Notes. Difference-in-differences estimates in all columns. Our SI variable is measured in logs. Standard errors shown in parentheses are clustered at the AMC level. The 1980 municipal controls included literacy, the share of blacks, the population employed, and the median labor income. The Interquartile Range (IQR) represents the effect of a movement from the 25th to the 75th quartile of treatment. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

6.2 Robustness Checks

To ensure the robustness of our findings, we perform additional analyses to evaluate the sensitivity of our estimates. We control for other significant policies, such as Brazilian trade liberalization, and use various alternative specifications in our event-study analysis to verify consistency. We also conduct leave-one-out estimations to address potential outlier effects and expand our sample to include cities without banks, ensuring comprehensive and reliable results.

Table 8: Banking Expropriation: Alternative Treatment Definitions

	Log Total Employment			Log Number of Firms		
	(1)	(2)	(3)	(4)	(5)	(6)
SI $\times Post$	-0.0706			-0.0352		
	[0.0080]***			[0.0050]***		
Diff. Treat Quantiles:						
$[50th+] \times Post.$		-0.1606			-0.1214	
		[0.0235]***			[0.0174]***	
$[25th - 50th] \times Post.$			-0.196			-0.043
			[0.0310]***			[0.0198]**
$[50th - 75th] \times Post.$			-0.2381			-0.1159
			[0.0286]***			[0.0204]***
$[75th+] \times Post.$			-0.2903			-0.2162
			[0.0331]***			[0.0233]***
Men Dep. Variable	6.6226	6.6226	6.6226	4.0777	4.0777	4.0777
IQR	-0.1737			-0.0866		
N	109,393	109,393	109,393	109,393	109,393	109,393
# AMCs	3,042	3,042	3,042	3,042	3,042	3,042
R-squared	0.9528	0.9526	0.9528	0.9817	0.9817	0.9817
Baseline controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes. Difference-in-differences estimates in all columns. Our SI variable is measured in logs. Standard errors shown in parentheses are clustered at the AMC level. The 1980 municipal controls included literacy, the share of blacks, the population employed, and the median labor income. The Interquartile Range (IQR) represents the effect of a movement from the 25th to the 75th quartile of treatment. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

Table 8 explores alternative treatment definitions by first categorizing municipalities as treated or untreated based on whether they are above or below the median treatment level. Additionally, the Table presents the impacts by splitting the treatment into quantiles to address the interpretive challenges posed by continuous difference-in-differences models, as highlighted by Callaway et al. (2024). Columns 1 and 4 present our baseline estimations using the continuous measure of treatment, revealing substantial negative effects on both

log total employment and log number of firms. Specifically, a one-log point increase in the exposure measure led to a 7.06% decrease in total employment and a 3.52% decline in the number of firms. When defining the binary treatment, we see that municipalities above the 50th percentile experienced even larger effects: total employment dropped by 16.06%, and the number of firms decreased by 12.14%. The results show robust and significant negative effects across all quantiles. Specifically, the highest treatment quartile ($[75th+]$) experienced the most substantial impact, with a 29.03% decline in total employment and a 21.62% reduction in the number of firms. These effects, though most pronounced in the highest quartile, are also notable in other quartiles. For instance, the $[50th - 75th]$ and $[25th - 50th]$ quartiles demonstrate significant declines in total employment of 23.81% and 19.6%, respectively, with corresponding reductions in the number of firms by 11.59% and 4.3%.

Table 9: Banking Expropriation Accounting for the Brazilian Trade Liberalization

	Log Total Employment		Log Number of Firms	
	(1)	(2)	(3)	(4)
SI $\times Post$	-0.0703	-0.0645	-0.0345	-0.0316
	[0.0080]***	[0.0079]***	[0.0050]***	[0.0049]***
Men Dep. Variable	6.6226	6.5665	4.0777	4.0196
IQR	-0.0861	-0.0782	-0.0487	-0.0464
N	106351	106351	106351	106351
# AMCs	3,042	2678	3,042	2678
R-squared	0.9528	0.9513	0.9817	0.9809
Baseline controls	Yes	Yes	Yes	Yes
Trade Liberalization Controls	No	Yes	No	Yes

Notes. Difference-in-differences estimates in all columns. Our SI variable is measured in logs. Standard errors shown in parentheses are clustered at the AMC level. The 1980 municipal controls included literacy, the share of blacks, the population employed, and the median labor income. The Interquartile Range (IQR) represents the effect of a movement from the 25th to the 75th quartile of treatment. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

Table 9 assesses the impact of the Collor Plan while accounting for the Brazilian trade liberalization, using the trade exposure intensity measure from Dix-Carneiro and Kovak (2017); Dix-Carneiro et al. (2018). By including year-fixed effects interacted with this trade measure, we control for potential confounding effects from trade policies. The results show that our main estimates remain remarkably stable, with coefficients for total employment and the number of firms only slightly attenuated. The IQR effects are also consistent, indicating that transitioning from the 25th to the 75th percentile of treatment intensity still results in substantial declines in total employment (-7.82%) and the number of firms (-4.64%). This robustness check reinforces our findings, suggesting that the adverse economic impacts

observed are primarily attributable to the Collor Plan's asset freeze rather than coinciding with trade liberalization policies.

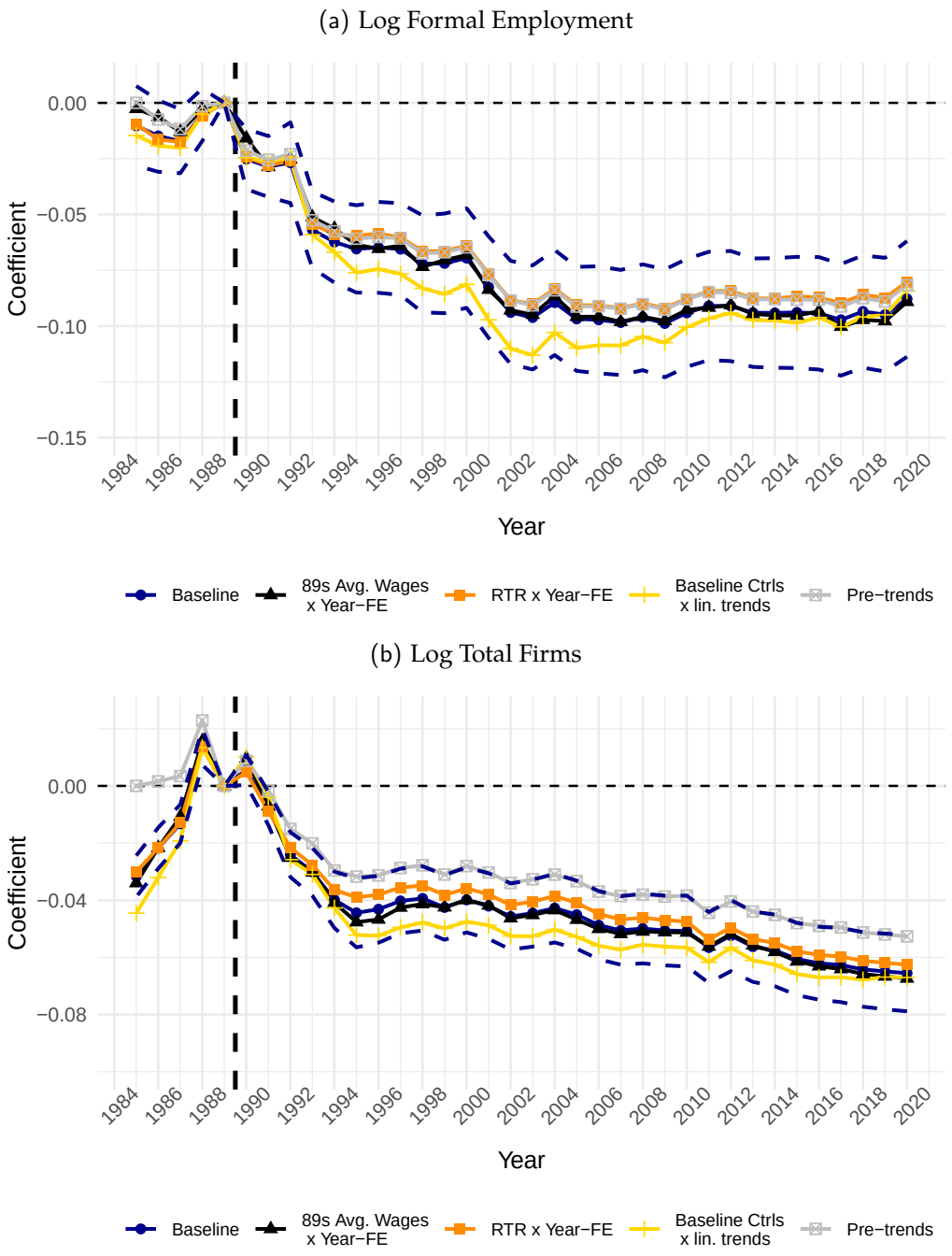
Figure 11 presents a series of event-study analyses using various specifications to verify the robustness of our baseline estimates. The first specification replicates our baseline results, capturing the core effects of the Collor Plan. The second specification addresses mean reversion concerns by adding 1989 wages interacted with year-fixed effects. The third specification incorporates trade liberalization controls to account for potential confounding effects. In the fourth specification, we replace our baseline control variables with their linear trends. Finally, the fifth specification controls for pre-trends in the main outcomes. Across all specifications, Panels A and B show that the estimates for log formal employment and log total number of firms remain consistent and significant, indicating that the Collor Plan had persistent negative effects on both.

As explained in the previous sections, we define exposure to bank confiscation at the municipality level as the logarithm of the total amount of bank deposits per capita one month before the confiscation. Figure A.8 in the Appendix presents results for estimates using a discrete definition of exposure. Specifically, we consider municipalities with deposits per capita above the national median one month before the treatment as exposed and those with deposits below the median as non-exposed. The results remain robust to this alternative definition of exposure, reinforcing the reliability of our main findings. In the same spirit as the previous exercise, we test another alternative definition of treatment. We follow Card and Krueger (1995) and predict our baseline intensity of exposure measure using 1980s census covariates. Specifically, we regress our baseline measure on the median total income of municipalities, the share of blacks, the literacy rate, and the share of the employed population. We then use the predicted values from these regressors as a new measure of intensity. Figure A.9 shows that our results remain robust to this alternative measure of treatment.

Figure 12 presents the robustness of our point estimates for total employment and the number of firms by conducting leave-one-out analyses, where we sequentially exclude each state from the sample. This approach ensures that our findings are not driven by any single state's data. The results show that the negative effects of the Collor Plan on total employment and the number of firms remain remarkably stable regardless of which state is excluded.

Finally, Table 10 tests the robustness of our results by expanding the sample to include cities without banks, which are generally poorer and were initially excluded from the main analysis. Adding these cities introduces a different control mean, potentially moderating the estimated impacts. Despite this change, our findings remain consistent. The effects on total employment show a decrease to 2.28% and on the number of firms, a decrease to 1.36%. These effects are slightly attenuated compared to the main sample but remain statistically significant. The Interquartile Range (IQR) effects indicate a drop of 5.60% in total employment and 3.34% in the number of firms for the expanded sample. These results reinforce that our main findings are robust and not dependent on the initial sample selection, reinforcing the

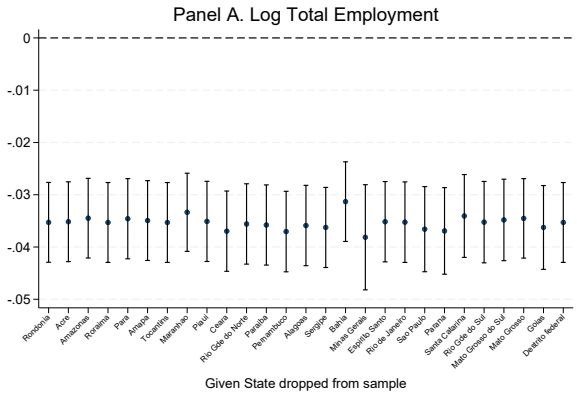
Figure 11: The effect of the Bank Expropriation: Alternative Specifications



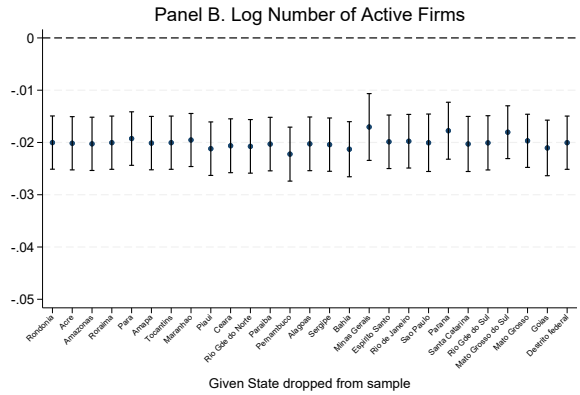
Notes. This figure plots estimates by year of equation 2. Standard errors are clustered at the AMC level. Dashed lines show 95-percent confidence intervals for each estimate. The model includes all the baseline controls

Figure 12: Exclusion of States One by One

(a) Log Total Employment



(b) Log Number of Firms



Notes. This figure plots estimates based on the specification 1. Point estimates for the effect of 1990 Expropriation, denoted by markers, and corresponding 95-percent confidence intervals represented by lines, as different subsets of observations are excluded from the sample.

broad adverse impacts of the Collor Plan.

Table 10: Banking Expropriation, Total Employment, and the Number of Active Firms: Adding the Cities Without Banks in Main Sample

	Log Total Employment		Log Number of Firms	
	Main Sample	Adding No-Bank Cities	Main Sample	Adding No-Bank Cities
	(1)	(2)	(3)	(4)
SI $\times Post$	-0.0706	-0.0506	-0.0352	-0.0108
	[0.0080]***	[0.0043]***	[0.0050]***	[0.0025]***
Men Dep. Variable	6.6226	6.1848	4.0777	3.6383
IQR	-0.1737	-0.1245	-0.0866	-0.0266
N	109,393	136,149	109,393	136,149
# AMCs	3,042	3,787	3,042	3,787
R-squared	0.9528	0.9385	0.9817	0.9816
Baseline controls	Yes	Yes	Yes	Yes

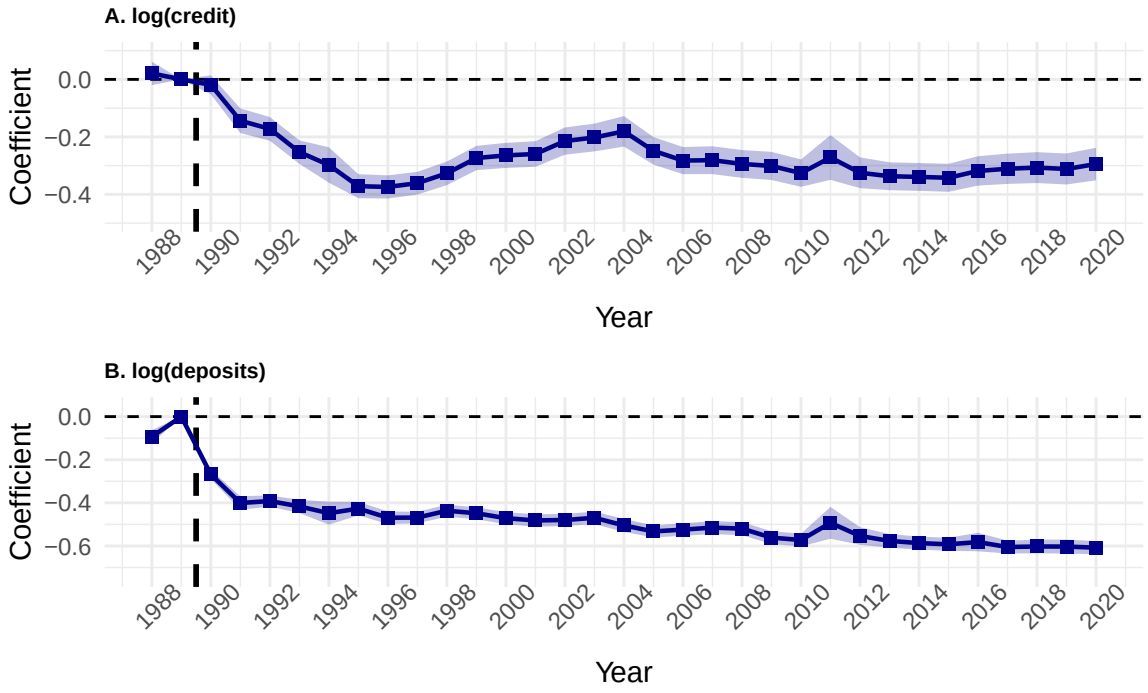
Notes. Difference-in-differences estimates in all columns. Standard errors shown in parentheses are clustered at the AMC level. The 1980 municipal controls included literacy, the share of blacks, the population employed, and the median labor income. The Interquartile Range (IQR) represents the effect of a movement from the 25th to the 75th quartile of treatment. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

7 Mechanisms: Banking Expropriation and Credit Crunch

Understanding the underlying mechanisms driving the observed economic impacts of the Collor Plan is necessary for a complete analysis. One primary channel through which the

policy likely exerted its effects is a severe credit crunch, resulting from the sudden freeze of financial assets. By drastically restricting access to liquid funds, the expropriation affected both businesses' and households' ability to finance operations and consumption. This section investigates the extent to which reduced credit availability contributed to the long-term declines in employment, wages, and the number of active firms. We focus on its impact on deposits and credit lending, shedding light on how the disruption in financial intermediation may have played a critical role in propagating the adverse effects of the policy.

Figure 13: The Effect of the Banking Expropriation on Deposits and Credit



Notes. This figure plots estimates by year of equation 2. Standard errors are clustered at the AMC level. Dashed lines show 95-percent confidence intervals for each estimate. The model includes all the baseline controls.

Table 11 explores the dramatic effects of the Collor Plan on banking deposits and credit lending, revealing extremely strong and lasting impacts. Panel A shows the significant reductions in total deposits, with an estimated coefficient of -0.1793, indicating a sharp decline. The Interquartile Range (IQR) effects stress the magnitude of these changes, with a shift from the 25th to the 75th percentile of treatment intensity leading to a 44.10% decrease in total deposits. Panel B presents similarly severe declines in total credit, with an estimated effect of -0.1316 and an IQR effect showing a 32.37% drop in credit lending. Figure 13 further illustrates these findings with event-study analyses for both deposits and credit lending. Despite having only one pre-trend period available for these estimations, the event-study patterns are striking. The results show a consistent and significant reduction in deposits and credit, which stabilize at lower levels shortly after the policy implementation and remain

depressed over the long term. This persistent credit crunch highlights the lasting disruptions in financial intermediation caused by the asset freeze, particularly reducing the ability of small firms to secure financing and recover from the shocks imposed by the policy. The continuing contraction in credit availability severely constrained economic activity and growth.

Table 11: Banking Expropriation and Credit Crunch

	Panel A:			
	Log Total Deposits:			
	(1)	(2)	(3)	(4)
SI $\times Post$	-0.3152	-0.345	-0.4446	-0.3633
	[0.0093]***	[0.0137]***	[0.0140]***	[0.0138]***
Mean Dep. Variable	17.0625	17.0589	17.0646	17.0646
IQR	-0.4334	-0.4255	-0.4890	-0.4410
N	92,114	92,048	91,351	91,351
# AMCs	3,067	3,065	3,040	3,040
R-squared	0.9657	0.9701	0.9713	0.9703
AMC and Year FE	Yes	Yes	Yes	Yes
State by Year FE	No	Yes	Yes	Yes
Trend in 1980 Characteristics	No	No	Yes	Yes
Year FE $\times$ 1980 Characteristics	No	No	No	Yes
	Panel B:			
	Log Total Credit:			
	(1)	(2)	(3)	(4)
SI $\times Post$	-0.1225	-0.2293	-0.226	-0.2751
	[0.0147]***	[0.0193]***	[0.0194]***	[0.0203]***
Mean Dep. Variable	16.7808	16.7765	16.778	16.778
IQR	-0.3014	-0.5641	-0.5559	-0.6767
N	92,113	92,047	91,350	91,350
# AMCs	3,067	3,065	3,040	3,040
R-squared	0.938	0.9455	0.9456	0.9461
AMC and Year FE	Yes	Yes	Yes	Yes
State by Year FE	No	Yes	Yes	Yes
Trend in 1980 Characteristics	No	No	Yes	Yes
Year FE $\times$ 1980 Characteristics	No	No	No	Yes

Notes. Difference-in-differences estimates in all columns. Our SI variable is measured in logs. Standard errors shown in parentheses are clustered at the AMC level. The 1980 municipal controls included literacy, the share of blacks, the population employed, and the median labor income. The Interquartile Range (IQR) represents the effect of a movement from the 25th to the 75th quartile of treatment. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

The persistent reductions in deposits and credit observed in Table 11 and Figure 13 explain the long-lasting economic disruptions triggered by the Collor Plan. The sharp and lasting contraction in financial intermediation created a prolonged credit crunch, which severely impaired the ability of firms, especially small enterprises, to finance their operations and recover from the temporary shock. Without adequate access to credit, businesses struggled to meet working capital needs, invest in growth, and cover re-entry costs, leading to persistent declines in employment and firm numbers as shown in previous tables. This financial constraint likely exacerbated the initial recession, turning what might have been a short-term disruption into a long-lasting economic crisis. The inability of the credit market to rebound swiftly meant that the negative impacts on wages, employment, and firm activity persisted for decades, highlighting the critical role of credit availability in economic stability and recovery.

8 Conclusion

In this paper, we provide new evidence on the long-term economic consequences of the Collor Plan, an extreme monetary intervention implemented in Brazil in March 1990. We find that municipalities with higher exposure to the policy, which froze over 80% of the country's liquid assets, experienced significant and enduring economic disruptions. Our analysis reveals that a one-log-point increase in exposure to the policy led to a decrease in total employment by 7.06%, a reduction in average wages by 4.40%, and a decline in the overall wage bill by 12.79%. Additionally, there was a 3.52% reduction in the number of firms, with smaller enterprises being disproportionately affected, as indicated by a 2.42% increase in average firm size. Examining the persistence of these effects, we find that even 30 years after the implementation of the Collor Plan, the adverse economic outcomes have not dissipated. This suggests that the economic dislocation induced by the policy was both severe and long-lasting. Our investigation points to a sustained credit crunch as the primary mechanism driving these outcomes. Specifically, we observe a substantial reduction in deposit levels and a consequential decline in credit availability, which severely impacted economic recovery and disproportionately impacted small firms dependent on credit.

Furthermore, we contribute to several strands of economic research. First, our findings add to the literature on hyperinflation stabilization policies by highlighting the potential for long-term economic costs associated with extreme interventions. Second, our study enriches the research on monetary policy shocks, providing a long-term perspective on the economic effects of drastic measures like the Collor Plan. Third, we extend the understanding of how temporary macroeconomic shocks can result in persistent downturns, emphasizing the role of credit markets in this process. Lastly, our results contribute to the debate on wealth taxes by demonstrating the long-term economic ramifications of policies that implicitly reduce savings through mechanisms similar to wealth taxation.

Overall, the evidence suggests that the Collor Plan had significant and long-lasting neg-

ative effects on Brazil's economic health, emphasizing the risks associated with extreme stabilization measures. These findings offer critical insights for policymakers contemplating similar interventions in the future. Future research could further investigate the broader socio-economic repercussions of such policies and explore strategies to mitigate their long-term adverse impacts.

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Online Appendix to " Recession and Credit Crunch: The Lasting Consequences of a Banking Expropriation"

Daniel Araujo Yuri Barreto Lucas Warwar

August 27, 2024

A Appendix **2**
A.1 Data Sources and Variable Definitions: 2
A.1.1 Estban Variables: 2
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A Appendix

A.1 Data Sources and Variable Definitions:

A.1.1 Estban Variables:

Log Seizure Index: Measures the intensity of the asset freeze in each municipality, based on the amounts frozen in demand deposits (*depositos_vista*), savings deposits (*Poupanca*), and time deposits (*depositos_prazo*) as of February 1990. *Source*: Brazilian Estaban and own calculations

Log Total Deposits: This variable measures the logarithm of the total deposits held in all bank accounts within a municipality, annually. *Source*: Brazilian Estaban and own calculations

Log Total Credit: This variable measures the logarithm of the total credit provided by banks in a municipality, annually. *Source*: Brazilian Estaban and own calculations

A.1.2 RAIS Variables:

Log Total Employment: This variable measures the logarithm of the total number of employed individuals in a municipality, annually. *Source*: Brazilian RAIS and own calculations

Log Number of Firms: This variable measures the logarithm of the total number of active firms in a municipality, annually. *Source*: Brazilian RAIS and own calculations

Log Wage: This variable measures the logarithm of the average wage paid to employees in a municipality, annually. For wage calculations, we restrict the sample to prime-age men (ages 25-50) to focus on a stable demographic segment. *Source*: Brazilian RAIS and own calculations

Log Average Firm Size: This variable measures the logarithm of the average size of firms, calculated by the number of employees per firm, annually. *Source*: Brazilian RAIS and own calculations

Log Number of Big Firms: This variable measures the logarithm of the number of large firms, which are classified based on whether their size is above the median firm size during the sample period. *Source*: Brazilian RAIS and own calculations

Log Number of Small Firms: This variable measures the logarithm of the number of small firms, which are classified based on whether their size is below the median firm size during the sample period. *Source*: Brazilian RAIS and own calculations

A.1.3 Brazilian 1980 Census Baseline Characteristics:

Median Labor Income: Median level of income from labor in 1980 Brazilian Census. *Source*: Brazilian census and own calculations

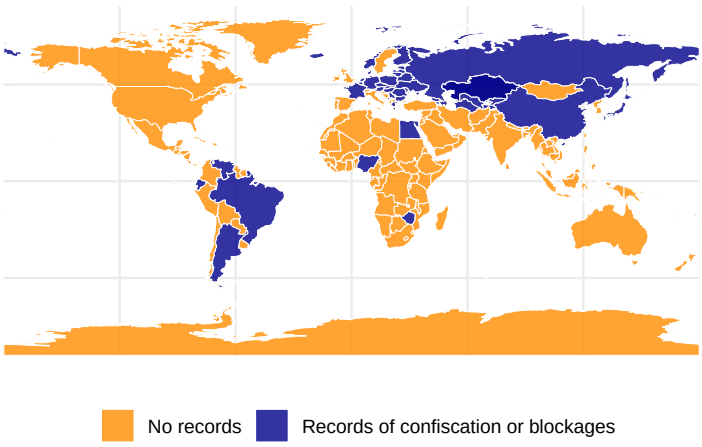
Literacy: Share of population who can read in 1980 Brazilian Census. *Source*: Brazilian census and own calculations

Black: Share of population that is black in 1980 Brazilian Census. *Source*: Brazilian census and own calculations

Employed: Share of population employed in 1980 Brazilian Census. *Source*: Brazilian census and own calculations

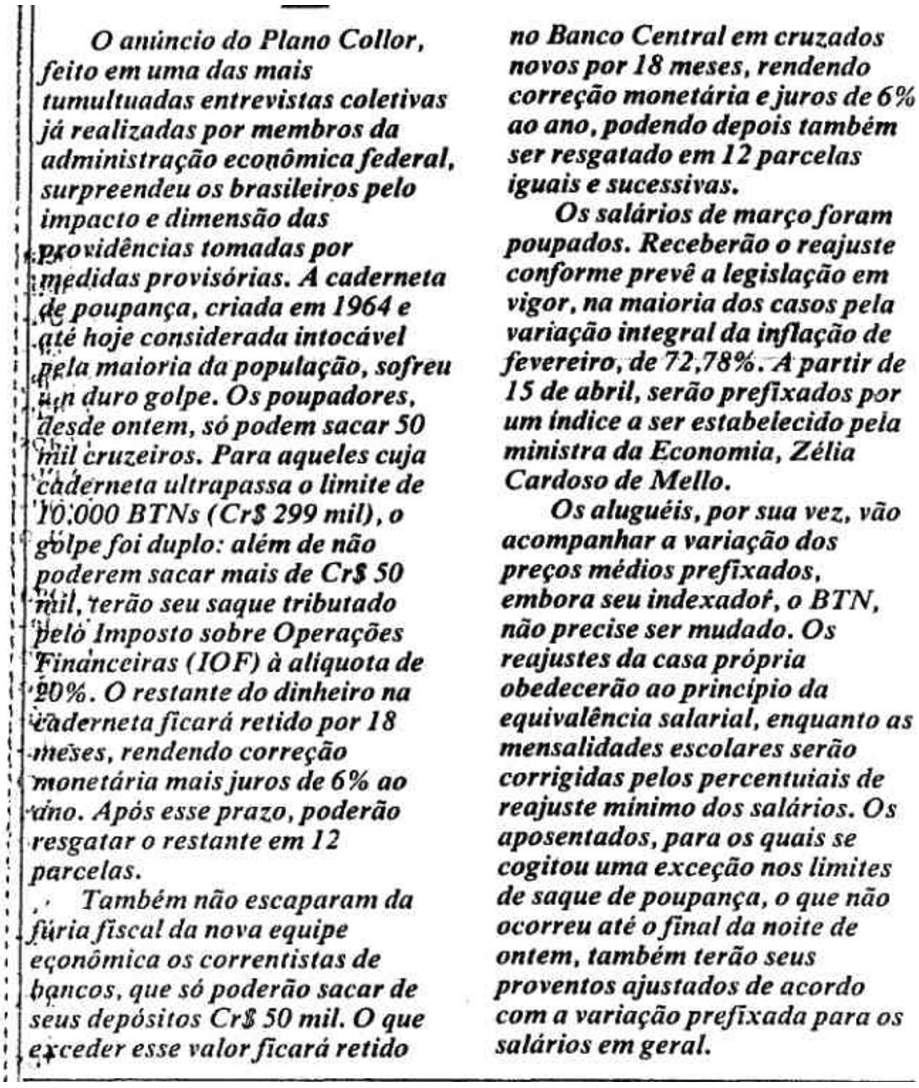
A.2 Figures

Figure A.1: Financial Assets Confiscations and Blockages around the world



Notes. Authors elaboration based on Dornbusch and Wolf (1990) and additional contemporary sources.

Figure A.2: Details of the Collor Plan Implementation



O anúncio do Plano Collor, feito em uma das mais tumultuadas entrevistas coletivas já realizadas por membros da administração econômica federal, surpreendeu os brasileiros pelo impacto e dimensão das providências tomadas por medidas provisórias. A caderneta de poupança, criada em 1964 e até hoje considerada intocável pela maioria da população, sofreu um duro golpe. Os poupadores, desde ontem, só podem sacar 50 mil cruzeiros. Para aqueles cuja caderneta ultrapassa o limite de 10.000 BTNs (Cr$ 299 mil), o golpe foi duplo: além de não poderem sacar mais de Cr$ 50 mil, terão seu saque tributado pelo Imposto sobre Operações Financeiras (IOF) à alíquota de 20%. O restante do dinheiro na caderneta ficará retido por 18 meses, rendendo correção monetária mais juros de 6% ao ano. Após esse prazo, poderão resgatar o restante em 12 parcelas.

Também não escaparam da fúria fiscal da nova equipe econômica os correntistas de bancos, que só poderão sacar de seus depósitos Cr$ 50 mil. O que exceder esse valor ficará retido no Banco Central em cruzados novos por 18 meses, rendendo correção monetária e juros de 6% ao ano, podendo depois também ser resgatado em 12 parcelas iguais e sucessivas.

Os salários de março foram poupados. Receberão o reajuste conforme prevê a legislação em vigor, na maioria dos casos pela variação integral da inflação de fevereiro, de 72,78%. A partir de 15 de abril, serão prefixados por um índice a ser estabelecido pela ministra da Economia, Zélia Cardoso de Mello.

Os aluguéis, por sua vez, vão acompanhar a variação dos preços médios prefixados, embora seu indexador, o BTN, não precise ser mudado. Os reajustes da casa própria obedecerão ao princípio da equivalência salarial, enquanto as mensalidades escolares serão corrigidas pelos percentuais de reajuste mínimo dos salários. Os aposentados, para os quais se cogitou uma exceção nos limites de saque de poupança, o que não ocorreu até o final da noite de ontem, também terão seus proventos ajustados de acordo com a variação prefixada para os salários em geral.

Notes. This article, published on March 17, 1990, outlines the key measures of the Collor Plan announced during a tumultuous press conference. The plan included freezing checking and savings accounts, allowing withdrawals of only Cr$ 50,000, and blocking the remainder for 18 months while earning limited interest. The article highlights the impact on savings, wages, rent, and other economic aspects, explaining the government's intention to curb hyperinflation through stringent financial controls. These measures marked a significant and controversial intervention in Brazil's economic history. Source: O Estado de S. Paulo (1990).

Figure A.3: Predicted Wave of Bankruptcies in Micro and Small Enterprises



☐ Microempresas

Prevista onda de quebras

O presidente da Confederação Nacional da Micro e Pequena Empresa (Conampe), Pedro Cascaes Filho, disse ontem, em **Blumenau**, Santa Catarina, que o setor será o mais sacrificado pelas medidas contidas no Plano Collor, por sua dependência do mercado interno. Outro fator de dificuldade, segundo Cascaes, é o confisco dos recursos dessas empresas, aplicados no mercado financeiro "para uso intensivo e não especulativo".

O empresário prevê o "fechamento de centenas de milhares de micros e pequenas empresas em todo o País", caso o plano não seja mudado. Para Cascaes, é possível que Fernando Collor consiga efetivamente derrubar a inflação, mas indaga: "É compensador o custo social que prevemos neste momento?"

Em **Campinas** a falta de dinheiro para honrar compromissos — salários, aluguel e dívidas assumidas com fornecedores — e as dúvidas sobre as alternativas para reaver os recursos bloqueados no BancoCentral alteraram ontem a rotina dos micros e médios empresários. O dono da Funilaria Cacheado, Hildo Bossi, já pensava em fechar a oficina por tempo indeterminado até conseguir o dinheiro suficiente pelo menos para pagar o salário dos oito empregados. O médio empresário Marcos César Antonelli, proprietário da ABA — Uniformes Industriais, não conseguiu resgatar duplicatas no valor de NCz$ 4 milhões e precisou suspender o café da manhã e a cesta básica tradicionalmente fornecidos aos 90 funcionários. Antonelli disse não poder garantir sequer o pagamento de salários.

Dirigentes afirmam que o setor será o maior prejudicado

Em **São Paulo**, Amauri Cunha, proprietário de uma loja de roupas em Santo André, a Opeste, com 39 funcionários, garantiu que pagará seus empregados com o movimento de caixa dos últimos seis dias. "Eu recebi em cruzeiros esses dias e vou pagá-los em cruzeiros", diz. Os fornecedores de suas roupas, contudo, vão ter de se contentar com os cruzados novos. "Duplicatas e cheques pré-datados vão seguir as normas do BC, aqui na minha empresa", completa.

Na mesma situação está o dono da Swell Designer, Wilson Macedo Fernandes, que emprega sete pessoas. Fabricante de búguis e caiaques, o pequeno empresário afirma que tem dinheiro em caixa para a folha de pagamento, mas não sabe o que vai ocorrer em abril. "Pela premeira vez eu realmente não sei o que vai acontecer.

Notes. This article from March 20, 1990, discusses the anticipated surge in bankruptcies among micro and small enterprises as a result of the Collor Plan. Pedro Cascas Filho, president of the Confederation of Micro and Small Enterprises, warns that the sector would be severely impacted by the asset freeze and ensuing economic instability. The text highlights the struggles businesses face in meeting obligations and maintaining operations due to the sudden unavailability of funds, underscoring broader economic vulnerabilities and the severe repercussions for smaller businesses. Source: O Estado de S. Paulo (1990).

Figure A.4: Impact of the Collor Plan on Economic Activity



26 — O ESTADO DE S. PAULO — O ESTADO DE S. PAULO ECONOMIA & NEGÓCIOS — TERÇA-FEIRA, 20 DE MARÇO DE 1990

□ COMÉRCIO

Carrinhos ficaram abandonados no estacionamento do supermercado Carrefour: maioria dos clientes preferiu só olhar preços

Corredores vazios: para consumidor, hora não é boa para comprar

Movimento cai 40% nos supermercados

No primeiro dia de validade da tabela da Sunab, pouca gente arriscou comprar

O movimento nos supermercados de São Paulo ficou cerca de 30% a 40% abaixo da média normal, no primeiro dia útil após a divulgação da tabela de preços da Sunab. Para adequar os valores das mercadorias aos da lista, a maior parte dos estabelecimentos só abriu suas portas depois do meio-dia. As grandes redes mantiveram suas ofertas, mesmo com alguns preços ficando abaixo do estabelecido pelo governo.

"Já vínhamos adotando uma política agressiva de promoções, que deve se intensificar daqui para a frente", disse o diretor regional do Grupo Paes Mendonça, Vander Luiz Vasconcelos. Para ele, a tendência é de estabilização ou queda de preços.

"Com as medidas do novo plano econômico há menos pessoas com poder de compra e os comerciantes terão de se esforçar para tê-las como clientes", argumentou o diretor do Carrefour da Marginal do Tietê, Renilton Cândido Paulo. O Carrefour abriu às 10 horas, mas os caixas tiveram pouco trabalho. "As compras vinham diminuindo desde a semana passada, por causa do feriado bancário", afirmou Renildo. Segundo ele, a loja conseguiu funcionar cedo porque a maioria dos preços já estava de acordo com a tabela. "Ou até abaixo. Por cauxa de um acordo de cavalheiros, entre os empresários e a Polícia Federal, os valores já eram os de 12 de março", disse.

A queda no movimento dos supermercados não preocupa o diretor regional do Paes Mendonça. "No tempo do Plano Cruzado as pessoas tinham dinheiro e o mercado não estava preparado para atender à demanda", comentou Vasconcelos. Agora, ele acredita que os consumidores vão gastar mais acertadamente. "Não é uma maravilha para o comércio, mas assim se evitará a especulação e a falta de mercadorias." De acordo com ele, sua rede tem estoque médio para 30 dias. "Notamos uma retração dos fornecedores, por causa da expectativa. A tendência agora é de negociação — do comércio à matéria-prima."

MAIS CHEQUES

O feriado bancário aumentou a porcentagem de cheques no movimento diário da rede Carrefour de 40% para 70%. "Até a sexta-feira recebemos em cruzados novos, depois só em cruzeiros", destacou o diretor do Tietê, Renildo Cândido Paulo. "Estamos chamando os fornecedores também para que façam, suas tabelas retroagir ao dia 12." Ele não acredita que o fornecimento pare. "Todos precisam de dinheiro novo, de cruzeiros", disse.

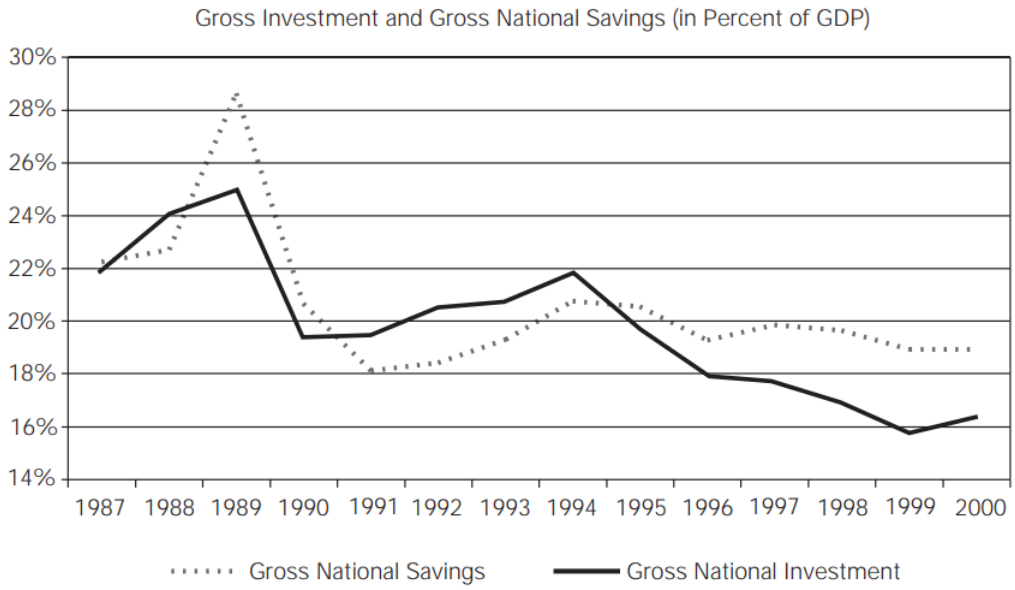
As novas medidas, pelo menos a princípio, mudam os hábitos do consumidor. Em vez de encher os carrinhos, eles optam por comprar o necessário. É o caso da professora Maisa Romano, que tem três filhos, duas empregadas e ainda um guarda em sua casa no alto de Pinheiros. "Restringi minhas compras e cortei o supérfluo, até que entre algum dinheiro." O gerente do Supermercado Sé, da Praça Panamericana, Fernão Nóbrega, disse que seus clientes compram "picado" e levam só o essencial. "A maioria veio mesmo ver os preços."

No Rio, preços já tabelados atraíram poucos clientes

Vendas no varejo foram quase nulas nas principais capitais

Notes. This newspaper article from March 20, 1990, highlights the dramatic drop in supermarket activity following the implementation of the Collor Plan. The headline reports a 40% decrease in movement within supermarkets, capturing the immediate economic shock and consumer uncertainty caused by the asset freeze. The images depict empty supermarket parking lots and aisles, indicating a significant reduction in consumer spending in major cities.Source: O Estado de S. Paulo (1990).

Figure A.5: Brazilian Gross National Savings and Investment



Notes. This figure presents the gross national savings and investment before and after the Collor Plan. Source: (Paiva and Jahan, 2020).

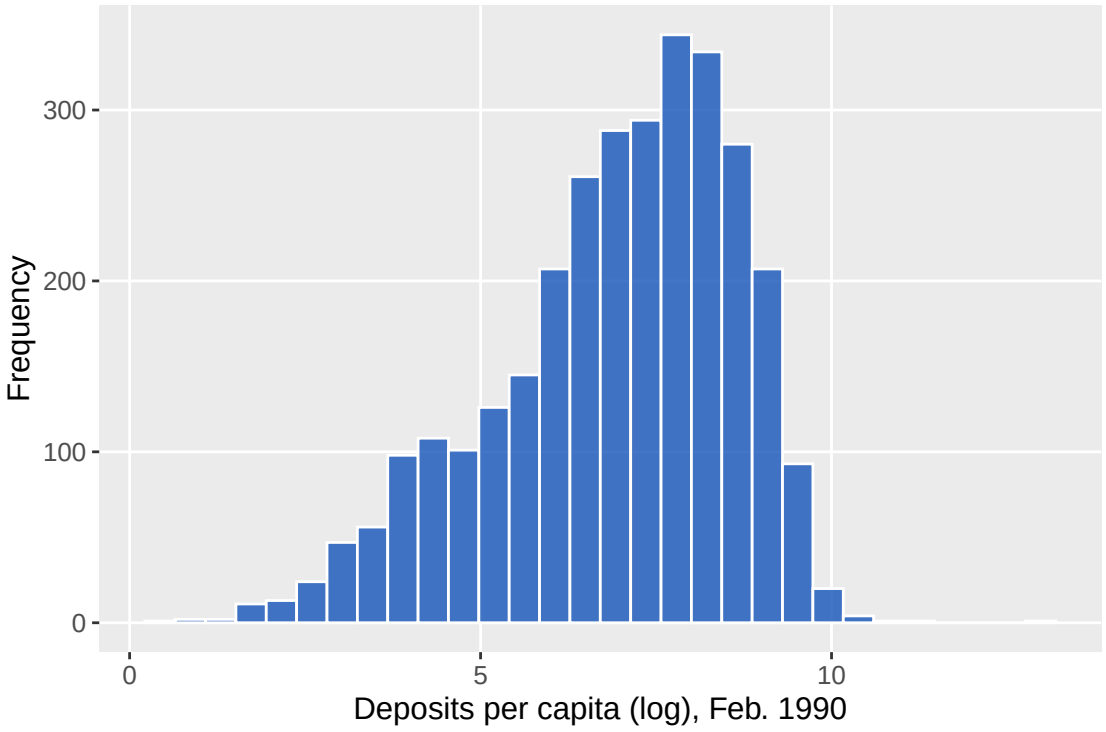
Figure A.6: Brazilian Operational Deficit and Real Seigniorage



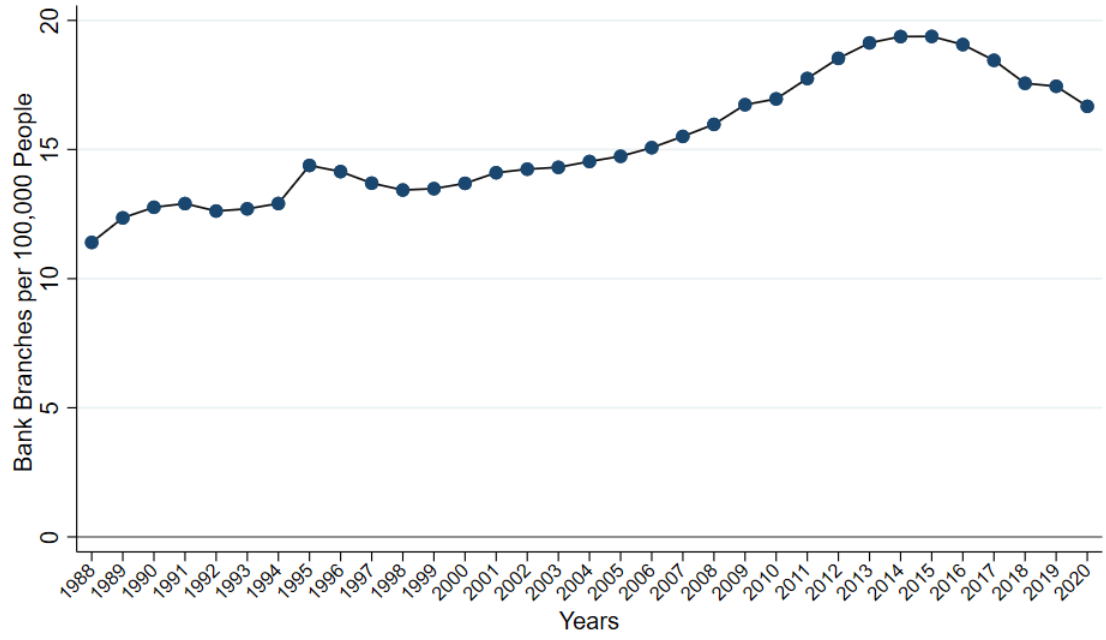
Notes. This figure presents the series for government operational deficit and real seigniorage from 1985 to 1998. Source: (Fund, 2001).

Figure A.7: Bancarization in Brazil

(a) Deposits per capita (log)

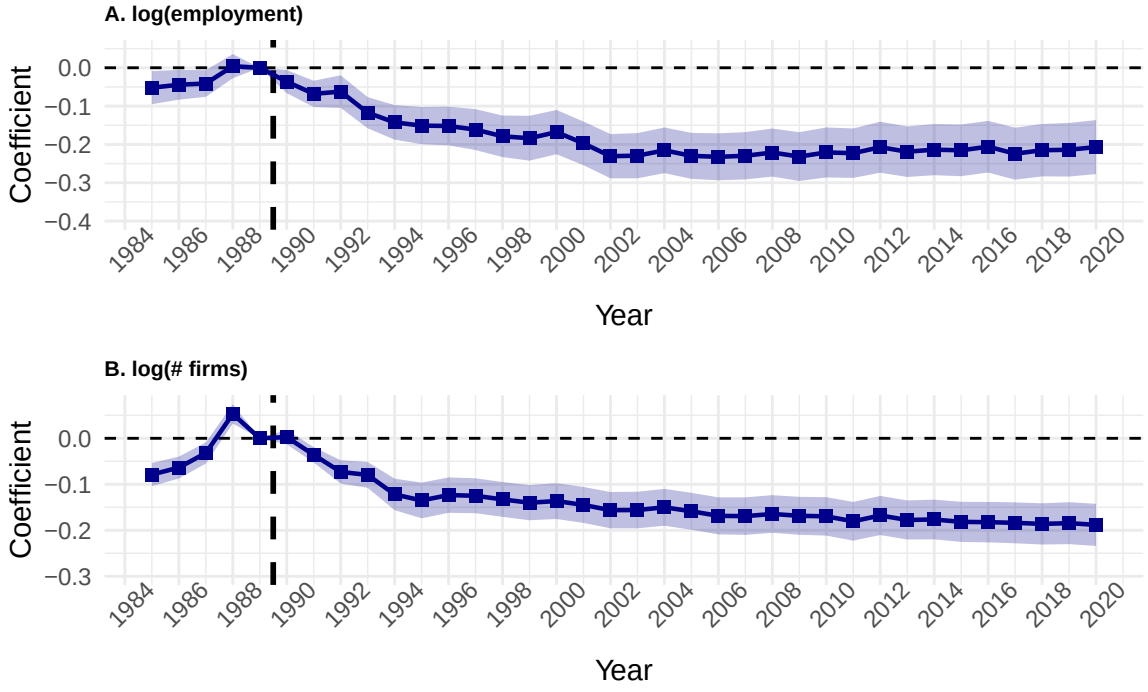


(b) Number of Bank Branches per 100,000



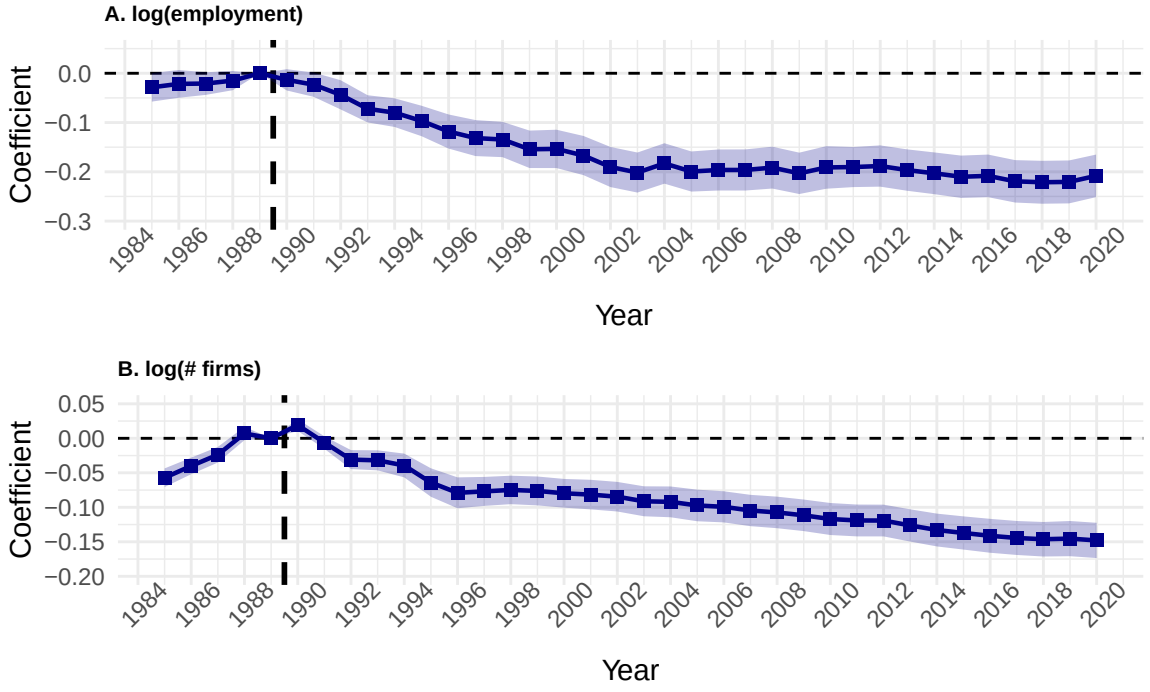
Notes. Figure A.7 visually represents the log deposits per capita in Panel A and the share of total deposits in public banks. Source: Own Calculations

Figure A.8: The Effect of Bank Expropriation on Total Employment and Number of Firms - Binary exposure definition



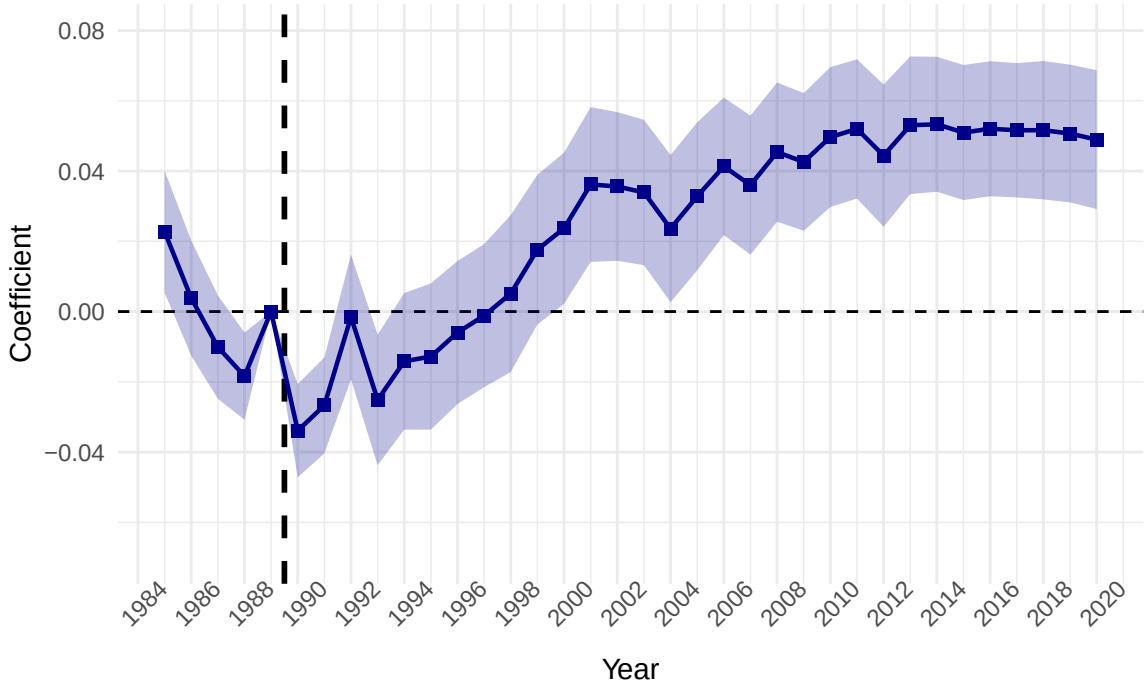
Notes. Event study estimates using an alternative definition of exposure to expropriation. In this specification with assume a binary treatment that equals one (treated) for municipalities where our measure of exposure was above the national median and zero (control) for municipalities below the median of exposure.

Figure A.9: The Effect of Bank Expropriation on Total Employment and Number of Firms - Predicted Treatment



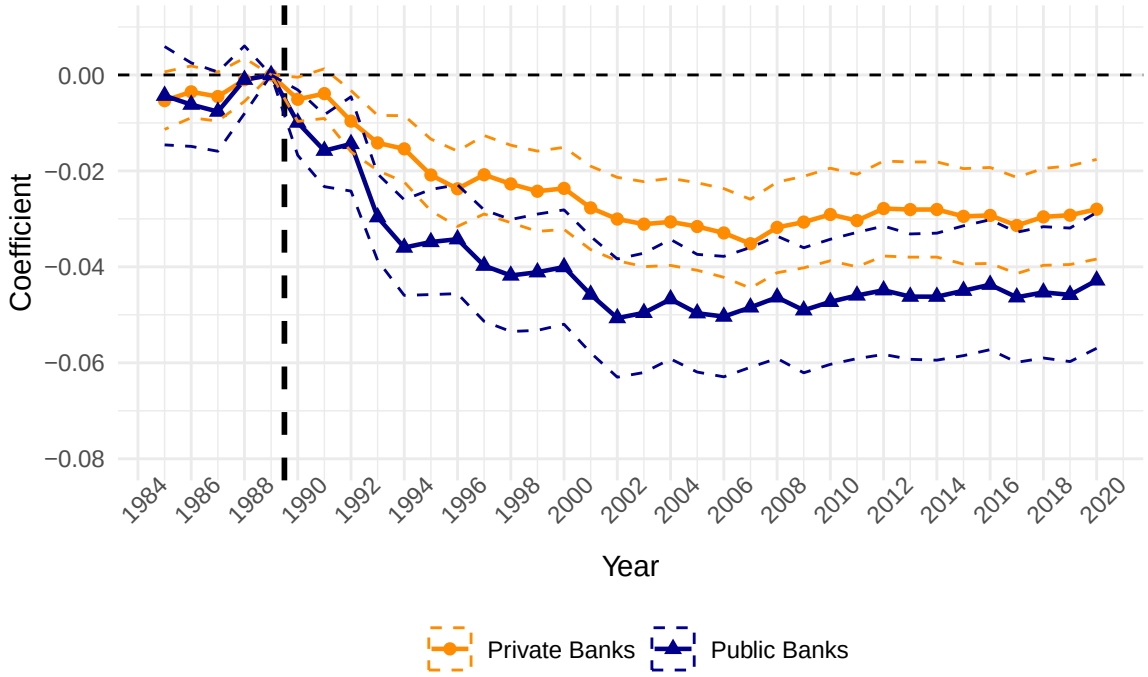
Notes. Event study estimates using an alternative definition of exposure to expropriation. In this specification, we use a measure of exposure that equals the predicted measure obtained by regressing our baseline measure on 1980s census municipality characteristics. The predictors are median total income, the share of the population population, the share of blacks, and the literacy rate.

Figure A.10: The Effect of the Bank Expropriation on the Firm Size



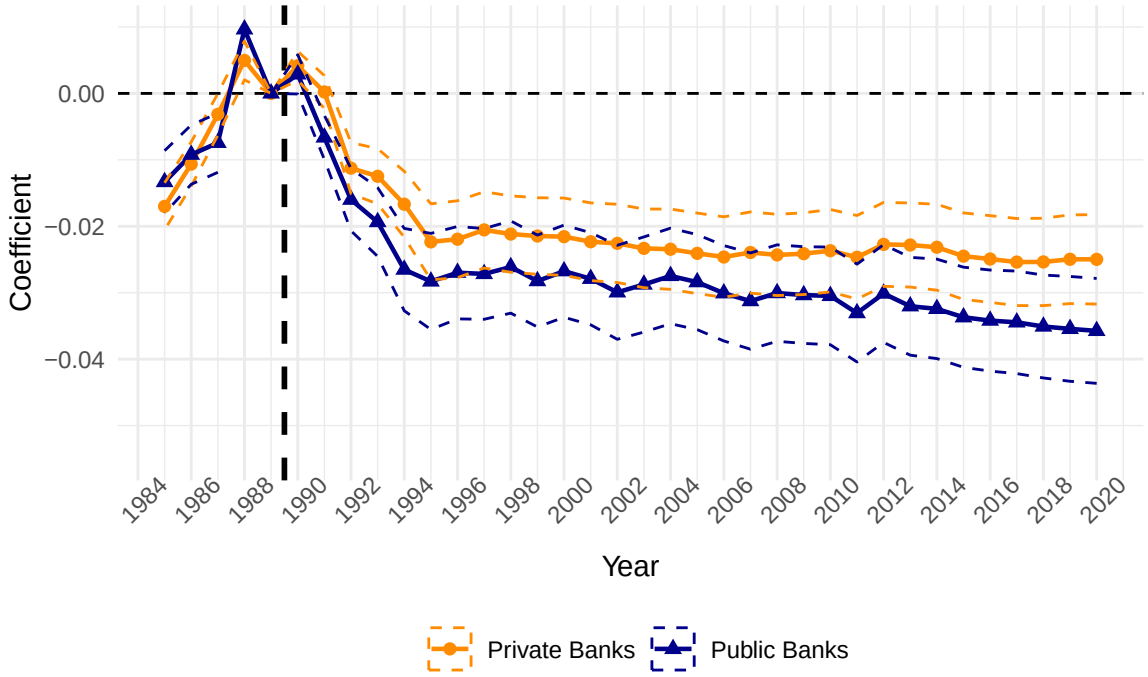
Notes. This figure plots estimates by year of equation 2. Standard errors are clustered at the AMC level. Dashed lines show 95-percent confidence intervals for each estimate. The model includes all the baseline controls.

Figure A.11: The Effect of Bank Expropriation on Total Employment - Private vs Public Banks Exposure



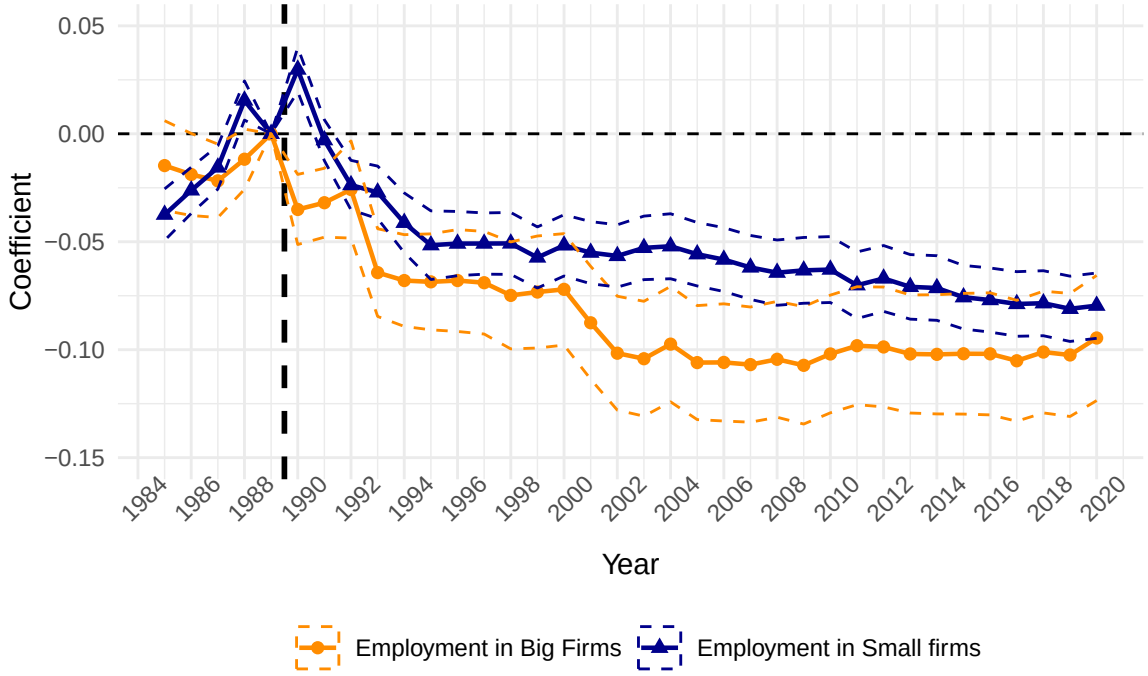
Notes. Event study estimates using an alternative specifications.

Figure A.12: The Effect of Bank Expropriation on Number of Firms - Private vs Public Banks Exposure



Notes. Event study estimates using an alternative specifications.

Figure A.13: The Effect of Bank Expropriation on Employment by Size



Notes. Event study estimates on employment by firm size

A.3 Tables

Table A.1: Descriptive Statistics

	Average in:	Average in:		Normalized
Variables	AMCs in Sample	Control	Treated	Difference
Population	37,029.492	22,554.897	51,504.087	0.147
Age	24.651	23.933	25.368	0.79
Proportion of:				
Whites	0.57	0.432	0.708	1.108
Females	0.493	0.495	0.491	-0.253
Catholics	0.918	0.934	0.902	-0.443
Share of Population:				
in Labor Force	0.594	0.582	0.606	0.454
in Rural Areas	0.515	0.629	0.4	-1.13
Employed	0.976	0.962	0.99	0.422
in High-school or More	0.116	0.092	0.14	0.792
Literate	0.671	0.568	0.774	1.455
with 18 or less	0.501	0.53	0.471	-1.486
with 60 or more	0.059	0.059	0.06	0.105
Share of Households with:				
Car	0.168	0.103	0.232	1.505
Electricity	0.507	0.341	0.673	1.538
Fridge	0.317	0.182	0.451	1.474
Piped Water	0.286	0.164	0.409	1.355
Tv	0.367	0.211	0.524	1.611

Notes. The table reports the summary statistics for the groups studied in the paper. The last column presents the normalized difference between the treated and control groups aligned with Imbens and Wooldridge (2009).

Table A.2: Suggestive Evidence: Contemporary Trust and Satisfaction Beliefs

	Confidence in:				Satisfaction with		Self-Positioning in	
	Banks [std.]	Banks [std.]	Government [std.]	Government [std.]	Democracy [std.]		Right-Left Scale [std.]	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln Seizure Intensity	-0.0280	-0.0297	-0.0324	-0.0362	-0.0275	-0.0300	0.0332	0.0306
	[0.0126]**	[0.0127]**	[0.0119]***	[0.0123]***	[0.0098]***	[0.0100]***	[0.0107]***	[0.0110]***
R2	0.0346	0.0378	0.1255	0.1326	0.1060	0.1114	0.0319	0.0327
Observations	8,947	8,929	13,920	13,167	13,229	12,493	10,602	9,935
State fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Wave fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Demog. Charac.		✓		✓		✓		✓