The Echoes of Economic Trauma: The Short and Long-term Impacts of a Seizure by the State*

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Abstract

Comprehending the consequences of imprudent macroeconomic policies is essential for political accountability. This paper examines the immediate and prolonged impacts of Brazil's unprecedented 1990 Seizure, a policy whereby the government confiscated citizens' checking, savings, and investment accounts, amounting to over 40% of the country's GDP, to combat soaring inflation. Despite the magnitude of this intervention, its consequences have remained empirically unexplored. We thus construct a novel measure capturing regional differences in exposure to the Seizure and implement a difference-in-differences design comparing cohorts born closer versus farther away from the shock in regions of varying levels of exposure. Our analysis reveals lasting damage to human capital and weaker labor market outcomes for children growing up in this period. Remarkably, we find stronger impacts among white individuals, reflecting potential larger losses for families with relatively higher savings. Moreover, the policy's historical footprint extends beyond economics into the beliefs sphere. Even decades later, regions that were hit harder by the Seizure manifest reduced trust in banking institutions and government, disillusionment with democracy, and a left-leaning political shift - a reaction to the initial right-wing government that imposed the policy. To gain further insight into mechanisms, we analyze contemporary firm data and observe substantial and persistent negative effects on the cities exposed. Therefore, this paper reveals the intergenerational impacts and profound economic and political consequences of haphazard economic policy-making.

JEL codes: I38, J08, J24, J38

Keywords: Seizure, human capital accumulation, long-term well-being

1 Introduction

The consequences of irresponsible monetary policies can reverberate through generations, shaping the socioeconomic landscape of a country for decades to come. A great deal of existing economic research has focused on the immediate impacts of such policies with mixed results. Yet, the study of the long-term effects on human capital, economic development, and sociopolitical attitudes of such policies is often limited, leaving policy-makers without reliable evidence to make informed decisions. The profound implications of these macroeconomic choices span not only monetary and fiscal domains but also implicate social welfare, inequality, and overall economic prosperity

To contribute to a better understanding of these long-term effects, this paper focuses on the aftermath of a notable historical case: the 1990 Seizure in Brazil. By examining the reverberations of this policy, which involved the Brazilian government confiscating a substantial portion of the population's savings, 40% of Brazilian GPD, we aim to shed light on the potential consequences of similar policy decisions and guide future decision-makers in navigating the complexities of macroeconomic policy. Similar monetary policies are still common to this day, with other countries engaging in similar confiscations such as the U.S. 1933 "Gold Confiscation Order", Argentina's "Corralitos" in 2001, and Russia's 2018 central bank reform limiting access to personal deposits. Therefore, lessons derived from this analysis may extend beyond the specific Brazilian context and resonate with other instances of economically disruptive policies enacted by governments globally. Through this exploration, we hope to provide valuable insights that foster a more sustainable and equitable approach to macroeconomic policy-making and its intergenerational implications.

Delving into the specifics of the 1990 Seizure in Brazil, the government's decision entailed restricting access to nearly $160 billion dollars from personal checking, savings, and investment bank accounts. Their main objective was to reduce the money supply and thus control the high inflation rate, which was estimated to be at around 100% per month at the time. Unfortunately, this money was updated with an interest rate lower than the inflation rate, which consequently caused severe destruction of the population's savings. The objective of this paper is to analyze the short- and long-term consequences of this policy, with a particular focus on intergenerational human capital and labor market outcomes for individuals exposed during childhood. To assess the effects of this policy, we exploit the geographic city-level variation in the total amount of money in saving or investment accounts in the month just prior to the reform, and the timing of policy adoption for identification. Our empirical strategy is a generalized difference-in-differences framework that compares cohorts born closer to or far away from the introduction of the 1990 Seizure in states with low and high shares of savings-account holders. We expect that individuals exposed during the first years of life or adolescence are more likely to obtain educational gains from the policy change than those who were already ”too” old at the time of the 1990 Seizure. We look at outcomes related to educational attainment, and labor market outcomes. Specifically, we examine the effects of the policy on educational attainment, and labor market outcomes such as total income and hours worked. Additionally, we control for a variety of demographic, geographic, and economic characteristics.

Our rigorous empirical analyses elucidate the considerable long-lasting effects of the 1990 Seizure on both human capital and labor outcomes. As evidenced in the data, the individuals most affected by this policy—those belonging to households in municipalities with sizable savings-account holdings—experienced a substantial reduction in overall educational attainment. Specifically, the average educational attainment for these cohorts saw a marked decrease of approximately 4%. The repercussions of this policy extend to labor market outcomes as well, with cohorts belonging to the most affected regions exhibiting a 2% reduction in total income. Interestingly, when diving deeper into these patterns, we find that the effects on educational attainment and labor market outcomes are disproportionately amplified among white individuals compared to their black counterparts. This racial discrepancy, we conjecture, may stem from the larger destruction of savings experienced by white families due to their relatively higher savings. These findings not only emphasize the far-reaching impacts of large-scale economic policies but also underscore the importance of considering the distributional consequences of such interventions, particularly along racial lines.

After noting the pronounced intergenerational effects on children and adolescents exposed to the Seizure, we shift our focus to exploring the long-term cultural and societal impacts. Analysis of these estimates uncovers a striking correlation between exposure to this monetary shock and enduring shifts in societal attitudes, even when accounting for various demographic controls and state-fixed effects. Regions with greater exposure to the Seizure report significant persistent decreases in trust in banking institutions and the government, indicated by reductions of 0.0297 and 0.0362 standard deviations respectively. What's more, a sense of disappointment with democracy is noticed in these regions, revealed by a notable 0.030 standard deviation decrease in satisfaction with democratic processes. Locales that experienced significant exposure to the Seizure also register a prominent leftward political shift, demonstrated by a 0.0306 standard deviation increase in left identification, perhaps as a reaction to the right-wing government's hefty policy miscalculation. Remarkably, these shifts are seen even in regions that were more affluent historically, suggesting that the devastating policy not only resulted in economic losses but also brought about significant cultural changes among the direct victims.

To delve deeper into the underlying mechanisms and comprehend the contemporaneous impact of the 1990 Seizure, we analyzed contemporary regions' firm data. In applying a difference-in-differences approach, we find stark and persistent negative effects on employment and the number of firms in cities more exposed to the reform. The reduction is significantly high, with a negative impact of -0.16343 on the log(1+employment total) and -0.07022 on the log(1+n firms active). Most notably, these effects remain strong even three decades after the reform, revealing a startling level of persistence in the policy's detrimental impacts. These outcomes divulge a clear link between macroeconomic policy missteps, namely the Seizure, and firm-level indicators. The prolonged negative impacts on employment and the number of active firms potentially suggest a persistent economic disruption that traversed decades to ripple into the present day. This, inherently, supports our findings on the intergenerational human capital and labor market outcomes, as well as the sociopolitical attitude shifts. Admittedly, the reduction in productive economic activity could have precipitated various cascading effects lower family incomes, altered fertility behaviors, and reinforced inequality all of which cumulatively contributed to the bleak socio-economic landscape that we observe today. By illustrating this complex interplay between historical economic shock and enduring socio-economic outcomes, our analysis underscores the irrefutable consequence of not just short-term, but possibly enduring macroeconomic disruptions. This reinforces our understanding of the far-reaching influence of such radical macroeconomic policy interventions, highlighting the need for their careful deliberation.

This project contributes to three main branches of economic literature. First, more generally, this study adds to a large body of studies on the economic effects of macroeconomic policies and their implications for human capital acquisition and inequality of opportunity. (Yagan, 2019; Bailey, DiNardo and Stuart, 2021; Hershbein and Stuart, 2022) This project is also closely linked to literature on the effects of historical events on long-term outcomes. (Stuart, 2022; Baran, Chyn and Stuart, 2023) Finally, our project connects to the literature on the importance of early life investments, as it is closely related to papers discussing evidence that this effect on critical skills during childhood can have serious consequences that persist even in the long run, such as those found in the works of Currie and Almond (2011), Kline and Walters (2016), Johnson and Jackson (2019), Bailey, Sun and Timpe (2018), and Almond, Currie and Duque (2018). Our findings in this paper provide evidence that macroeconomic policies with far-reaching implications for inequality of opportunity should be carefully considered before being implemented.

The paper is structured as follows: Section 2 offers background information on the 1990 Seizure. In Section 3, we introduce the data and describe the measure used to capture exposure to the law change. Section 4 outlines our empirical approach to assess the effect of the 1990 Seizure on long-run human capital and total income. Section 5 discusses the main mechanisms driving our results. Section 6 presents the primary findings, followed by an exploration of heterogeneous effects in Section 7. Robustness checks are conducted and detailed in Section 8. Section 9 delves into the contemporary consequences of the policy, and finally, Section 10 concludes the paper, summarizing our findings and highlighting their implications for future research and policy-making.

2 Background

In the late 1980s, Brazil was in the midst of a significant political transformation. Following two decades of military rule, the country returned to a democratic system in 1985. The transition to democracy was marked by widespread popular mobilization, which led to the adoption of a new constitution in 1988. In 1989, the country held its first direct election for president since 1960. Despite the transition to democracy and hope for the future, the political landscape in the period was still marked by significant challenges. Political parties were still in the process of consolidating and organizing, and there were concerns about the strength and stability of democratic institutions. In addition, the country was facing high inflation, a debt crisis, and economic instability.

The country was in the midst of the so-called "Lost Decade", during which it experienced low growth, high inflation, and large external imbalances. In the late 1980s, Brazil's annual inflation rate reached hyperinflationary levels, reaching over 2,500% in some years. This led to a loss of confidence in the country's currency and a decline in the standard of living for many Brazilians. The government attempted to control inflation through various measures, including price controls and wage freezes, but these efforts were largely unsuccessful. Overall, the Brazilian economy in the late 1980s was in dire need of structural reforms to address these issues, mainly inflation, to restore stability and growth. This would be the main challenge of the winner of the 1989 presidential election.

2.1 The 1989 presidential election

The first presidential election after the military dictatorship was won by Fernando Collor de Mello, who ran as the candidate of a newly-created right-wing party, the National Reconstruction Party (PRN). Collor, until then a little-known governor of a small state, branded himself as a jovial anti-establishment politician and campaigned on a platform of economic reform. He promised to combat inflation, privatize state-owned enterprises, and end corruption – which yielded the support of the business class and mainstream media. Collor defeated Luis Inácio Lula da Silva, the candidate of the Workers' Party (PT). Lula had a strong base of support among labor unions and leftist groups and vowed to govern for the poor and the overlooked population. Despite his popularity, Lula was ultimately unable to overcome Collor's aggressive campaign strategy. TV ads portrayed Lula as a radical communist who was not suitable for the job, suggesting that the leftist would seize the population's financial assets if elected. Still, the race was close. Collor won the runoff with 53% of the votes in December 1989. In that same month, the annual inflation rate reached 1.749%. This would be the main challenge of the new government.

2.2 The Collor Plan

The three months between the 1989 election and Collor's inauguration on March 15th 1990 were marked by uncertainty surrounding the incoming government's economic plan. The nation's major newspapers reported daily on Collor's economic team's deliberations and speculated about possible policy proposals. On the eve of the plan's announcement, general consensus suggested it would comprise three shocks: a price freeze, fiscal tightening, and contraction of the money supply. For instance, on March 11th, Estadão reported that the government was likely to announce a combination of short-term price and wage control policy, currency devaluation, hikes in tax rates, and increases in commercial banks' minimum reserves. Economists believed these tax hikes would primarily impact short-term financial investments used by the public to shield against inflation. On March 14th, the nominated Economy Minister assured the public that there would be no confiscation of financial assets, particularly savings accounts. Thus, leading to a notable increase in deposits in savings accounts in anticipation of the new plan.

However, when the Collor Plan was released on March 15th, it took the entire country by surprise. Alongside the predicted measures such as the introduction of a new currency, the Cruzeiro, an unforeseen 18-month freeze on bank accounts, especially savings, was implemented under Provision Measure 168, which later became Law 8.024. This legislation outlined the specifics of the liquidity-blocking measure, with a substantial portion of financial assets, excluding paper money held by the public, to be retained in the Central Bank of Brazil for 18 months. Notably, these blocked funds would receive a 6% annual interest rate with daily accrual and would be released in 12 monthly installments starting from the 19th month.

The law stipulated different conversion rules for various asset types:

- Actual paper currency was converted immediately without being blocked.
- Deposit accounts and savings accounts of up to Cr$ 50,000 were immediately released. (equivalent to around US$ 1,300 based on the official exchange rate on March 13, 1990).
- Overnight applications and remunerated accounts were subjected to an immediate

release of Cr$ 25,000 (around US$ 650, using the official exchange rate at that time) or 20% of their total amount; the larger of two was considered.

- For funds and term deposits, 20% of the total amount was subjected to immediate release.

The implementation of this liquidity-blocking measure led to significant public discontent and a marked decrease in consumer spending and an economic slowdown. Even after the freeze lifting, the government's reputation suffered a serious blow, and a considerable loss of public confidence in the economic policies of the Plano Collor had incurred. The incident remains one of the most debated instances in recent Brazilian economic history.

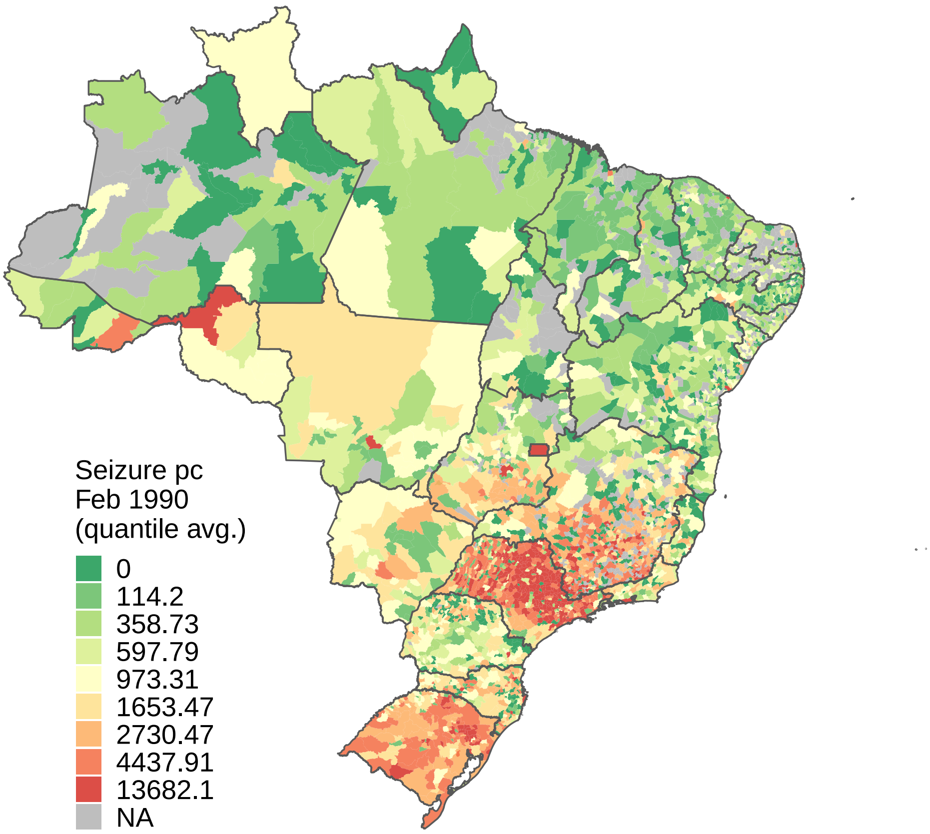
The immediate and long-term consequences of the liquidity-blocking measure were stark. While the funds were intended to be returned with interest after the 18-month freeze, the reality was that crushing inflation levels severely diminished the real value of the returned money for most individuals. Simply put, the money that was returned had considerably less purchasing power compared to when it was initially blocked due to rampant inflation in the interim periods. This resulted in significant losses for the individuals who saw their savings essentially eroded when they were returned. Furthermore, there were also cases where the returned funds did not materialize at all. Disagreements and conflicts surrounding the procedures of this refund process meant that not all individuals had their savings returned as had been initially stated. Whether due to bureaucratic hurdles, legal disputes, or simple oversight, several individuals ended up not receiving any of the blocked funds back, thus further exacerbating the economic suffering inflicted by this policy. This contributed to a pervasive sense of disillusionment with the government, extending the economic impact of the Collor Plan into a profound societal and political disillusionment, the effects of which are felt even decades later.

3 Data

This paper utilizes data from the 2000 and 2010 Brazilian Census, in order to analyze the effects of the 1990 Seizure policy. One important feature of the Brazilian census is the presence of information about the municipality and year of birth, therefore, using the intensity of exposure to the 1990 Seizure in a given municipality it is possible to gain insights into the effects of the policy on the exposed individuals. Additionally, the 1980 census, which occurred just before the law change, provides several baseline demographic and socioeconomic characteristics that we can interact with a time trend. This data will enable us to identify the impacts of the 1990 Seizure policy on those exposed to it.

The 1990 Seizure could affect levels of human capital through various channels. To investigate these potential mechanisms, this paper utilizes micro-data from the RAIS, with reference years ranging from 1987 to 2010, to assess the contemporary effects of the policy. Specifically, indicators on the total number of active firms, the median active firm's size, and the total level of employment will be studied in order to explore the changes this policy brought about.

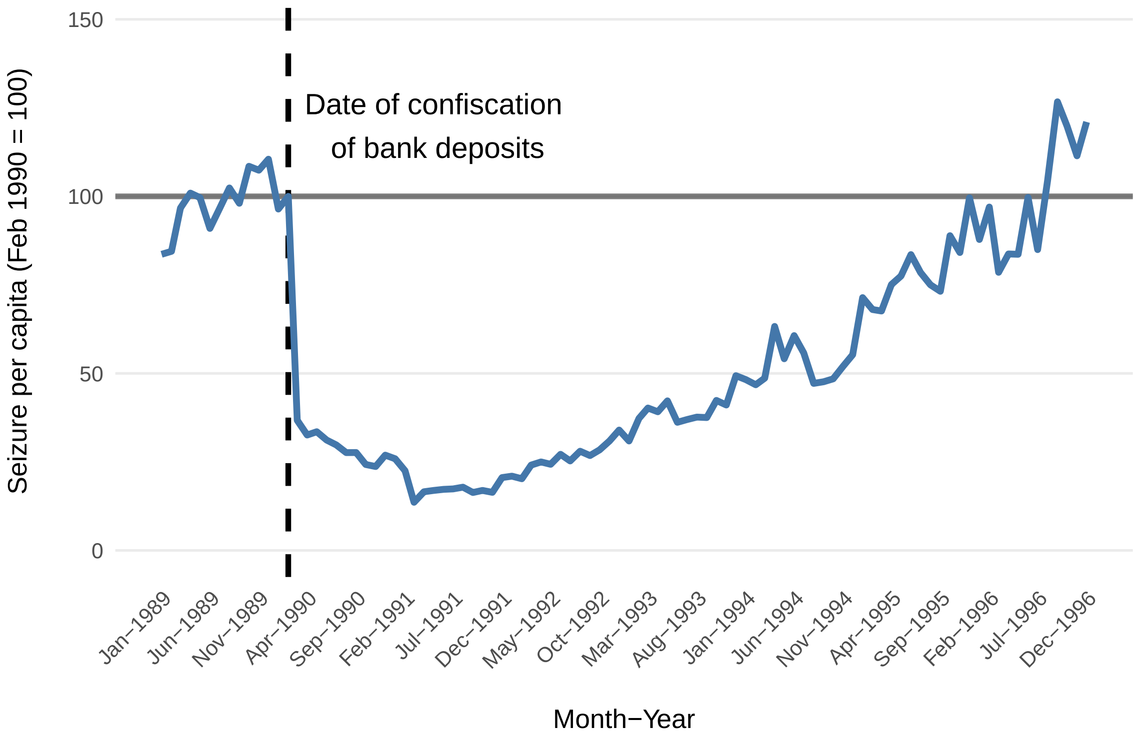
Fig. 1: Geographical variation in exposure to the seizure of bank deposits



Notes. Figure 2 presents a visual representation of the geographical variation in exposure to the 1990 Seizure 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.

To quantify the effects of the 1990 Seizure, we need to compare the cities that were most affected to those least affected by the new policy. To reach this objective, we consider that the 1990 Seizure had a greater effect in states with larger amounts of money in the accounts blocked by the government (investment and saving accounts) in the month immediately before the law changed.[1] This gives us an intensity of exposure to the policy change for each city in Brazil, allowing us to examine the effect of the policy by interacting the intensity with the timing of the policy change, observing how the contemporary outcomes before and after the policy, as well as the long-term effects of the policy on children exposed early in life or who were already older during the policy implementation, are affected. See Figure 1 for a visual representation of our measure.

Fig. 2: Total Volume of Bank Deposits in Brazil (Jan 1989 - Dec 1996)



Notes. Figure 1 illustrates the total volume of bank deposits in Brazil between January 1989 and December 1996. The values presented are deflated and per capita figures, with February 1990 as the base (Feb 1990 = 100).

Figure 2 provides a clear visualization of the total volume of bank deposits in Brazil from January 1989 to December 1996. The graphic reveals a marked drop in total bank deposits to around 40% of the February 1990 level. This steep decline suggests a significant ”bank run” triggered by the Collor Plan, in which those who were able to withdraw their money from the banks did so rapidly in anticipation of the policy change. It’s worth noting that these values are deflated and per capita, with February 1990 serving as a base index (Feb 1990 = 100) for comparison. One of the most striking features of this figure is the extended period of recovery after the introduction of the Plan Collor - it took approximately six years for the total volume of bank deposits to return to its February

[1]This measure will be built with the Estban data from the central bank of Brazil.

1990 level. This slow recovery period serves as a stark indicator of the lasting trauma inflicted on the Brazilian banking system following the dramatic policy shift, emphasizing the enduring economic impact of such a large-scale governmental intervention.

4 Research Design

Our main empirical strategy is a difference-in-differences setup that compares cohorts born closer to and far away from the policy change in cities with low and high exposure intensity, to observe the long-run effects in the children exposed. This approach, commonly employed in the literature, allows us to account for observable and unobservable characteristics, as well as differences across geographic areas, in order to assess the effects of the policy. Additionally, the use of the intensity of exposure measure allows us to identify the effects of the policy in short-run outcomes, by comparing outcomes before and after the policy change. This will enable us to gain deeper insights into the impact of the 1990 Seizure policy.

4.1 Basic Specification

To estimate the long-run impacts of childhood exposure to the 1990 Seizure, we will employ a difference-in-differences approach. Specifically, we will use the following specification:

$$\begin{aligned} Y_{istc} = \alpha \ + \ \beta \ \textit{Childhood Exposure}_t \times \textit{Seizure Intensity}_s \\ + \ \vec{\mathbb{X}}'_{istc}\Lambda \ + \ \tau_{sc} \ + \ \theta_{tc} \ + \ \xi_{istc} \end{aligned} \tag{1}$$

Here, the outcome of interest, Y_{istc}, is examined for individuals i born in the city s in year t and observed in census-year c. The key independent variable consists of the interaction between *Childhood Exposure*, defined as the fraction of childhood years exposed to the reform, and *Seizure Intensity*, defined as the amount of money in the accounts blocked by the government (investment and saving accounts) in the month immediately before the law change, for each city in Brazil. Furthermore, the vector $\vec{X}'_{ist}$ incorporates a basic set of individual-level demographic characteristics such as gender and race, as well as interactions between baseline city-level characteristics and linear cohort trends. The models will include city-of-birth $\times$ census-year fixed effects (τ_{sc}), and year-of-birth $\times$ census-year fixed effects (θ_{tc}), to account for substantial differences across cities and overall cohort-changes in potential determinants of human capital accumulation. The error term ξ_{ist} is clustered at the city-of-birth level, to account for possible serial correlation across birth cohorts over time. This common approach in the economic literature will allow us to accurately identify the effects of the policy and gain deeper insights into the impacts of the 1990 Seizure policy.

We will also estimate a non-parametric version of (1) to examine in detail the effects at different ages of exposure:

$$Y_{istc} = \alpha \; + \underbrace{\sum_{K=0}^{14} \beta_K \cdot \left(\boldsymbol{I}_{t=K} \times \textit{Seizure Intensity}_s\right)}_{\text{Childhood Exposure}} + \underbrace{\sum_{K=-11}^{-2} \beta_K \cdot \left(\boldsymbol{I}_{t=K} \times \textit{Seizure Intensity}_s\right)}_{\text{No Childhood Exposure}}$$
$$+ \; \vec{\mathbb{X}}'_{istc}\Lambda \; + \; \tau_{sc} \; + \; \theta_{tc} \; + \; \xi_{istc} \tag{2}$$

In this equation, $\boldsymbol{I}_K(\cdot)$ is a timing indicator that is equal to one if the age of an individual is in the year that the 1990 Seizure policy passed and zero otherwise. The remaining parameters are the same as in equation one. This more comprehensive formulation provides a transparent and flexible method of examining the relationship between the 1990 Seizure policy and lifetime outcomes.

To evaluate the sensitivity of the estimates, this paper will perform several additional robustness checks. These include alternative specifications (e.g. 1980-cities characteristics $\times$ cohort trends, additional controls); relaxed and alternative sample restrictions when constructing our cross-city measure (e.g. inclusion of cities without banks in the sample); addressing potential bias due to mobility (e.g. effects on residential mobility, limiting the sample to stayers); exploring the sensitivity of our estimates to outliers (e.g. excluding birth cohorts one by one, dropping cities one by one); and performing a permutation test (randomizing our measure of cross-city exposure).

5 Mechanisms Discussion

5.1 Theoretical Framework for Saving Destruction Consequences

Prior to presenting our results, it is essential to provide an in-depth theoretical framework to explain the hypothesized relationship between the 1990 Seizure policy and the long-term effects on human capital and labor market outcomes. This framework focuses on saving destruction as the main mechanism wherein the confiscation of personal savings and investment accounts leads to substantial erosion of household financial resources, restricting the ability to make critical investments in education, health, and overall well-being.

In the context of education, the reduced financial resources could impair the accessibility and affordability of quality education. Limited funding for essential needs such as tuition fees, textbooks, and extracurricular activities could hinder the cognitive and skill development of the affected generation, ultimately diminishing their competitiveness in the labor market. Regarding health, saving destruction can affect families' capacity to access healthcare facilities and provide necessary medical treatments. The poorer health outcomes may indirectly impact human capital development, leading to decreased productivity in the labor market. Furthermore, diminished resources can make it challenging for families to support their children's aspirations and provide access to occupational opportunities that require capital investments. These limitations can alter career choices and trajectories, ultimately affecting labor market outcomes.

Disparities across demographic groups are another crucial aspect to consider within this theoretical framework. For instance, groups with a higher reliance on savings for educational and occupational opportunities, such as more affluent segments of the population, may experience more pronounced effects of saving destruction. Consequently, these individuals may face a disproportional decline in educational attainment, career opportunities, and social mobility, as compared to counterparts who were not as heavily reliant on savings. Alternatively, vulnerable populations that already face numerous barriers to achieving socioeconomic success may find their challenges exacerbated by saving destruction, further solidifying the cycle of poverty.

5.2 Alternative Mechanisms

In order to investigate the other mechanisms underlying the intergenerational results, we will observe contemporary outcomes, such as the total number of firms, the total number of employers, and the median firm size. To do this, we will utilize the following equation:

$$Y_{ct} = \alpha \ + \ \beta \ \textit{Post-1990} \times \textit{Seizure Intensity}_c \ + \ \vec{\mathbb{X}}'_{ct}\Lambda \ + \ \tau_c \ + \ \theta_t \ + \ \xi_{ct} \tag{3}$$

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*, along with baseline 1980 characteristics ($\vec{X}'_{ct}$) interacted with linear year trends. 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.

6 Main Results

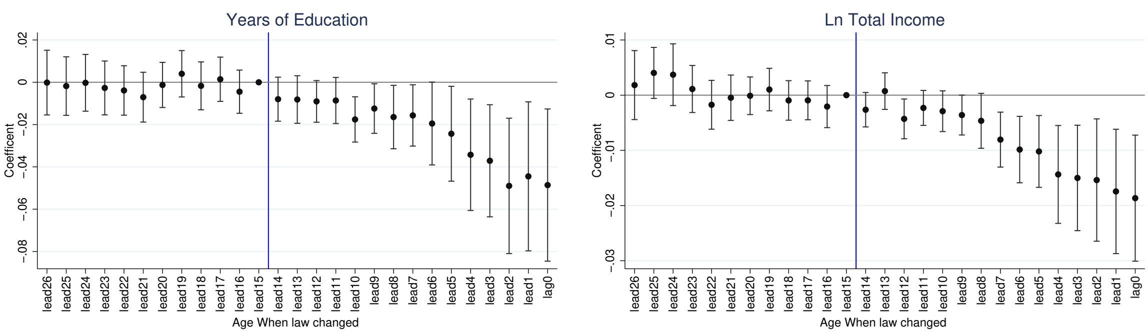
In this section, we turn to our primary objective of examining the long-term effects of the 1990 Seizure policy on the exposed cohorts in terms of human capital development and labor market outcomes. Building on the theoretical framework and preliminary evidence, we employ a robust empirical approach to thoroughly investigate the impact of saving destruction on the affected generations. Moreover, we assess the presence of a common trend between cohorts exposed to the policy at different ages, which is crucial in corroborating the strength of our research design and supporting the causal interpretation of our results. The forthcoming paragraphs present the main results of our analysis, highlighting the consequences of the policy on educational attainment and income for the most treated cohorts, as well as the robustness of these findings.

6.1 Long-run Cohort Estimates

Our empirical analysis reveals significant long-run consequences of the 1990 Seizure policy on the affected cohorts. Importantly, our findings also demonstrate a common trend for cohorts who were exposed to the policy at older ages, which is crucial in strengthening the validity of our research design and supporting the causal interpretation of our results. This common trend suggests that the observed differences in outcomes between the various cohorts are primarily driven by the policy, rather than confounding factors or pre-existing trends, reinforcing the reliability of our estimates.

As presented in Figure 3, we find that the policy resulted in an approximately 4% reduction in educational attainment for the most treated cohorts, indicating the detrimental impact of saving destruction on human capital formation. Additionally, our results demonstrate a decline in income of around 2% for the most treated cohorts, which further underscores the far-reaching implications of the policy on households' financial well-being and labor market outcomes. These findings, supported by the observed common trend, provide a robust empirical basis to study the broader mechanisms and implications of the policy in relation to the socioeconomic trajectories of the affected generation.

Fig. 3: The long-run effects of seizure: event-study



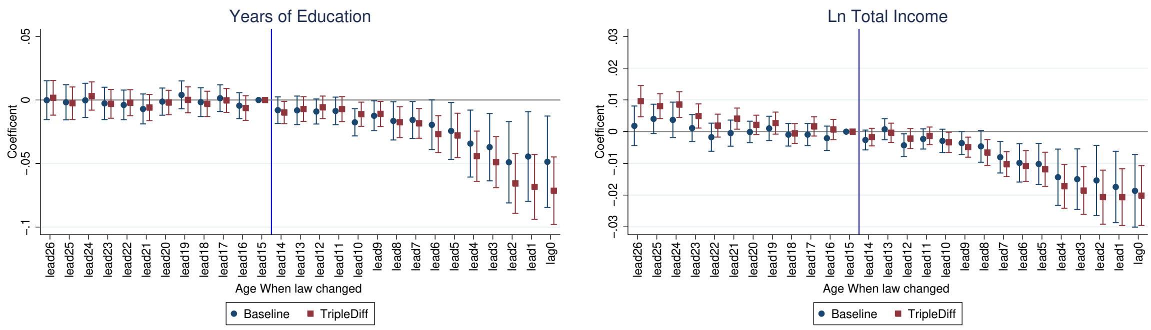
(a) Years of education

(b) Income

Notes. These figures present the event-study estimates based on Equation 1, illustrating the impact of the 1990 Seizure policy on educational and income outcomes. Panel A displays the results for years of education, while Panel B presents the findings for log total income. Estimates are clustered at the municipality level.

Figure 4 presents a comparison between the triple difference estimates and baseline estimates for both educational and labor market outcomes, further validating our analysis. In Panel A, which focuses on educational outcomes, our findings reveal slightly higher magnitudes for the triple difference estimates compared to the baseline estimates. Similarly, Panel B, which examines the impact on income, also demonstrates marginally higher magnitudes for the triple difference estimates in comparison to the baseline estimates. These findings support the robustness of our results and reinforce the credibility of our empirical methodology, indicating that our conclusions remain consistent across both the baseline and the more rigorous triple difference estimation strategies. By confirming the direction and magnitude of the policy effects through these robustness checks, we strengthen our understanding of the 1990 Seizure's long-term impact on human capital and labor market outcomes in Brazil, providing valuable insights for future research and policy-making endeavors.

Fig. 4: Triple Difference: Median Income In 1980



(a) Years of education (b) Income

Notes. These figures present the event-study estimates based on Equation 1, illustrating the impact of the 1990 Seizure policy on educational and income outcomes. Panel A displays the results for years of education, while Panel B presents the findings for log total income. Estimates are clustered at the municipality level.

Table 1 presents the results of our baseline and triple difference estimates, providing a comprehensive view of the effects of the 1990 Seizure policy on years of education and log total income. Columns 1 and 2 represent the effects on years of education, while columns 3 and 4 show the effects on log total income. Both sets of results are consistent and in line with our expectations. The findings in Table 1 underscore the stronger effects for individuals exposed to the policy during their early childhood years (0-5 years old), which supports our hypothesis that the policy had the most significant impact on human capital formation and labor market outcomes for people exposed at these critical developmental stages. This consistency between the baseline and triple difference estimates across both outcomes further strengthens the credibility of our empirical analysis, demonstrating the robustness of our results in capturing the long-term consequences of the 1990 Seizure policy. By providing evidence of the policy's impact on educational attainment and total income, this analysis contributes to a deeper understanding of the mechanisms through which the policy affected the socioeconomic trajectories of the exposed generations.

Table 1: Baseline and Triple Difference Estimates for Years of Education and Log Total Income

	Baseline Years of Education (1)	Triple Difference Years of Education (2)	Baseline Log Total Income (3)	Triple Difference Log Total Income (4)
Childhood Exposure (0-5)	-0.0382		-0.0154	
	[0.0166]**		[0.0053]***	
Childhood Exposure (6-14)	-0.0116		-0.0046	
	[0.0058]**		[0.0018]***	
Childhood Exposure (0-5)		-0.0528		-0.0216
$\times$ Above med. Inc. 1980		[0.0121]***		[0.0040]***
Childhood Exposure (6-14)		-0.0112		-0.0082
$\times$ Above med. Inc. 1980		[0.0045]**		[0.0013]***
R^2	0.5747	0.5751	0.5339	0.5344
Observations	5,354,627	5,354,627	3,848,443	3,848,443
AMC fixed effects	✓	✓	✓	✓
Birth-Year fixed effects	✓	✓	✓	✓
State-by-year fixed effects	✓	✓	✓	✓

Notes. Difference-in-differences estimates in all columns. All columns present locality, birth year, and State-by year fixed effects. Standard errors shown in parentheses are clustered at the AMC level. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

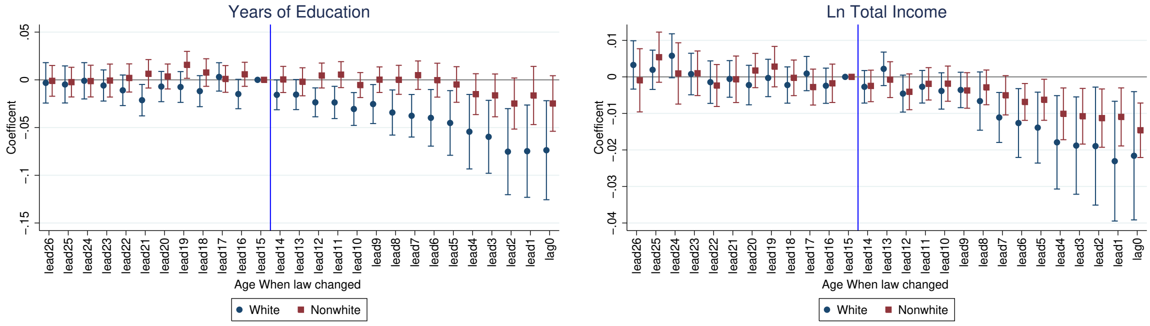
7 Main Heterogeneities

As we delve deeper into the implications of the 1990 Seizure policy, it is essential to recognize the potential heterogeneities in the effects of the policy across various dimensions. In our analysis, we focus on two key factors, namely, Race (Black and White) and economic conditions (municipalities above and below the median income in the 1980s). The assessment of these heterogeneities will enrich our understanding of the policy's multifaceted consequences across diverse contexts and cohorts. In the following figures, we will explore these various heterogeneities and discuss their implications in deepening our knowledge of the 1990 Seizure policy's effects across selected subpopulations and contexts. This comprehensive analysis will contribute to a more nuanced understanding of the policy dynamics and generate insights that can inform future research and policy-making.

In Figure 5, we present the heterogeneous effects of the 1990 Seizure policy across racial groups, revealing distinct consequences for Whites and Blacks in terms of educational and labor market outcomes. A crucial aspect of this analysis is the connection between these heterogeneities and the savings destruction mechanism, which we posit as the primary driver of the observed consequences of the policy. Panel A of the figure illustrates that the policy had a stronger impact on the educational outcomes of White individuals, while the effects on Black individuals were virtually negligible. This disparity can be primarily attributed to the fact that White households were more affected by the savings destruction mechanism due to their higher reliance on savings and investments on average compared to Black households. The differential impact on educational outcomes supports the argument that the saving destruction mechanism played a significant role in shaping the long-term consequences of the 1990 Seizure policy on human capital formation.

Panel B demonstrates that although the policy effects were more pronounced for Whites, Black individuals also experienced negative labor market outcomes caused by the 1990 Seizure policy. This finding may be attributable to the broader economic repercussions of the policy on the labor market, which could have led to reduced job opportunities and lower overall demand for labor. The presence of negative labor market effects for both racial groups illustrates the far-reaching consequences of the policy, emphasizing the need for a deeper understanding of the interconnectedness of macroeconomic policies, household finances, and labor market dynamics to inform future policy interventions and foster a more equitable and inclusive socioeconomic landscape.

Fig. 5: The long-run effects of seizure by race



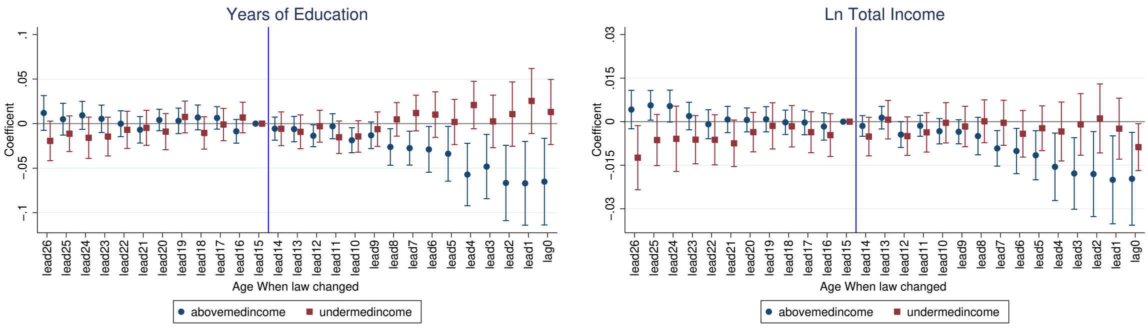
(a) Years of education (b) Income

Notes. These figures present the event-study estimates based on Equation 1, illustrating the impact of the 1990 Seizure policy on educational and income outcomes. Panel A displays the results for years of education, while Panel B presents the findings for log total income. Estimates are clustered at the municipality level.

Figure 6 provides a comparative analysis of the effects of the 1990 Seizure policy on two distinct subsamples of municipalities: those above the median income in the 1980s and those below the median income in the 1980s. This comparison is crucial as it allows us to explore how the impact of the policy varies between richer and poorer municipalities, further enhancing our understanding of the policy's differential consequences. As hypothesized, the effect is expected to be more pronounced in the richer municipalities, where households were more likely to be affected by the savings destruction mechanism. In accordance with our hypothesis, Figure 6 demonstrates that the effects of the 1990 Seizure policy were stronger for richer municipalities, whereas the effects were virtually non-existent for poorer municipalities. These findings hold for both educational and labor market outcomes. Our results suggest that, indeed, richer municipalities were more impacted by the savings shock due to the higher rates of personal savings and investment accounts among their populations. By considering a measure of income that predates the policy implementation and was not affected by it, we can better isolate the effects attributable to the policy itself and the pre-existing income disparities between municipalities.

This analysis reinforces the importance of studying the heterogeneities in the effects of macroeconomic policy interventions, as it reveals how different socioeconomic environments may experience distinct consequences. Consequently, these insights can be valuable for designing future policy interventions that consider such disparities and are aimed at fostering a more inclusive and equitable socioeconomic landscape.

Fig. 6: The long-run effects of seizure: municipalities above and below the median income in 1980s



(a) Years of education (b) Income

Notes. These figures present the event-study estimates based on Equation 1, illustrating the impact of the 1990 Seizure policy on educational and income outcomes. Panel A displays the results for years of education, while Panel B presents the findings for log total income. Estimates are clustered at the municipality level.

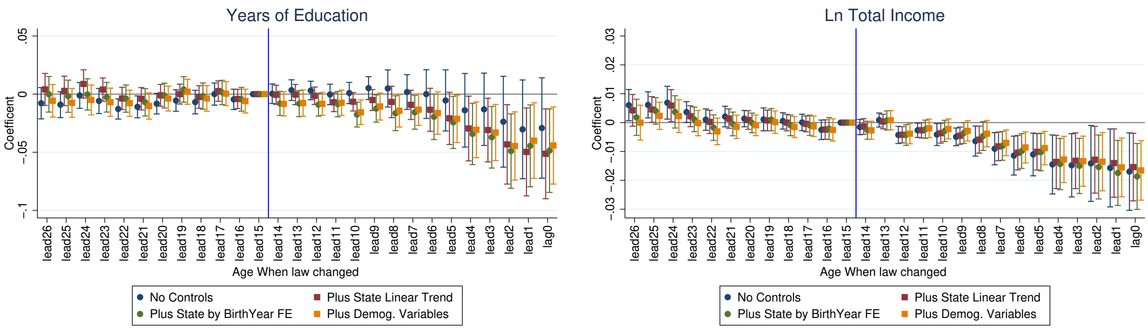
8 Robustness Checks

To ensure the validity and reliability of our findings, it is necessary to subject our analysis to a series of robustness checks that probe the sensitivity of our results to alternative specifications, sample restrictions, and potential confounding factors. By thoroughly examining the robustness of our empirical investigation, we aim to establish a greater level of confidence in our conclusions and mitigate concerns regarding potential biases or pitfalls in our research design. In the following paragraphs, we will present and discuss the various robustness checks we have conducted, highlighting their implications for the overall strength and generalizability of our findings. Such rigorous examination of the robustness provides additional credibility to our study, further reinforcing the contribution of our research to the understanding of the long-term effects of economically disruptive policies like the 1990 Seizure in Brazil.

Figure 7 presents the results of several robustness checks that probe the sensitivity of our findings to alternative specifications, providing a rigorous examination of the validity and reliability of our conclusions. These robustness checks include various alterations to our empirical model, such as: (1) excluding extra controls besides municipality and birth year, (2) incorporating state-by-year fixed effects at model 1, (3) including state linear trends at model 1, and (4) adding demographic controls, specifically race and gender at model 2. By engaging in these robustness checks, we aim to demonstrate the consistency of our results across different model specifications, mitigating concerns regarding potential biases or pitfalls in our research design.

Our findings indicate that the main results remain qualitatively consistent and statistically significant across all of the alternative specifications. The robustness of our results reinforces the credibility of our empirical methodology and strengthens our confidence in the conclusions drawn from the analysis. Consequently, this rigorous examination of the sensitivity of our findings lends further support to our understanding of the long-term effects of the 1990 Seizure policy on human capital and labor market outcomes, which in turn informs discussions on the broader implications of macroeconomic policies and their consequences for socioeconomic development.

Fig. 7: Alternative specifications

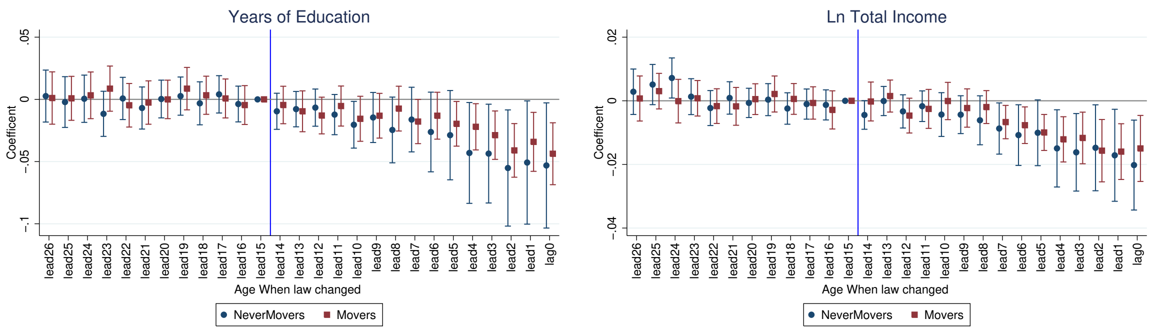


(a) Years of education (b) Income

Notes. These figures present the event-study estimates based on Equation 1, illustrating the impact of the 1990 Seizure policy on educational and income outcomes. Panel A displays the results for years of education, while Panel B presents the findings for log total income. Estimates are clustered at the municipality level.

In Figure 8, we analyze the heterogeneity of the 1990 Seizure policy's effects between two distinct subsamples: individuals who never moved (Never Movers) and those who moved across municipalities (Movers). This differentiation is important as our identification strategy is based on individuals' birth municipalities, and we assume that they continued residing in their birth municipality during and after the shock. By examining whether the effects persist for both subsamples, we aim to establish that migration is not the main driver of our estimates. As observed in Figure 8, the policy effects are detectable across both educational and labor market outcomes for both Never Movers and Movers, suggesting that migration is not the predominant determinant of the observed long-term impacts. These findings strengthen the robustness of our research design and support the assertion that the consequences of the 1990 Seizure policy can be attributed primarily to its direct influence at the local level, rather than being driven by migration patterns. In conclusion, the results presented in Figure 5 lend credence to the validity of our estimates and further emphasize the need for a comprehensive understanding of the interplay between macroeconomic policies, household finances, and individual outcomes to mitigate the adverse impacts and foster a more inclusive and prosperous society.

Fig. 8: The long-run effects of seizure by migration status

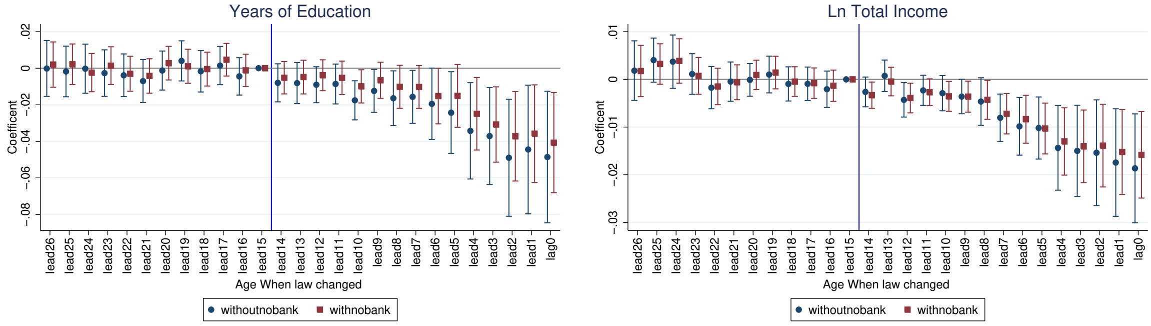


(a) Years of education (b) Income

Notes. These figures present the event-study estimates based on Equation 1, illustrating the impact of the 1990 Seizure policy on educational and income outcomes. Panel A displays the results for years of education, while Panel B presents the findings for log total income. Estimates are clustered at the municipality level.

In Figure 9, we conduct a robustness check to ensure the reliability of our main results by comparing the effects of the 1990 Seizure policy on two distinct subsamples: (1) cities with banks, which form the main sample of our analysis, and (2) an additional subsample that includes cities without banks. This comparison allows us to assess whether the exclusion of cities without banks in our main analysis could be driving the observed results, shedding light on the potential sensitivity of our estimates to sample variations. The results depicted in Figure 9 reveal that the policy effects are discernible for both educational and labor market outcomes not only in the main sample of cities with banks but also in the additional subsample, which includes cities without banks. This evidence suggests that the exclusion of cities without a bank in our main analysis is not the primary driver of our estimates, as the policy's impacts are consistently observed across both subsamples. The consistency of our findings across the different subsamples lends further credibility to our results and underscores the robustness of our research design and methodology.

Fig. 9: The long-run effects of seizure including municipalities without banks



(a) Years of education (b) Income

Notes. These figures present the event-study estimates based on Equation 1, illustrating the impact of the 1990 Seizure policy on educational and income outcomes. Panel A displays the results for years of education, while Panel B presents the findings for log total income. Estimates are clustered at the municipality level.

9 Long-Run Sociopolitical Estimates

We have unearthed the profound effects of the Seizure on human capital and labor market outcomes, but it turns out that the repercussions of this reform reach beyond the economic realm into the domain of sociopolitical attitudes. Echoes of the economic trauma appear to have resonated within Brazil's sociopolitical fabric, shaping lasting shifts in political ideology, trust in institutions, and satisfaction with democratic processes. In this section, we untangle and explore these complex sociopolitical implications, painting a holistic picture of the deep and enduring impacts of the Seizure. To address these topics we rely on a unique data set from Latinobarometer, consisting of survey responses from almost 14,000 Brazilian individuals spanning the years 2001-2020.

The coefficient estimates from our model, presented in Table 2, elucidate the profound sociopolitical consequences of the Seizure. The odd-numbered columns display the results for models with state and wave year fixed effects, while the even-numbered ones incorporate demographic controls. With full controls, results indicate reductions of 0.0297 and 0.0362 standard deviations in trust towards banking institutions and the government respectively in regions with more exposure to the Seizure. Also apparent is a discernable sense of disillusionment with democracy. There is a notable decrease of 0.030 standard deviations in satisfaction with democratic processes. Furthermore, the regions bearing significant exposure to the Seizure report an evident shift towards left-leaning political ideologies, as indicated by a 0.0306-standard deviation increase in left identification. This political reorientation is plausibly a public backlash against the right-wing government that enacted the controversial reform.

Table 2: Long-Run Sociopolitical Consequences

	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	8947	8929	13920	13167	13229	12493	10602	9935
State fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Wave fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Demog. Charac.		✓		✓		✓		✓

Notes. OLS estimates in all columns. All columns present state and wave year fixed effects. Standard errors shown in parentheses are clustered at the municipality level. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

Altogether, these findings reveal the profound sociopolitical effects of Seizure. The loss of trust in banking institutions and the government and the reported discontentment with democratic processes align closely with the economic upheaval suffered in the wake of the policy. These negative impacts on trust reflect a deep societal discontent and skepticism bred from the policy's detrimental consequences. The shift towards left-leaning political ideologies is a particularly noteworthy phenomenon. It seems to represent a repudiation of the government responsible for the Seizure, and a resonance with the redistributive rhetoric typically associated with left-wing ideologies. It gives a voice to the disapproval and disillusionment of those the most severely affected by the policy, crystallizing into a political identity that permeates Brazil's contemporary political landscape. Overall, these findings reveal not only the economic but also the profound sociopolitical legacies of drastic macroeconomic policies, underscoring the need for careful and judicious policy formulation. Comprehending these broader, more pervasive implications helps forge a path toward more holistic and inclusive policy-making.

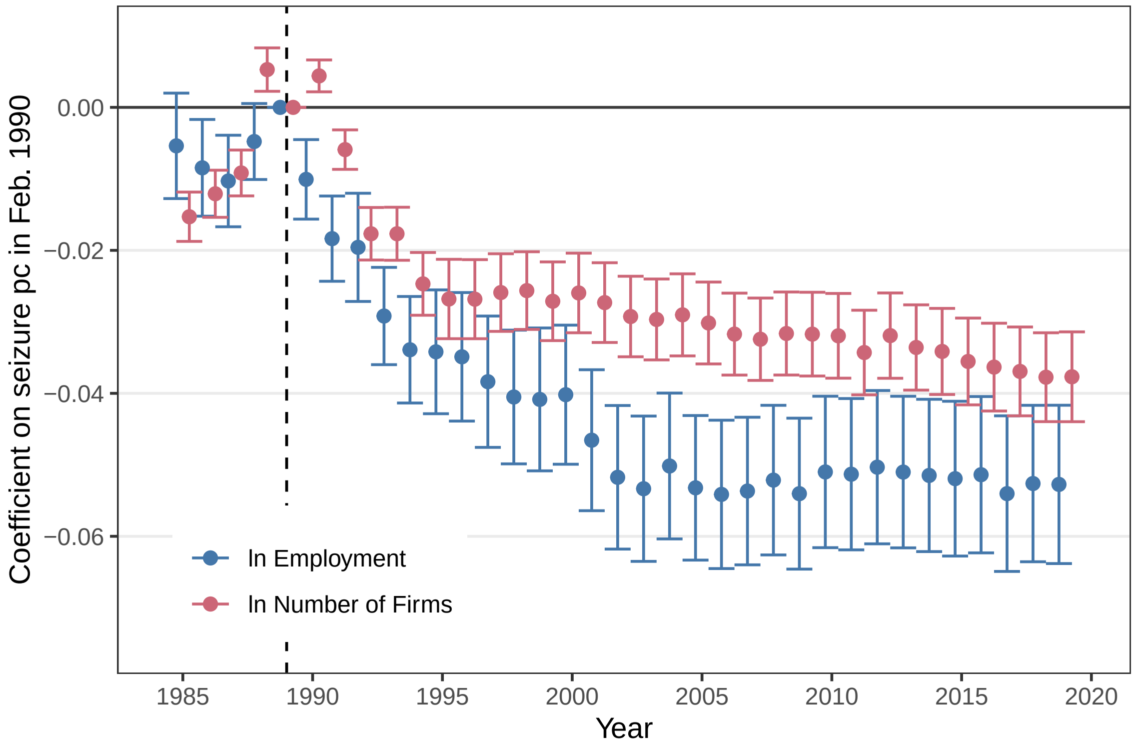
10 Contemporary Estimates

In addition to our in-depth analysis of the long-term effects of the 1990 Seizure policy on human capital and labor market outcomes, in this section, we turn our attention to the contemporary results, exploring the immediate and shorter-term consequences of the policy intervention. We will investigate the impact of the policy on a range of contemporary outcomes, including firm dynamics and local economic conditions, to provide a more comprehensive understanding of the policy's far-reaching implications. It is important to note that firm owners were not immune to the policy's confiscation of savings and investment accounts, which had significant implications for business viability and growth.

By examining the short-term repercussions of the 1990 Seizure, we aim to complement our long-term findings with an assessment of how the policy shaped the economic landscape in Brazil in the aftermath of its implementation. We observe that the policy's confiscation of accounts adversely affected not only household finances but also the liquidity and resources of firms. Consequently, several firms faced financial difficulties, leading to business closures and contractions in the local business landscape.

This contemporary analysis highlights the challenges faced by households, firms, and local economies, and illuminates the mechanisms through which these short-term effects evolved into the intergenerational consequences documented in our long-term analysis. By providing an in-depth understanding of the consequences faced by both individuals and firm owners, our research offers insights valuable to policymakers in designing future interventions with the aim of fostering a more inclusive and resilient economic environment.

Fig. 10: Contemporary Firm Effects



Notes. These figures present the event-study estimates based on Equation 2, illustrating the contemporary impact of the 1990 Seizure policy on Log Employment and Log Number of firms.

Figure 10 provides insight into the contemporary effects of the 1990 Seizure policy in Brazil by examining the immediate and short-term consequences of the policy on log employment and log number of firms. An event-study framework is utilized to analyze the impact of the policy on these two critical indicators of economic activity in the wake of its implementation. From the event-study graph, we observe a discernible negative pattern for both log employment and log number of firms, suggesting that the 1990 Seizure had an immediate detrimental effect on the local economies. The decline in log employment points towards possible job losses and reduced labor demand as a direct consequence of the policy, indicating the challenges faced by households during this period. Similarly, the decline in the log number of firms implies contractions in the local business landscape, possibly due to reduced consumer spending as a result of the confiscation of savings and investment accounts.

Table 3: Short run effects of seizure on firms

	log Total Employment		log Num. of Active Firms	
	(1)	(2)	(3)	(4)
Seizure Intensity × Post	-0.21508***	-0.16343***	-0.08116***	-0.07022***
	(0.00001)	(0.00001)	(0.00001)	(0.00001)
R^2	0.998	0.998	0.999	0.999
Observations	4,486	4,486	4,486	4,486
AMC fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓
State-by-year fixed effects	✓	✓	✓	✓
Rural Population 1980s-year fixed effects	✓	✓	✓	✓
Controlling for RTR		✓		✓

Notes. Difference-in-differences estimates in all columns. Standard errors shown in parentheses are clustered at the AMC level. (***$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.1$)

11 Conclusion

In summary, this paper has analyzed both the short-term and long-term effects of the 1990 Seizure policy in Brazil, a prominent instance of saving destruction resulting from government intervention in personal savings and investment accounts. Our empirical investigation reveals substantial consequences of such policies, particularly in the context of human capital development and labor market outcomes in the long run, as well as the detrimental impact on firms exposed to the policy in the short run. The long-run estimates indicate reduced educational attainment and poorer labor market outcomes for exposed generations, with the effects being more pronounced for white individuals compared to black individuals. This finding is consistent with the saving destruction story, as it confirms that the groups expected to be more reliant on savings for educational and occupational opportunities were indeed disproportionately affected.

Our analysis uncovers not only economic reverberations but also significant cultural shifts stemming from the Seizure. Regions more afflicted by the policy reveal a lasting erosion of trust in banking institutions and the government, matched by palpable disillusionment with democratic processes. Remarkably, these areas also demonstrate a political shift towards the left, possibly reacting to the disenchantment with the right-wing government that enacted the Seizure. These profound shifts in societal attitudes underscore the enduring cultural legacy left by macroeconomic shocks, extending beyond immediate economic impacts to shape the cultural and political ethos of the population decades later. This realization sharpens the need for prudent policymaking that factors in both the immediate and prospective long-term cultural and political implications.

In the short term, we found that exposed firms experienced significant challenges due to the confiscation of their savings and the sudden disruption in household savings. The diminishing financial resources of both firms and families led to decreased consumer demand, directly impacting the viability and growth potential of these firms. Moreover, the destruction of firms' savings constrained their ability to invest in critical initiatives, such as research and development, employee training, and capital expansion, thus exacerbating the adverse consequences in the business environment.

As we move forward, the insights gained from this study can serve as valuable lessons for policymakers in navigating the complexities of macroeconomic policies, particularly when seeking a balance between macroeconomic stability and the preservation of household and firm savings. Encouraging a more sustainable and equitable approach to macroeconomic policy-making can contribute to reinforcing the well-being and prospects of both generations and the economic resilience of firms. Furthermore, the findings in this research may extend beyond the specific context of the 1990 Seizure in Brazil, offering critical information for other countries that may face similar challenges due to economically disruptive policies enacted by governments. By shedding light on the multifaceted implications of such policy decisions, including the racial differences in impact, our research contributes to a broader understanding of the dynamics between governmental actions, household finances, firms' sustainability, and socioeconomic outcomes, enriching the ongoing discourse on responsible and effective economic policy formulation.

References

Almond, Douglas, Janet Currie, and Valentina Duque, "Childhood circumstances and adult outcomes: Act II," *Journal of Economic Literature*, 2018, *56* (4), 1360–1446.

Bailey, Martha J, John DiNardo, and Bryan A Stuart, "The economic impact of a high national minimum wage: Evidence from the 1966 fair labor standards act," *Journal of labor economics*, 2021, *39* (S2), S329–S367.

__ **, Shuqiao Sun, and Brenden Timpe**, "Prep School for Poor Kids: The Long-run Impacts of Head Start on Human Capital and Economic Self-sufficiency," Technical Report, Working paper 2018.

Baran, Cavit, Eric Chyn, and Bryan A Stuart, "The Great Migration and Educational Opportunity," Technical Report, National Bureau of Economic Research 2023.

Currie, Janet and Douglas Almond, "Human capital development before age five," in "Handbook of Labor Economics," Vol. 4, Elsevier, 2011, pp. 1315–1486.

Hershbein, Brad and Bryan Stuart, "The Evolution of Local Labor Markets After Recessions," 2022.

Johnson, Rucker C and C Kirabo Jackson, "Reducing inequality through dynamic complementarity: Evidence from Head Start and public school spending," *American Economic Journal: Economic Policy*, 2019, *11* (4), 310–49.

Kline, Patrick and Christopher R Walters, "Evaluating public programs with close substitutes: The case of Head Start," *The Quarterly Journal of Economics*, 2016, *131* (4), 1795–1848.

Stuart, Bryan A, "The long-run effects of recessions on education and income," *American Economic Journal: Applied Economics*, 2022, *14* (1), 42–74.

Yagan, Danny, "Employment hysteresis from the great recession," *Journal of Political Economy*, 2019, *127* (5), 2505–2558.