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Restoring property rights: The effects of land restitution on credit access

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ABSTRACT

Victims of forced displacement and land dispossession are eligible for land restitution under a law approved in Colombia in 2011. These households are materially deprived and have limited access to the formal labor market, often resorting to informal entrepreneurship to improve their living conditions. For this, they need access to credit. We estimate the causal effect of the law on credit access, using the timing of the restitution as the source of identification in an event study approach. We analyze administrative data from the program and data from the census of credit transactions. Our findings reveal, on the extensive margin, a substantial increase in beneficiaries' likelihood of obtaining a loan and, on the intensive margin, an increase in loan size. These effects are most pronounced two years after land restitution when individuals obtain the full property right. Although complementary policies partly drive this effect, the data suggest that demand for credit also increases, signaling restored trust.

1. Introduction

War and internal conflicts have increasingly resulted in the mass displacement of people from their homes, leading to significant property and asset losses (Ibáñez et al., 2022). This displacement has created urgent needs for effective remedies to support affected populations in recovering their livelihoods. A prominent remedial action, recommended based on international judicial principles known as the Deng and Pinheiro principles, is land restitution (Deng, 1998; Paglione, 2008; Pinheiro, 2005). The primary objective of land restitution is to grant victims the right to decide whether they wish to return to their original homes or establish a new life elsewhere. The freedom to choose requires that victims obtain agency by regaining control over their assets (Atuahene, 2007; Williams, 2007). Despite broad support for the principle of reparation, some debate surrounds the question of whether asset restitution is the most efficient choice relative to financial compensation or alternative remedies that expedite the process and have proven effective (Guarin et al., 2023).

In fact, restitution may backfire for different reasons, depending on the institutional context. In regions where institutions are strong and the rule of law prevails, the possibility of competing land claims may increase legal uncertainty and deter investment (Blacksell & Martin Born, 2002). Conversely, in areas dominated by customary rules and lacking comprehensive cadastral information, even when property is restituted, victims may encounter numerous external constraints when trying to rebuild their lives (Attanasio & Sánchez, 2012), including further conflicts with the new occupants (Hall, 2004; Joireman & Meitzner Yoder, 2016; Williams, 2007) or struggles with bureaucratic inefficiencies (Buchely, 2020).

Among its other purposes, reparation should help beneficiaries transition from dependence on assistance into taking control of their own life project. To evaluate whether land restitution serves this purpose, this article examines the impact of property rights restoration through a land restitution program in Colombia on access to credit. In 2011, then President Juan Manuel Santos enacted Bill 1448 (Ley de Víctimas), which aimed to return land to victims of land dispossession or forced abandonment. Our analysis looks at whether beneficiaries of land restitution gain improved access to credit. Victims of displacement are materially deprived and lack the capacity and networks to access formal labor markets (Ibáñez & Moya, 2010; Moya, 2018; Moya & Carter, 2019). Thus, they must recur to informal entrepreneurship to get ahead, and they need credit to do it.

We examine *microcredit* as our main outcome of interest. Small-scale farmers and small informal businesses typically rely on small- to medium-sized loans, often without substantial collateral (Banerjee & Duflo, 2010; Bose, 1998). The Colombian law, coherently with the conceptual definition in the development literature (Cull et al., 2009), classifies such loans as microcredits. Thanks to our access to comprehensive administrative data, we can measure all (legally defined) microcredits separately from other types of loans. Indeed, Colombia has maintained a comprehensive, longitudinal record of formal credit market data at the census tract level since 2004. Within this dataset, we can identify which bank issued the loan and what kind of guarantee is attached to it.

In this article, we employ an event study approach to estimate the impact of land restitution on credit access. Our identification strategy leverages the temporal variation in the date of restitution. The bill mandates that the complete property right to the restored land, including the right to sell it, be bestowed after a two-year embargo period, offering us a dual source of exploitable variation: in the date of the verdict granting the restitution and in that of the acquisition of full property rights. Therefore, we follow households 16 quarters after the restitution and 16 quarters before it. To perform this analysis, we combine information from two sources: judicial verdicts of restitutions and granular administrative records of formal credit transactions. We compile a unique dataset derived from archival judicial records spanning eight years (2011–2018). We digitize thousands of verdicts, capturing information about the timing of the restitution, the individuals involved, the specific land parcels subject to the verdict, demographic characteristics, and any other pertinent details. Our credit data are sourced from the "individual debtor and active credit operations report" (commonly referred to as Form 341) provided by Superfinanciera, the Colombian government agency responsible for overseeing financial regulation. Any institution operating in Colombia and providing credit to the public is regulated by Superfinanciera and must provide quarterly information, through Form 341, on all credit transactions.[2] In this manuscript, we use the legal classification of microcredit as implemented in Form 341, which matches the conventional definition used in the academic literature, namely, "credit targeted toward small-scale entrepreneurial activities of the poor who may otherwise lack access to financing" (Buera et al., 2021).[3]

Our empirical strategy follows the research on the effect of exposure to major negative or positive shocks (Bindler & Ketel, 2021; Dobkin et al., 2018; Guarin et al., 2023; Kuziemko et al., 2018). In our sample, all individuals receive land, but at different points in time: Our key comparison looks at the change in outcomes before and after the beneficiary experiences the event, relative to the changes among individuals whose land has not yet been restored. For our estimates to have a causal interpretation, the timing of the restitution must be uncorrelated with the credit outcomes. For instance, if victims who are more motivated to invest are more likely to be selected first, our estimation would be biased. Nonetheless, this is not plausible in our context since the exact date of the restitution is the result of a two-step process that involves an administrative discussion in a governmental agency and a judicial phase in court, where the average victim lacks concrete opportunities to speed up or delay the procedure (CCJ, 2019). In fact, after the initial two quarters of our data period, rulings were issued at a frequency mimicking a uniform distribution, which would be the expected pattern in the absence of strategic manipulation. Additionally, we implement an estimator that removes the source of possible bias due to the use of Two-Way Fixed Effect with staggered treatment (Callaway & Sant'Anna, 2021), obtaining similar results.

We find that the land restitution program increases access to microcredit on both the extensive and intensive margins, i.e., the probability of accessing credit and the loan size, respectively. In the quarter before the restitution, on average 1.3 % of the individuals in our sample have access to credit. According to the point estimate, two years after the restitution, the number of individuals with access to credit increases by 2.7 percentage points. Notably, the effect increases until the acquisition of full property rights and remains statistically significant thereafter. On average, the effects after the acquisition of full property rights are nearly twice as large as those for the first two years after the verdict, and the difference is statistically significant. This impact is even more remarkable in light of the rural context of our study. On average, in Colombia, microcredit loans are worth 3.6 million COP (Estrada & Hernández-Rubio, 2019). In our data, the average loan issued to a restitution beneficiary is approximately one and a half times larger (5.6 million COP).

The estimated effect could result from increased demand for credit, reduced credit rationing, or both. Bogliacino et al. (2021) document increased trust among victims who benefit from restitution, indicating perceived legitimacy of the property rights and a willingness to participate in the economy. Following this reasoning, restitution should lead to increased demand. On the other hand, the estimated effect could result from complementary initiatives to overcome credit rationing for poor and informally employed peasants (Boucher et al., 2009). Colombia has been dealing with internal displacement for some time because of its protracted civil conflict and, by trial and error, has developed a set of best practices. Articles 128 and 129 of the restitution bill regulate special assistance, restructuring of nonperforming loans, and incentives for financial institutions that extend and widen affirmative action policies introduced in 1997. Additional institutions such as a special fund were created to foster economic inclusion. These provisions apply all victims of the conflict (or demobilized combatants).

Using the comprehensive information available in our credit data, we show that approximately two-thirds of the new loans are issued by the Agrarian Bank and approximately half backed by a guarantee from the Fondo Agropecuario de Garantías (AGF), an entity that provides insurance to financial institutions for agricultural investments on behalf of all small agricultural producers in Colombia (the AGF is unrelated to the agency managing the restitution, the Unidad de Restitución de Tierras or URT). We interpret this presence of the AGF as evidence that policies in place to facilitate credit for victims are the lubricant behind the causal effect. Nevertheless, our data suggests that demand still matters, primarily because of the timing of the effect: The additional provisions facilitating victims' credit access (and even Articles 128 and 129 of the restitution bill) are conditional only on an individual's being recognized as a victim. In our sample, victim status is not established by the judge or court that rules on the land restitution claim. In fact, all the households are already victims before the ruling and, as such, had the right to access credit on favorable terms at any moment in our time window. However, it is only the restitution that triggers the expansion of credit access.

When we look at heterogeneity, our analysis reveals that the effect is not concentrated solely among beneficiaries with large land parcels.

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[2] Form 341 records every transaction in the formal credit market, covering all types of credit (microcredits, consumer loans, commercial loans, and mortgage loans) in detail. The classification of microcredits follows the legal definition; in Colombia, when an individual applies for a microcredit, she must demonstrate that there is a productive project in place, and this information is subject to verification by the financial institution. For consumer credit applications, similarly to credit card applications, there is no need to provide evidence of a productive project in place. We provide an exact definition of each credit category in Section 3.1, where we describe the data.

[3] Other examples are abundant: One paper describes the loans as "small—typically hundreds of dollars rather than many thousands—and the bank requires no collateral" (Cull et al., 2009), while another paper defines microcredit as the "provision of small loans to underserved entrepreneurs" (Banerjee et al., 2015). We highlight that, in economics, microcredit and microfinance are considered synonyms, but in other fields, they may not be. According to one source, microcredit is as defined in this paper, but microfinance is a functionally different concept that includes the provision of additional intermediation services to poor communities, including voice (Elahi & Rahman, 2006).

Furthermore, we find some suggestive evidence that the effect weakens when either concentration of land ownership or specialization in production increases. Both may signal the presence of large landowners and established producers with significant market power, which would serve to dampen investment incentives for those who have had land restored and enter the market as small newcomers.

Our paper evaluates the impact of land restitution on access to credit. Previous quantitative evidence on the effects of the restitution bill has addressed its consequences for trust (Bogliacino et al., 2021) and violence (Marín et al., 2022). While land restitution has received considerable attention at the international level, there has been comparatively little effort to measure its effects on the behavior and welfare of those who have had land restored (Bohlin, 2004; Dikgang & Muchapondwa, 2016; Hall, 2004, 2009). Our results are consistent with a positive asset shock increasing take-up of credit for productive investment. This finding contributes to the literature on small-scale farmers in developing countries: Previous evidence shows that small farmers forgo productive investment because of conflict (De Roux & Martínez, 2022) or other forms of shocks (Burke et al., 2019; Fafchamps, 1992; Rosenzweig & Wolpin, 1993).

An indirect consequence of land restitution is to formalize land tenure and property rights in rural areas with limited cadastral information. Our findings on the increased credit access are novel because the literature on land tenure and formalization focuses on land titling and redistribution rather than on land and property restitution (Lawry et al., 2017). Our result that securing property rights increases access to microcredit is in line with the most recent evidence (Aikaeli & Markussen, 2022; Piza & de Moura, 2016), although previous work was more cautious (Feder et al., 1988; Domeher & Abdulai, 2012). Finally, our inference that securing property rights leads to investment (and, theoretically, to more growth) aligns with the main conclusion from analyses of rural reform based on property rights protection (Banerjee et al., 2002; Besley, 1995; Kerekes & Williamson, 2010) and with analysis on urban areas (Galiani & Schargrodsky, 2010).

2. Institutional context and theoretical background

2.1. Institutional context

Colombia enacted the Ley de Víctimas (Bill 1448 10/6/2011) in 2011 to address the needs of victims affected by its internal conflict. The bill declared victims of land dispossession and forced abandonment eligible for land restitution provided that the violent act had occurred within the context of the armed conflict and had taken place after 1991. Approximately 5.5 million hectares of land are believed to be eligible for restoration, although this figure is disputed (Comisión de Seguimiento, 2009; Ibáñez, 2009).

Land restitution occurs in an administrative and a judicial phase. During the administrative phase, an agency created by the bill (the Land Restitution Agency) verifies that three conditions are met: An act of land dispossession and forced abandonment must have occurred, its date must have been after 1991, and the act must have taken place within the context of the armed conflict. The claimant may be the owner, the occupier, or someone authorized to exploit a parcel of public land (*baldío*). At the end of the administrative phase, the case is either dismissed or included in the registry of dispossessed land.

The judicial phase starts with a trial. The trial does not follow standard criminal law procedures. Instead, Bill 1441 fully regulates the process. If the claimant does not face an opponent, the case is argued before a single judge; otherwise, the trial is held in front of a court. The agency argues the claimant's case. This procedure provides limited room for any manipulation of the timing by the beneficiary.

The combined result of the two phases is the judgment. In case the court (or the judge) rules favorably to the victims (as occurs 94 % of the time in our sample), the land is restored and the legal title to the parcel formalized, if necessary. The involvement of the judiciary lengthens the process (Maldonado et al., 2020) but provides further guarantees to victims, as the armed forces have been one of the perpetrators of crimes in the internal conflict (Grupo de Memoria Histórica, 2013). Moreover, the judicial phase is better suited to the securing of property rights. In fact, Colombian cadastral information is poor, and multiple claims to and disputes over parcels may emerge because of the extensive period covered by the law (Sánchez León, 2017).

Victims may be granted a "productive project" or other reparations partially financed by governmental institutions but cannot sell the acquired title for two years. In the design of the law, the productive project and the two-year "embargo" on sale jointly constitute a carrot-and-stick system to induce the return of the victims to the restored parcel. This carrot-and-stick provision aims to instantiate the recommendation under the Pinheiro doctrine to incentivize the return of farmers to their land. Given the conditions of underdevelopment within most of rural Colombia, an extensive array of obstacles may complicate beneficiaries' return to their land (Arias et al., 2014). Securing a return requires further provisions, such as security, economic opportunities, and provision of education and public goods (Attanasio & Sánchez, 2012).

Within the Colombian context, the law represents a significant innovation and the culmination of decades of effort. Indeed, policymakers and academics have extensively studied the Colombian case, which, despite some failures, provides a collection of best practices (Ibáñez et al., 2022). Colombia has been addressing emergency relief and the long-term transformation of the living conditions of the millions of victims of the internal conflict for a very long time. In 2004, the Constitutional Court issued a mandate for the government (Sentence T-025) using the judicial formula of *estado de cosas inconstitucionales* (unconstitutional state of affairs): a ruling that the constitutional rights of internally displaced households had not been protected and must be restored. To be clear, public goods provision in rural areas is far from sufficient, and thus the unconstitutional state of affairs will not be fully remedied anytime soon. Nonetheless, an array of policies to promote inclusion has been targeted at victims of internal displacement and former combatants, with some of the initial affirmative action policies dating back to 1997 and followed by complementary initiatives, among them the creation in 2011 of the Programa Especial de Fomento y Desarrollo Agropecuario (Finagro*)* for access to credit on favorable terms for productive projects. The Ley de Víctimas extends and consolidates these measures through Articles 128 and 129 regulating access to credit, assistance and debt restructuring (for loans that became nonperforming because of the conflict). These additional provisions play a role in fostering credit access for the population of interest, unconditionally on land restitution, since all the subjects in our sample are victims. This point should be stressed and will become relevant when we explore mechanisms.

2.2. Existing evidence on land restitution

Several land restitution policies have been implemented in countries that have transitioned from command-style economies. In Eastern and Central Europe, the Communist experiment encompassed legal interventions to abolish property rights over land and assets, transferring ownership to the state (Fisher & Jaffe, 2000). As a result, the scope of land restitution in former socialist countries was well defined because the origin of the appropriation was legal instruments such as ordinances, confiscations, and expropriations enforced by the state during the formation of socialist economies (Fisher & Jaffe, 2000). In contrast, a restitution process targeting land seizures resulting from violent acts during or after internal conflicts requires a strong prosecutorial effort to establish the facts. Additionally, in former socialist countries, the legal procedures often treated material restitution and financial compensation equally because land use changed dramatically between appropriation and restitution. Countries such as post-reunification Germany initially opted for restitution but later recognized the need for adjustments to prevent paralysis in the property market (Southern, 1993). In

fact, owners could be difficult to locate, or they may have settled elsewhere, delaying procedures and prolonging uncertainty in property rights. Conversely, in cases such as the former Czechoslovakia, those eligible for material restitution had to pay for the improvement of the assets (Reiner & Strong, 1995).

In other former socialist countries, the restitution process primarily unfolded in urban areas. In certain instances, agricultural properties were explicitly excluded (Southern, 1993). Romania (Brooks & Meurs, 1994) and Bulgaria (Blacksell & Martin Born, 2002) represented the only exceptions where agricultural land factored significantly into restitution, yet the scope of the process remained limited. Given the urban context with detailed cadastral information, the scope of conflicting claims was limited to cases where the state had used the assets for housing or agriculture. This situation differs from cases of rural land restitution in developing countries, where property rights are unsecured, cadastral information is imperfect, and the land has been confiscated by private actors (with or without state support).

In transition countries, land restitution occurred concurrently with comprehensive economic reforms to establish a modern property rights system. The radical and often disorderly nature of these changes and the multitude of simultaneous legal alterations made it challenging to assess the restitution process using a credible research design. As a result, the evidence on the effect of restitution in transition countries is limited and fragmented. Germany is praised for having achieved substantial investment following restitution, yet this success might be more attributable to the Investment Priority Law passed in 1992. This law transformed restitution claims into compensation when disputes likely hindered new investments and property development (Blacksell & Martin Born, 2002). In other former Soviet countries, restitution partially reinstated property rights from the pre-Communist era (Hanley & Treiman, 2004), but we do not possess systematic evidence on other outcomes, such as investment or credit.

Apart from transition countries, the other primary source of evidence is developing countries, where violence and conflict have led to widespread displacement along with significant losses in terms of land and property. Mass displacement can be a strategy employed by armed actors to gain control of the territory, as in Colombia (Ibáñez et al., 2022) and Guatemala in the 1980 s (Stepputat, 1999), or a weapon wielded against a targeted group, as in apartheid-era South Africa (Hall, 2009) and Mozambique (Unruh, 2005). Forcibly displaced individuals who have experienced land appropriation or forced abandonment can have their victim status recognized through transitional justice processes as exemplified by Bill 1448 in Colombia (Ibáñez et al., 2022). Within the context of transitional justice, land restitution is functionally distinct from but complementary to other forms of reparations, both material and symbolic, which address mental and physical harm (De Greiff, 2006; Williams, 2007).

Initially, land restitution was conceived as a legal remedy in interstate disputes. Only after the Second World War did the need to protect individual citizens from states, including their own, lead to the development of the current approach. As the number of refugees increased at the end of the Cold War, Western countries favored the idea of return as the preferred political solution. However, without appropriate measures, refugees could return only to their countries, not their homes (Williams, 2007). In this debate, the Pinheiro and Deng principles recommend that the right to restitution be independent of whether the beneficiary returns to the property. The essence of this norm is to formally protect victims' freedom to choose between returning to their life project before the violent shock and establishing their life elsewhere, while also providing them with substantial agency through ownership of the asset. This argument has been criticized for overlooking the constraints faced by victims in impoverished countries under the (pre-victimization) status quo. Even with a formally secure title, an eligible family might require comprehensive support to re-establish life in the previous home (Attanasio & Sánchez, 2012).

Another aspect that may be overlooked by the principles is the presence of weak institutions and poor administrative records. In the absence of formal land titles, customary rules and communal institutions offer an alternative framework where rights and claims are often based on occupation or tied to social identities (Joireman & Meitzner Yoder, 2016). In other words, defining a right to restitution becomes challenging when the connection to the land is not rooted in conventional property rights and multiple competing claims hold equal weight. The restitution process has been more likely to succeed when these customary rules are pragmatically acknowledged. For example, Rwanda dealt with competing claims (among refugees from the conflicts in 1959 and 1994) through land sharing and collective settlements known as *Imidugudu* (Todorovski & Potel, 2019). Conversely, overlooking informal rules often leads to unsuccessful outcomes. The failure of the restitution process in Guatemala can largely be attributed to this neglect (Williams, 2007). In Burundi, administrative and political mismanagement created unmet expectations that jeopardized the process itself (Chigudu, 2022; Mbazumutima, 2021), leading to worsened societal outcomes (Ruiz & Vargas-Silva, 2022).

South Africa also implemented land restitution under its postapartheid transition. Land dispossession of Indigenous groups had taken place from the very beginning of the colonial occupation, but the country's restitution law established 1913, the year of introduction of legal restrictions on Black land ownership, as the cutoff year for claims. Given the large period covered by the law and considering that intergenerational responsibility is legally unacceptable, the cost of restitution fell entirely on the state. Land restitution is often replaced by financial compensation, especially in cases where the right to restoration is absent (Hall, 2009).

Very little attention has been paid to evaluating of the consequences of reparations and land restitution for the well-being of beneficiaries (García-Godos & Wiig, 2018). The most credible causal assessment focuses on the financial component of the material reparations in Colombia—a lump-sum payment of approximately three times the victims' annual household income—and finds increased investment in physical and human capital (Guarin et al., 2023). In South Africa, the cash component of restitution led to the payment of debt but was divided among large families with minimal effects (Bohlin, 2004). Also in South Africa, land restitution to the ≠ Khomani San had no measurable effect on income or investment (Dikgang & Muchapondwa, 2016). Timor Leste faced a long conflict with the occupying Indonesian authorities from the second half of the 1970 s until independence, followed by a further episode in 2006. In Timor Leste, the multiple outbursts of violence involved mass displacement that later fed conflicts over land. Timor Leste is one of the very few cases where land management was included as part of the UN mission mandate (Todorovski et al., 2015). Nevertheless, we are not aware of any causal evaluations of this case.

3. Data and econometric strategy

3.1. Data

We have constructed a novel dataset spanning from 2011 to 2020. Our first data source is archival judicial data from *Unidad de Restitución de Tierras* (2021), the agency responsible for supervising the administrative aspects of the restitution process. We digitized 4,396 records documenting the beneficiary (name and ID, household size), the time of restitution, information about the perpetrators, details about the specific parcel of land, demographic characteristics of the beneficiary, the inclusion of any productive projects, and any additional relevant information. In this article, we consider the time window 2011–2014 (last quarter) to harmonize the data with our credit data. Specifically, we restrict observations to 16 quarters before and after the restitution event to ensure that we observe the outcome at least two years after acquiring the complete property. This dataset provides information for 1,574 households (6,036 individuals from 768 judgments) and a total land area of 16,621.41 ha.

The second source of data is the Financial Superintendence of Colombia (2019), the agency in charge of financial regulation. Our information comes from the "Individual Debtor Report and Active Credit Operations," or Form 341. These forms keep a record of every transaction in the formal credit market, including all types of credit such as microcredit, consumer loans, commercial loans, and mortgage loans, and include the main features of the transaction: amount, issuing financial institution, collateral, interest rates, days in default, credit quality, among others. We include information from the first quarter of 2004 to the final quarter of 2019. Form 341 includes the person's unique identifier (ID) to merge financial data and restitution data at the individual level. For this exercise, we focus mainly on microcredit data. In our setting, to get a microcredit line approved, all financial institutions ask applicants for proof of a productive project that the credit will support. Moreover, to be considered microcredits, businesses (natural or legal persons) should have annual sales lower than $120,368 US dollars (2020). Large companies apply for commercial credit, while for consumption credit, there is no need to provide evidence of a productive project, and it is granted upon a process similar to applying for a credit card.

More precisely, these are the definitions of the different categories. Commercial credit includes preferential or corporate credit, where the client possesses the necessary elements to negotiate an interest rate, and credit granted to preferential or corporate clients for a term of 30 days or less, aimed at meeting short-term liquidity needs, and any other ordinary credit issued to commercial entities that exclude microcredit, consumer or mortgage loans. Consumer credit constitutes credit granted to individuals to finance the purchase of consumer goods such as vehicles, appliances, personal computers, clothing, footwear, travel, and tourism, among others (credit cards included). A mortgage is a contract in which the creditor (financial institution) lends money to the debtor to purchase a property for housing.

Finally, we complement the information with the Gini of land concentration by municipality (IGAC, 2005) and the information on land use through the share of the area covered by the main crop from the municipal-level panel of the *Centro de Estudio en Desarrollo Económico* (CEDE) from the *Universidad de los Andes* (Acevedo & Bornacelly, 2014). We use these variables as mediators and moderators in the heterogeneity analysis. Table 1 below provides descriptive statistics for the main variables.

3.2. Econometric strategy

Our aim is to study the evolution of access to microcredit and the size of the loan before and after land restitution, identifying changes in outcomes around the quarter of the ruling. Since the program includes an embargo period of two years during which the land cannot be sold, we analyze program's effects up to 16 quarters (four years) after the restitution (that is, eight quarters before and after the embargo). We also analyze access to microcredit up to 16 quarters before the verdict.

Table 1
Descriptive statistics.

Variable	Mean	Std
Female (%)	43 %	50 %
Area (hect)	19,0	71,5
Formal title (%)	70 %	46 %
Ever has a microcredit (%)	40 %	49 %
Has a microcredit in t-1 (%)	1,3%	11,5%
Average amount microcredit (in 100 mil $COP, if access to credit)	2,1	2,4
Average interest rate microcredit (%, if access to credit)	21 %	14 %
Number of households	1574	
Number of individuals	6036	

Notes: Data sourced from Unidad de Restitución de Tierras and Superfinanciera. Formal title indicates whether the restituted household had proof of ownership (instead of simple occupation).

Restitution is a variable equal to one when the property right is restored and zero otherwise. The timing of the restitution is a dummy variable equal to one in the quarter in which restitution occurs and zero otherwise. Similarly, we can define additional dummy variables for the quarter after the restitution, two quarters after, and so on up to 16 quarters after. We do the same for the 16 quarters before the restitution.

Our identification strategy follows the event study design introduced by Jacobson et al., (1993), with applications by Bindler and Ketel (2022), Dobkin et al. (2018) and Kuziemko et al. (2018). We define the "event" as the quarter in which the individual's land is restituted. To identify the effect of the land restitution program, we leverage the variation from the unanticipated timing of the restitution to isolate the program's effects on the extensive and intensive margins. The estimated causal effects, k periods after the treatment, are obtained by contrasting the average change in outcome for treated units with the average changes observed in groups of victims who were not restituted yet over the event window. Since the judicial procedure staggers the event at different times for different restituted groups, the estimated effects are the weighted average of the impact on these different groups.[4] Our identification assumption only holds if restitution is anticipated by information about the timing of the restitution. In subsection 2.2, an illustrative presentation of the institutional procedure has shown why the end date of each process cannot be strategically manipulated by the victims; thus, this is not plausible in the current setting. In practice, the verdicts are rolled out over time.

Fig. 1 presents evidence supporting the previous claim that the restitutions are rolled out. The exhibit includes the histogram of verdicts by quarter within the observation window (Panel A) and a regression of several characteristics against the specific date of restitution (Panel B), reporting normalized coefficients (subtracting the mean and dividing by the standard deviation). Panel A shows that from the second quarter of 2013 until the end of our time window, the distribution of verdicts across the quarters is similar to a uniform distribution. Notice that a take-off period of two quarters is plausible, given the implementation of a new law. Panel B tests whether observable variables are balanced across the quarters in which restitution occurs. While the test does not exclude differences in unobservable characteristics, the lack of significant effects is consistent with a lack of strategic manipulation.

Another threat to identification is the possibility that the timing of the land restitution is correlated with an individual's probability of accessing microcredit before the event. For instance, one could argue that access to credit may be more common for those who apply early to the land restitution program due to motivation or private information. However, the evidence in Fig. 1 demonstrates that the data are inconsistent with this objection.[5] In the last section of the results, we also provide an alternative estimator that controls for the potential biases of Two-Way Fixed Effects estimators.
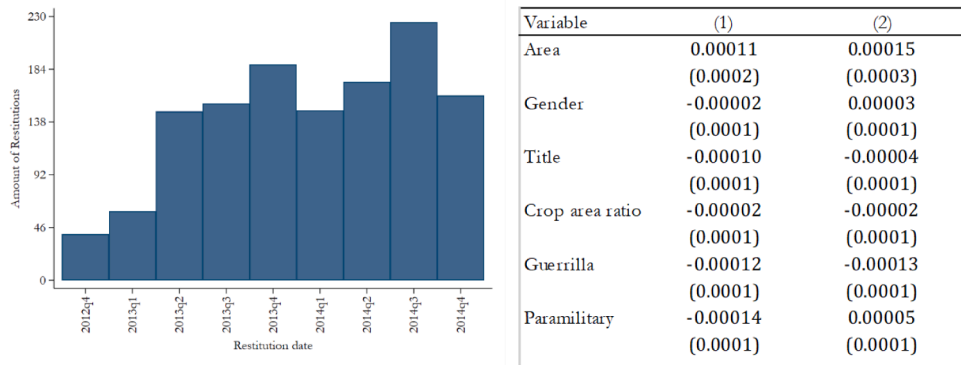
We use the following event study model:

$$Microcredit_{i,t} = \alpha_i + \gamma_t + \sum_{-16 \leq k \leq 16, k \neq -1} \delta_k * Restitution_{i,t+k} + \varepsilon_{i,t} \qquad (1)$$

where $Microcredit_{i,t}$ is an indicator recording whether individual i received a loan in quarter t (but we also use the size of the loan as the outcome), $Restitution_{i,t+k}$ is an indicator for whether the individual received a land restitution k quarters ago, α_i is an individual fixed

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[4] The "weighted" occurs because of the fixed effects. A bias may arise if the restitution has effects that are not homogeneous across groups and time. For this reason, a new class of estimators has been developed. We deal with this problem in Section 4.4.

[5] Notice that, in our setting, the permanent ceasefire with the FARC-EP guerrilla group (June 2016) cannot constitute a confounding factor, given the window of time considered for the cohorts of restituted (Figure 1). The ceasefire has been analyzed in depth (Bernal et al., 2024; Perilla et al., 2024; Prem et al., 2021).

Variable	(1)	(2)
Area	0.00011	0.00015
	(0.0002)	(0.0003)
Gender	-0.00002	0.00003
	(0.0001)	(0.0001)
Title	-0.00010	-0.00004
	(0.0001)	(0.0001)
Crop area ratio	-0.00002	-0.00002
	(0.0001)	(0.0001)
Guerrilla	-0.00012	-0.00013
	(0.0001)	(0.0001)
Paramilitary	-0.00014	0.00005
	(0.0001)	(0.0001)

Notes: The left-hand panel shows the rolling up of the verdicts from the last quarter of 2012 to the last quarter of 2014. The right-hand panel shows the results of a set of regressions of the specific date of the restitution against several covariates available in the ruling. In column (1), we control for department fixed effects, while in column (2) we further control for the year of the dispossession. All the coefficients are standardized in z-score.

Fig. 1. Robustness tests. Notes: The left-hand panel shows the rolling up of the verdicts from the last quarter of 2012 to the last quarter of 2014. The right-hand panel shows the results of a set of regressions of the specific date of the restitution against several covariates available in the ruling. In column (1), we control for department fixed effects, while in column (2) we further control for the year of the dispossession. All the coefficients are standardized in z-score.

effect, γ_t is a calendar time fixed effect and $\varepsilon_{i,t}$ is the error term. Since we use a panel of individuals, we cluster standard errors at the individual level for inference.

The parameters of interest are the δ_k s, which measure the effect of the land restitution before, during, and after the event, conditional on the individual- and time-specific effects. The term k indexes the set of time indicator variables starting 16 quarters before the restitution and up to 16 quarters after the event. Since our specification includes a constant and the parameter δ_{-1} is excluded, the estimated δ_k parameters are relative to the probability of access to microcredit the quarter before the restitution. We interpret these estimated parameters as the causal relationship between the land restitution program and microcredit. Additionally, the estimated coefficients before the event, i.e., $k = -2, -3, \cdots, -16$, test whether the event correlates with the probability of accessing microcredits before the restitution. The statistical significance of such coefficients would be evidence of the dynamic selectivity of the land restitution program: in the jargon, this would violate of parallel trends assumption. In the next section, we show that the estimated effects before the restitution are not consistent with such violation of parallel trends.

4. Results

The results section includes four parts. The first subsection reports the impact of land restitution on the propensity to and the intensity of accessing microcredit. The second subsection discusses the mechanisms. The third subsection reports some heterogeneity analysis. The fourth subsection provides some technical robustness checks related to the estimation procedure.

4.1. Main results

In Fig. 2, we present the estimated coefficients from the event study estimates. On the x-axis, the marks denote the quarters, centered on the restitution and covering 16 periods before and after. In the estimation, the omitted category is the quarter leading up to the restitution. In the graph, we plot the estimated dummy coefficients for each quarter (i.e., the δ_k in Equation (1) and the 95 % confidence interval. We also include two vertical dashed lines corresponding to the quarter before the restitution and the quarter before acquiring the complete property right. The outcome variable consists of access to new microcredit in the left-hand panel (the extensive margin), and the amount of the new loans in the right-hand panel (the intensive margin).

Before restitution, victims have limited access to credit. On average, only 1.3 % of households have a loan classified as microcredit and conditional on access, the average loan amounts 3'800,000.00 COP.[6] Land restitution increases the access to microcredit in both the intensive and the extensive margin. In addition, there is no ongoing trend before the restitution, as the entire set of the dummies for the 16 quarters preceding the restitution is not statistically significant. This lack of effect preceding the event is consistent with parallel trends and the absence of dynamic selectivity.

The increase in the outcome materializes three-quarters after the restitution. The effect increases throughout the embargo period, at which point it stabilizes and remains statistically significant. The average of the point estimates shows that after acquiring the entire property, access to formal microcredit increases in the first two years after the restitution by 1.32 percentage points and, in the third and fourth years after the restitution, by 2.49 percentage points. Before the restitution, only 78 victims had active microcredit loans, accounting for 1.3 % of the total. However, this number rose to 238 following the restitution, representing 3.9 %.

Regarding the intensive margin, the average active loan amount was 49,400 COP at t = -1. Sixteen quarters after land restitution, this figure increased significantly to 256,384 COP. The difference in the cumulative effects between the two years after the restitution and the two years after the acquisition of the complete property right is statistically significant at the 5 percent level in both the extensive and the intensive margins (respectively F = 5.64, p = 0.018; F = 6.00, p = 0.014). These effects are sizeable: the average loan classified as microcredit in Colombia is worth 3.6 million COP (Estrada & Hernández-Rubio, 2019), while in our data, the average loan issued to a restituted individual is about one and a half times larger (5.6 million COP).

4.2. Mechanisms

In our sample, land restitution increased access to microcredit. This can result from two non-competing explanations: restoring land rights induces financial institutions to lend more, or victims who get the land back increase their demand for credit. Demand may increase because victims look at the future with new aspirations and are willing to start a new project. Why? Because obtaining an asset offers new opportunities for individuals who face material, social, and psychological deprivation

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[6] The unconditional mean is a meager 50 thousand pesos.
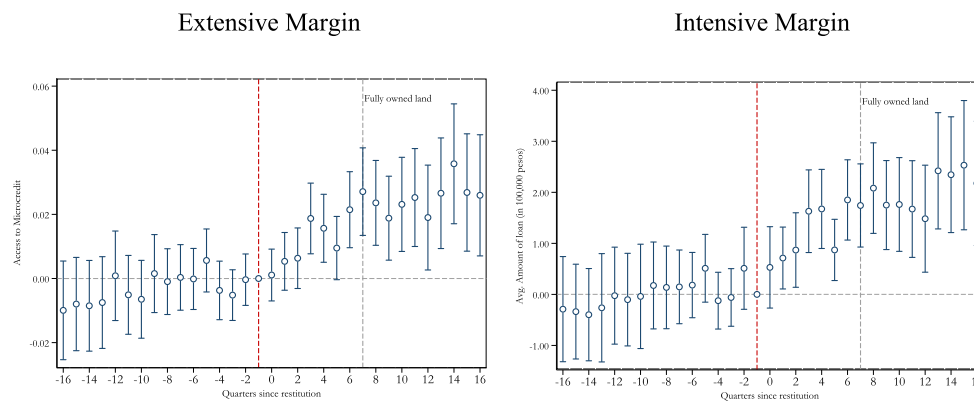
Extensive Margin   Intensive Margin

Notes: The left-hand panel shows the probability of obtaining a new microcredit in quarter $-16 \leq t \leq 16$ relative to the restitution date. The reference period is $t = -1$, which has an average access to credit of 0.013. The right-hand panel shows the average real loan amount in 100,000 Colombian pesos issued in the quarter $-16 \leq t \leq 16$. The reference period is $t = -1$, which has an average of 49,400 pesos, considering an amount of 0 for those who do not get any credit.

Fig. 2. Main Results: Causal Effects of Restitution on the Access to Microcredit. Notes: The left-hand panel shows the probability of obtaining a new microcredit in quarter $-16 \leq t \leq 16$ relative to the restitution date. The reference period is $t = -1$, which has an average access to credit of 0.013. The right-hand panel shows the average real loan amount in 100,000 Colombian pesos issued in the quarter $-16 \leq t \leq 16$. The reference period is $t = -1$, which has an average of 49,400 pesos, considering an amount of 0 for those who do not get any credit.

(Ibáñez & Moya, 2010; Moya, 2018; Moya & Carter, 2019) or because reparation increases trust and legitimacy in the system restoring confidence (Atuahene, 2007; Bogliacino et al., 2021). The supply effect occurs when the presence of an asset opens the door of the formal (and out of the informal) credit market (Banerjee et al., 2015; Boucher et al., 2009) or if the restitution triggers additional policies that promote credit access. To understand the change in demand and supply sides, we proceed as follows.
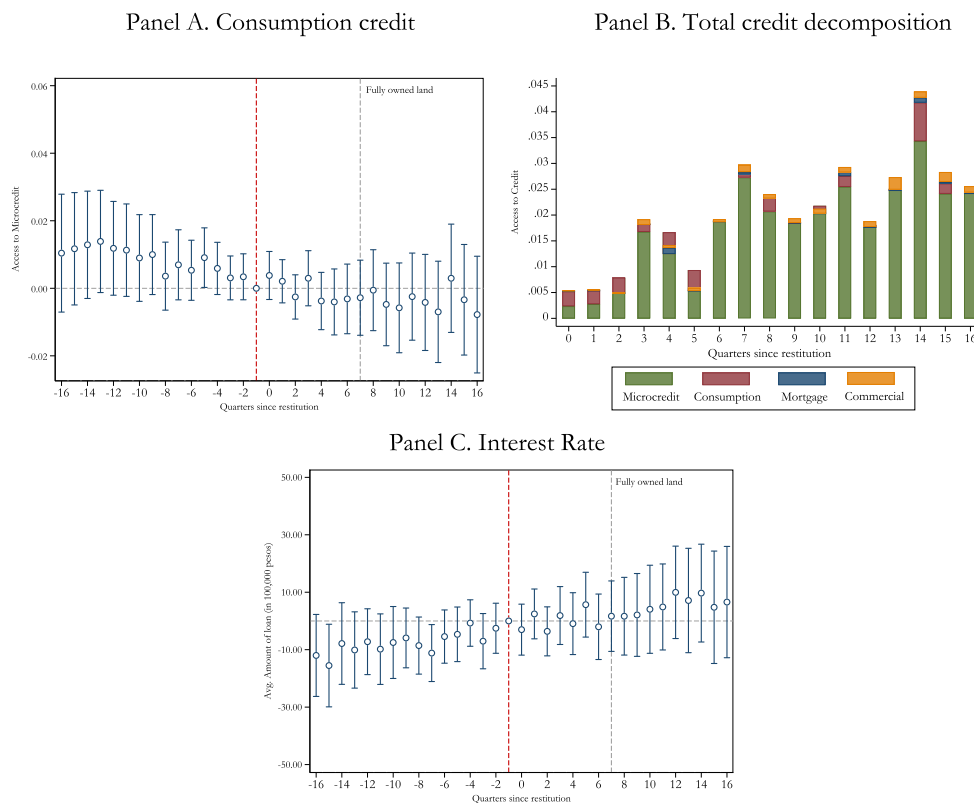
We first assess the complementarity and substitutability of microcredit with other types of credit; in other words, whether accessing microcredit is associated with negative or positive change in holding other types of debt. This analysis constitutes the first evidence on the role of demand and supply. We have argued that these households need credit given the low access to the formal labor market (lacking higher education, networking, and soft skills) which made them constrained informal entrepreneurs. Assume *a fortiori* that the demand for credit does not vary as a result of the verdict; then these households would have depended on informal credit or consumption credit to finance their ventures. Previous literature documented cases where consumption credit has been used as an insurance mechanism in rural areas (Eswaran & Kotwal, 1989). While we cannot observe informal credit, we can try to detect the presence of substitutability with consumption credit. Panel A of Fig. 3 shows the estimation results of Equation (1) using consumption credit as the primary outcome. Consumption credit shows a slight tendency to decrease after the event but is never statistically significant across the 16 quarters.

In general, we can reject substitutability with any formal credit. Looking at the additional information in our credit data, we define several mutually exclusive and exhaustive subcategories. We consider commercial credit, microcredit, consumption credit, and the residual. The exact legal definitions are provided in Section 3.1 above. We also compute a variable for *comprehensive* access to credit, equal to one if some form of credit is accessed. We estimate Equation (1) several times, using, as outcomes, the indicator variables for each sub-category and the comprehensive indicator. By construction, the sum of the coefficients from the regressions by type adds to the regression coefficient of the comprehensive indicator for any subperiod. In practice, the coefficients from the auxiliary regressions estimate how much each category contributes to the effect of land restitution on comprehensive access to credit. Thus, we can plot the coefficients from the regression on the

comprehensive indicator, but decomposed into its components, as in Panel B of Fig. 3. As shown in Panel B, microcredit explains 100.4 % of the access to credit on average during the first two years and 90.3 % in the subsequent two years. We reject the presence of substitutability and crowding out effect: the increase in microcredit does not replace another type of credit available before the restitution, which would imply negative contribution by some category. Additionally, hardly any complementarity exists, i.e., households requiring some additional form of commercial credit (backed by the land) or consumption credit (leasing to buy a car). We do not see other types of credit increase together with microcredit.

Another piece of evidence on demand and supply channels comes from the analysis of interest rates. Based on international evidence, the marker for credit for small farmers in developing countries features significant rationing (Boucher et al., 2009). Interest rates should remain flat if the causal effect on restitution comes mainly from eased rationing. Conversely, if demand drives the effect, the interest rates should increase for the market to clear. We estimate Equation (1) using the interest rate as the outcome. We plot the result in Fig. 3, Panel C. The test is inconclusive: there is no significant variation in the loan's negotiated interest rate but point estimates of the effect show a feeble tendency to increase. The effects are insignificant for the 16 quarters, and the confidence intervals do not allow for identifying a tendency.

To dig further into the problem of mechanisms, we explore the information on the features of the loan. Our credit data record which bank issue the credit and what kind of guarantee is available. We categorize the type of bank into the following subgroups: first, the Agrarian Bank (*Banco Agrario*), which is a public institution dedicated to agrarian credit; second, microfinance banks, which include all the banks that specialize in microcredits; third, traditional banks, which includes the most prominent companies; and fourth, a residual category. Second, we separately investigate the guarantee for the loan. For the guarantee, we

Panel A. Consumption credit   Panel B. Total credit decomposition

Panel C. Interest Rate

Notes: Panel A shows the probability of obtaining a new consumption credit in quarter $-16 \leq t \leq 16$ relative to the restitution date. Taking as reference period $t = -1$, which has an average access to credit of Average credit access for the reference period: 0.009. Panel B presents the decomposition of the probability of obtaining a new credit in quarter $0 \leq t \leq 16$, by type of credit acquired. Where categories correspond to microcredit, consumption credit, mortgage loans, and commercial credit for businesses. Panel C shows the average interest rate of a new microcredit in quarter $-16 \leq t \leq 16$ relative to the restitution date. They are taking as reference period $t = -1$, which has an average rate of 33.752.

Fig. 3. Total credit, consumption credits and interest rate. Notes: Panel A shows the probability of obtaining a new consumption credit in quarter $-16 \leq t \leq 16$ relative to the restitution date. Taking as reference period $t = -1$, which has an average access to credit of Average credit access for the reference period: 0.009. Panel B presents the decomposition of the probability of obtaining a new credit in quarter $0 \leq t \leq 16$, by type of credit acquired. Where categories correspond to microcredit, consumption credit, mortgage loans, and commercial credit for businesses. Panel C shows the average interest rate of a new microcredit in quarter $-16 \leq t \leq 16$ relative to the restitution date. They are taking as reference period $t = -1$, which has an average rate of 33.752.

use three subcategories: first, the Agricultural Guarantee Fund (AGF)[7]; second, other types of guarantees, which include collaterals such as personal properties or other assets; and third, credits without guarantee. The AGF is a public program called the *Fondo Agropecuario de Garantías*. Created in 2011, it provides insurance to financial institutions for agricultural investments. The AGF covers all small agricultural producers in Colombia and is an independent institution unrelated to the land restitution program.

Following the abovementioned approach, we run separate regressions on indicator variables per each subcategory. The sum of these coefficients from the auxiliary regressions adds up to the main effect for each period and decomposes the coefficient across subcategories. These decomposition exercises are plotted in Fig. 4. In Panel A, we present the decomposition by type of bank; in Panel B, we present the type of guarantee associated with the loan. In all cases, on the x-axis, we restrict

the variation to 0–16; which is, the post-restitution period. Both decompositions provide the same message. The "lion's share" comes from Agrarian Bank and AGF. The agrarian bank accounts for 76.24 % of the effect in the first two years and 63.89 % in the following two. AGF accounts for 61.64 % of the effect in the first two years and 44.66 % in the following two. Due to the characteristics of both the Agrarian Bank and the AGF, these loans must involve agricultural investments. The Agrarian Bank specializes in financing agricultural projects and programs, and the repayment is based on the crop type. The AGF is uniquely specialized in agricultural financing by mandate.[8]
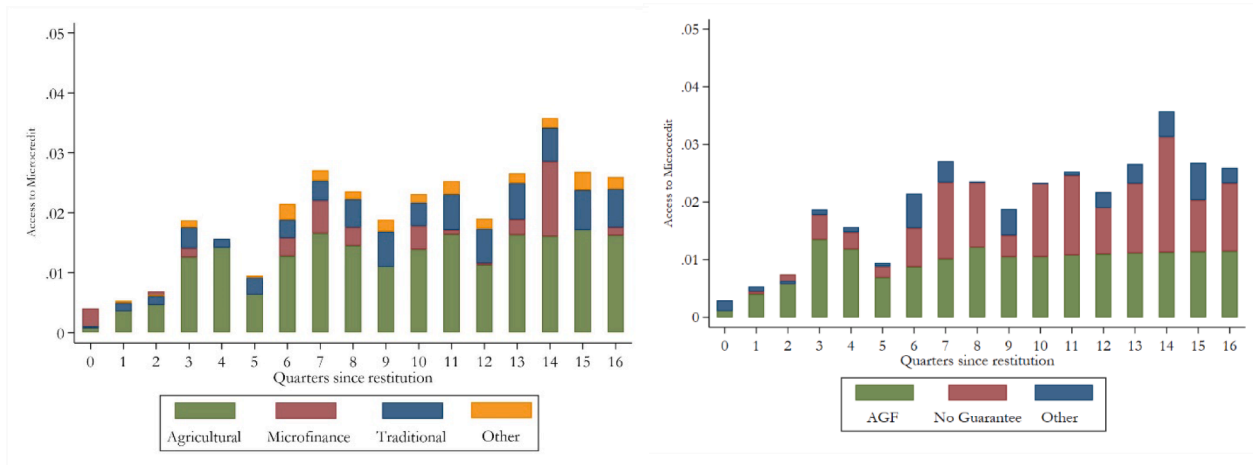
What can we conclude from Fig. 4? First, additional regulations to promote credit have certainly favored the positive effect of land restitution, addressing some of the structural problems faced by households in poverty (de Janvry & Sadoulet, 2020).[9] However, previous examples

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[7] The Fund is aimed at insuring loans issued by Finagro (*Fondo para el financiamiento del Sector Agropecuario*), instituted in 2011 by a regulation issued by the National Commission for Agricultural Credit. Finagro was instructed to promote productive projects by victims and former combatants. The AGF also cover loans issued by financial institutions at the Finagro conditions for producers who have feasible and financially viable projects but who lack the traditional instruments to access the credit at the conventional conditions.

[8] The Agrarian Bank has a more significant coverage in rural remote area, which may be playing a role. However, our sample has larger geographical heterogeneity.

[9] We only discuss other complementary policies that are within the scope of the article. A prime example is the enhancement of security, pivotal in the agency's 'microtargeting' for claim collection. However, given that microtargeting pertains to the method of policy implementation, we do not see it as a confounding variable. Security has also significantly varied as a result of the law, generating a debate in the literature (Marín et al., 2022; Prem et al., 2022).

Panel A. by Type of Banks

Panel B. by Source of Guarantee

Notes: Panel A shows the decomposition of the probability of obtaining a new microcredit in quarter $0 \leq t \leq 16$ by type of bank. The first category corresponds to the Agricultural Bank. Microfinance Banks include *Bancamía*, *Compartir* Bank, WW Bank, and *Banco Mundo Mujer*. The traditional banks category includes Bancolombia, Banco Caja Social, Banco de Bogotá, BBVA, Banco Popular and Davivienda. Panel B shows the decomposition of the probability of obtaining a new microcredit in quarter $0 \leq t \leq 16$ by type of credit guarantee. The first category corresponds to the Agricultural Guarantee Fund (AGF). The second category includes credits without guarantees or no valid guarantees. Other types of guarantees include personal items, deposits, letters of credit, among others.

Fig. 4. Decomposition of the Access to Credit by Bank and Guarantee. Notes: Panel A shows the decomposition of the probability of obtaining a new microcredit in quarter $0 \leq t \leq 16$ by type of bank. The first category corresponds to the Agricultural Bank. Microfinance Banks include *Bancamía*, *Compartir* Bank, WW Bank, and *Banco Mundo Mujer*. The traditional banks category includes Bancolombia, Banco Caja Social, Banco de Bogotá, BBVA, Banco Popular and Davivienda. Panel B shows the decomposition of the probability of obtaining a new microcredit in quarter $0 \leq t \leq 16$ by type of credit guarantee. The first category corresponds to the Agricultural Guarantee Fund (AGF). The second category includes credits without guarantees or no valid guarantees. Other types of guarantees include personal items, deposits, letters of credit, among others.

from rural reforms and adoptions of new agricultural technologies show that setting policies to overcome lack of credit is not enough, as the take up of credit is always modest (Balana et al., 2022) as it happens for interventions to promote microcredit (Banerjee et al., 2015). We argue that some demand effect must have taken place, as the supply mechanism cannot satisfactorily explain the timing of the effect. Both the measures included in the law and the statutory measures by Finagro and AGF do not require the restitution but the recognition of the victim's status. Even neglecting the problem in take-up rates and assuming that only the intervention of the policymaker could activate the credit for the productive projects, it would be implausible that no such *trigger* had taken place *at all* before land restitution given that every household in the sample could have benefitted well before the verdict and that opportunities for productive projects would have certainly been available.

4.3. Heterogeneity

We further explore the implications of the results by exploiting some of the heterogeneity in the administrative data of this project. We start from Fig. 5. As in previous exhibits, these graphs plot the effect for each quarter before and after restitution, using the quarter before the event as the baseline.

We start by analyzing the plot size given that every adjudication includes a description of the plot size. The evidence from Panel A of Fig. 5 shows that access to credit does not discriminate by the size of the restituted plot (although this may be just a consequence of the guarantee by the AGF). We split the sample between large and small using the

median of the restituted parcel distribution. The results for the small parcels are slightly less stable but qualitatively the same. The literature on land titling in developing countries points to a threshold effect, as the banking system tends to be biased against small producers (Lawry et al., 2017). The fact that this does not hold in our setting is essential and deserves further investigation. Notice that 5 Has is not a meaningful definition of a large plot, but again, this is related to the targeted population of this Bill. Consequently, it strengthens our argument that size does not drive the results in this case. It is worth mentioning that for both Panel A and Panel B, the intensive margin (average size of the loan) produces the same pattern.

As discussed in Section 2, land restitution in developing countries faced the conundrum of informal titles and occupations. As it happened in South Africa (Hall, 2009), also in Colombia the restitution recognizes the right to restitution even when the claim is rooted only in occupation. The verdict mentions the origin of the claim. In Fig. 5, Panel B plots the effect for formal (*de jure*, left graph) and informal (*de facto,* right graph) property claims. The effects are qualitatively the same, although they appear stronger for the former case. Restituting a plot based on occupation represents the part where the law gets closer to a land titling policy and contributes to the land reform debate we mentioned in the introduction.

Next, we consider heterogeneity across rural and agricultural contexts. To perform these analyses, we incorporate additional data at the municipal level. Let us have a look at Fig. 6. In Panel A, we categorize our data based on the degree of land concentration. Specifically, we utilize the Gini coefficient of land at the municipal level, dividing it into

Panel A. Plot Size over 5 Ha v. equal or less than 5 Ha
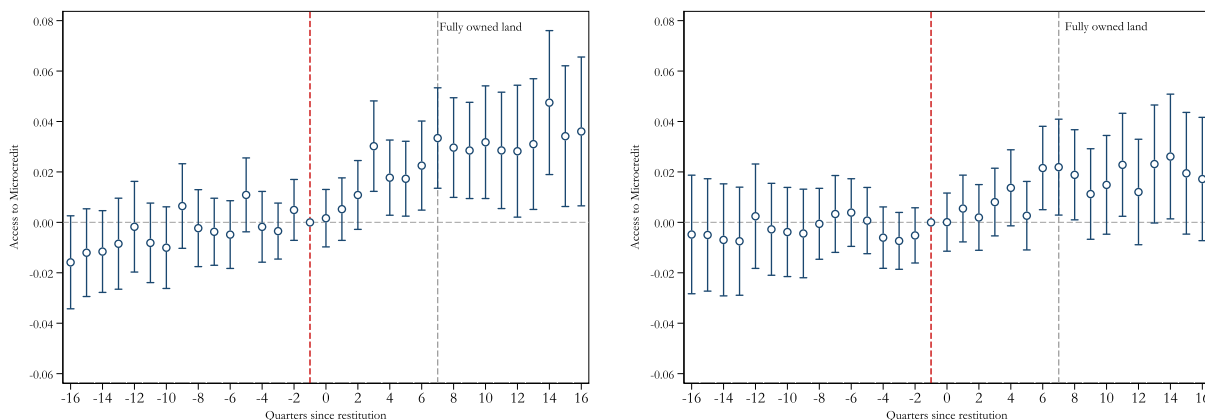
Panel B. De jure v. de facto
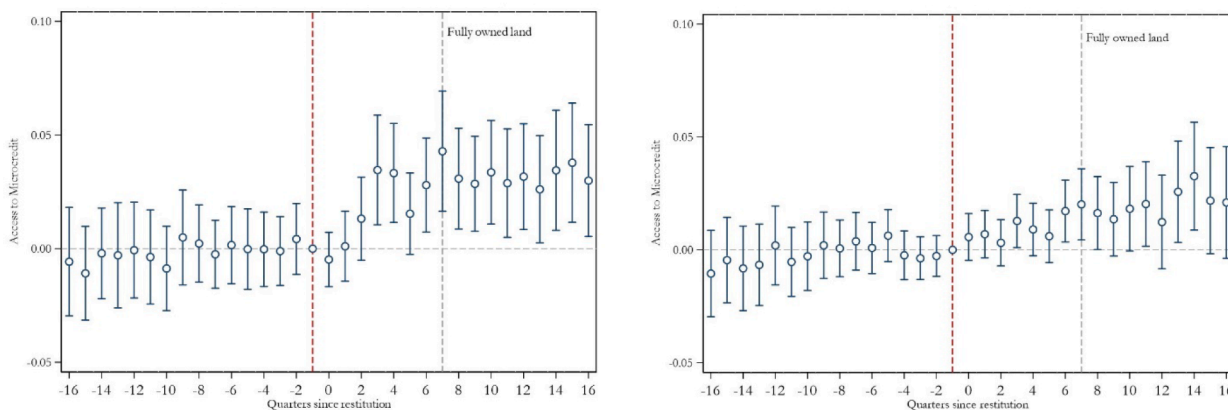
Notes: The left-hand side (right hand side) of Panel A shows the probability of getting a new microcredit when the total area of the land is greater than (lower than or equal to) 5 Ha. The average microcredit access for the reference period is 0.012 (0.015).

The left-hand side (right hand side) of Panel B shows the probability of getting a new microcredit when the eligible person has a formal title (proof of occupation). The average microcredit access for the reference period is 0.0148 (0.0127).

Fig. 5. Heterogenous effects by characteristics of the plot. Notes: The left-hand side (right hand side) of Panel A shows the probability of getting a new microcredit when the total area of the land is greater than (lower than or equal to) 5 Ha. The average microcredit access for the reference period is 0.012 (0.015). The left-hand side (right hand side) of Panel B shows the probability of getting a new microcredit when the eligible person has a formal title (proof of occupation). The average microcredit access for the reference period is 0.0148 (0.0127).

two groups: below and above the 75th percentile (within our sample of municipalities; however, results remain consistent when using the 75th percentile for the entire country). The confidence intervals on the right-hand side are significantly larger, which hinders drawing robust conclusions. The data point towards a diminished effect of restitution above the 75th percentile.
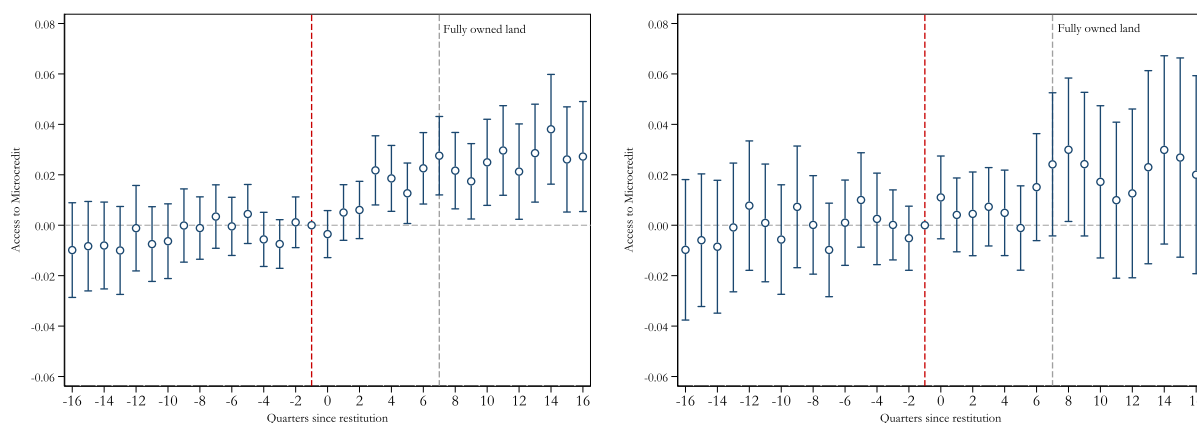
The second dimension of heterogeneity concerns product concentration. We employ a measure of diversification of production at the municipal level: the proportion of the primary product over total agricultural production. We set the threshold at the 75th percentile. The source of the data is the CEDE panel (Acevedo and Bornacelly, 2014),

covering 2009 and 2012. As already observed for Panel A, there is an increase in confidence intervals for the graph on the right-hand side. Again, the effects become insignificant beyond the threshold. We are cautious in drawing any robust conclusion due to the loss in power. Yet, it is still noteworthy that both forms of concentration (in land ownership and in land use) may weaken the effect of restitution on credit. Indeed, more evidence is required to discuss why, but this would be compatible with a lower return on investment due to the significant market power held by local incumbents. All these results are robust when we look at the intensive margin.

Panel A. Below v. above 75th percentile of land concentration (Gini index)
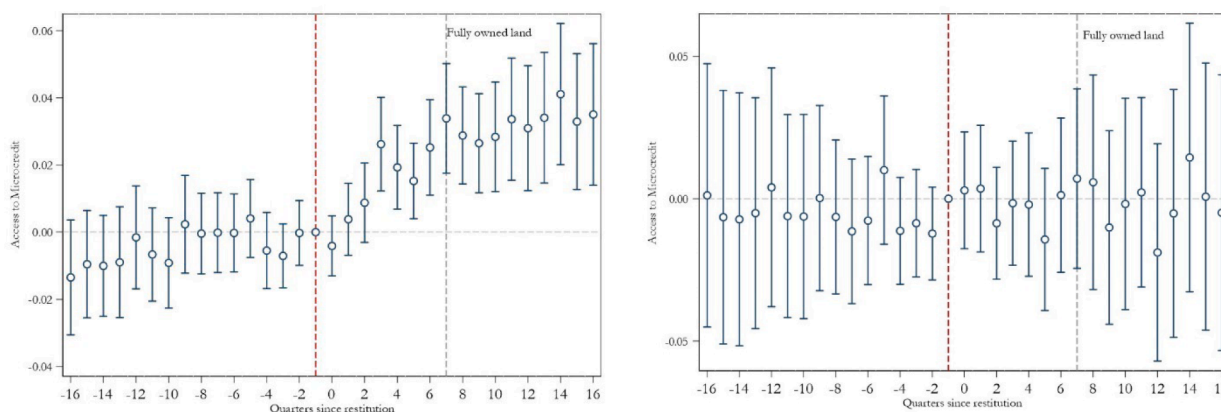
Panel B. Below v. above the 75th percentile of the share of the main crop

Notes: The left-hand side (right-hand side) of Panel A shows the probability of getting a new microcredit in quarter $-16 \leq t \leq 16$ for municipalities with a Gini index of land concentration above (below) the 75th percentile within the sample. The average microcredit access for the reference period is 0.017 (0.013).

The left-hand side (right-hand side) of Panel B shows the probability of getting a new microcredit when the share of the main crop over the total harvested area is greater than (lower than or equal to) the 75th percentile of all the municipalities in Colombia. The average microcredit access for the reference period is 0.010 (0.015).

Fig. 6. Heterogenous effects by characteristics of the area. Notes: The left-hand side (right-hand side) of Panel A shows the probability of getting a new microcredit in quarter $-16 \leq t \leq 16$ for municipalities with a Gini index of land concentration above (below) the 75th percentile within the sample. The average microcredit access for the reference period is 0.017 (0.013). The left-hand side (right-hand side) of Panel B shows the probability of getting a new microcredit when the share of the main crop over the total harvested area is greater than (lower than or equal to) the 75th percentile of all the municipalities in Colombia. The average microcredit access for the reference period is 0.010 (0.015).

4.4. Robustness

Difference-in-difference with staggered treatment and event study are the most widely used research designs for causal inference when direct experimentation is impossible. In the current setting, the counterfactuals and the treatment effect are estimated with two-way fixed effects (TWFE). Using TWFE may introduce a source of bias if the treatment effect is heterogeneous or dynamic (De Chaisemartin & D'haultfoeuille, 2021; Roth et al., 2023). Various estimators have been provided to address this problem.

We conclude the section on results by showing that even when accounting for this issue, our claim that restitution increases access to credit still holds. Furthermore, we provide additional evidence for the

assumption of parallel trends. We follow one of the most common estimators in this strand of diff-in-diff with staggered treatment literature (Callaway & Sant'Anna, 2021), hereafter CS. The CS framework does not necessarily require never-treated units. The design is also called a stepped wedge design when there are only eventually treated units, which is our case.

We consider two estimators for our stepped wedge design. First, a CS estimator compares the credit outcome between periods t and the average over cohorts not yet treated in period t. In Fig. 1, we showed our nine treated cohorts; then, for the first-ever treated cohort, we use the average of the other eight cohorts as a comparison group. The same procedure is then repeated for the remaining cohorts. Using this procedure, we can cover several periods before the first event but only seven

periods after because, eventually, the last cohort gets treated. Second, we estimate a CS estimator that uses only the last cohort as the comparison group (in the spirit of Sun & Abraham, 2021): the change in outcome around the event for each cohort is compared to the change in the last cohort, which plays the role of the control group. As before, we can only see the effects for seven periods after the first event.

The results are provided in Table 2 below. On average, the first year after the restitution (periods 1 to 4), access to microcredit increases by 1.4 percentage points, according to CS estimators. This effect estimation exceeds the 1.1 percentage points effect estimated from the event study but is comparable in size. The CS estimators provide further evidence to reject differential trend before the event, supporting the plausibility of the key identifying assumption.

5. Concluding remarks

Colombia has undertaken significant efforts to recognize and make reparations to victims of its internal conflict. An important milestone was the approval of Bill 1448/2011 (Ley de Victimas), which instantiated international principles recommending land restitution as reparations for internally displaced persons (IDPs). The aim of restoring and securing property rights for the dispossessed is to help victims overcome their trauma and invisibility and provide them with agency. From an economic point of view, victims can now become the residual claimants of the land's earnings, which should encourage them to invest in and capitalize on their assets. Using administrative data, we show that victims are more likely to access credit and receive larger loans as a result of the law. Although the effects are already evident in the six months following the restitution, once two years have passed, when the beneficiaries acquire full property rights, the effects become almost twice as large.

This work may have interesting implications for scholars studying land titling. In the field of development economics, a substantial body of

Table 2
Robust Difference in difference using Callaway and Sant'Anna.

	(1)	(2)
Period respect to the event	CS all eventually treated	CS last cohort
−7	0.00188	0.00575
	(0.00302)	(0.00418)
−6	0.000162	0.00439
	(0.00290)	(0.00376)
−5	0.00619*	0.00850**
	(0.00325)	(0.00426)
−4	−0.00256	−0.000537
	(0.00276)	(0.00362)
−3	−0.00408*	−0.000381
	(0.00242)	(0.00321)
−2	0.000576	0.00303
	(0.00221)	(0.00316)
0	−0.000743	−0.000527
	(0.00347)	(0.00363)
1	0.00355	0.00367
	(0.00427)	(0.00452)
2	0.00893*	0.00999**
	(0.00495)	(0.00510)
3	0.0281***	0.0283***
	(0.00693)	(0.00706)
4	0.0156**	0.0168**
	(0.00696)	(0.00702)
5	−0.00350	−0.00329
	(0.00536)	(0.00548)
6	0.0143	0.0145
	(0.0130)	(0.0130)
7	0.0124	0.0124
	(0.0259)	(0.0259)
N	102,310	102,310

Notes: probability of getting a new microcredit. Callaway and Sant'Anna (CS) estimates. Column (1) uses not yet treated as the control, Column (2) uses the last cohort. Cohorts from 2012-q4 to 2014-q4.

literature is dedicated to the study of land titling, particularly in countries where agriculture still plays a significant role in GDP and total employment (Besley & Ghatak, 2010), and of the market-enhancing commodification of property rights (Boone, 2019). Restoring rural properties that were forcibly abandoned or dispossessed serves to establish and enforce rural property rights. Notably, formal land titles are held by only 36 percent of rural households, and land restitution fundamentally alters the previous tenure conditions, which often featured weak protection.

The literature on the relationship between security of land tenure and investment in rural Africa has yielded mixed results. Some studies have documented positive effects (Ali et al., 2014; Besley, 1995; Goldstein et al., 2018; Goldstein & Udry, 2008), while others have found null results (Fenske, 2011; Huntington & Shenoy, 2021). In urban areas, there is evidence of a positive effect (Galiani & Schargrodsky, 2010). We add to the previous literature by showing evidence of a credit effect (Lawry et al., 2017). The literature on titling and access to credit points toward an increase in access: Feder, Onchan, Chalamwong, and Hongladarom (1988), Banerjee, Gertler, and Ghatak (2002) and Piza and de Moura (2016) find positive effects, while in Kerekes and Williamson (2010) and Domeher and Abdulai (2012), the results depend on the type of property and financial institution accessed.

In addition, our study contributes to the microcredit literature. Much of the existing research on microfinance in developing countries has revealed that microentrepreneurs are hesitant to access microcredit, despite the potentially high returns (de Mel et al., 2008). Behavioral economics suggests that present bias and cognitive load, often linked to poverty, may provide a plausible causal explanation for this reluctance (Haushofer & Fehr, 2014; Mani et al., 2014). This phenomenon is especially relevant for IDPs, who not only grapple with poverty but are also victims of violence, experiencing cognitive effects akin to those of poverty (Bogliacino et al., 2017). Our finding that the restoration of property rights and a positive wealth shock increase the uptake of microcredit by beneficiaries suggests that negative bandwidth effects can be alleviated.

As usual, this work has several limitations. First, the COVID-19 pandemic occurring in 2020 significantly disrupted state administrative capacity in many sectors and may have changed the impact of land restitution; we hope that future work will analyze heterogeneity along this dimension. Second, we do not have access to microdata on land characteristics, which could provide interesting insights with respect to effect heterogeneity. Third, it would be very interesting to include information on the rate of return and beneficiaries' socioeconomic background to estimate welfare effects. Fourth, given the large literature on the effects of the ceasefire with the Revolutionary Armed Forces of Colombia–People's Army (FARC-EP), it would be interesting to explore its effect in the domain of land restitution.

CRediT authorship contribution statement

Francesco Bogliacino: Writing – review & editing, Writing – original draft, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Christian Posso:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Marta Juanita Villaveces:** Writing – review & editing, Writing – original draft, Formal analysis, Conceptualization.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability

The data used in this study were analyzed on-site at the Central Bank of Colombia. We got access through one of the authors (C Posso), an employee of the Central Bank. The Central Bank is the owner of the data. Although we are not authorized to share the data publicly, permission can be obtained to access the data onsite in a secure enclave facility.

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