

Pioneering Unbanked Markets: The Catalytic Role of a Public Commercial Bank*

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Abstract

This paper provides new causal evidence on how a public commercial bank can shape private financial intermediation. Exploiting municipality-level variation in the staggered expansion of Banco Agrario de Colombia between 1999 and 2023, we estimate the impact of public bank entry on private sector activity using a heterogeneity-robust difference-in-differences design. Results reveal a clear crowding-in effect: Banagrario's entry stimulates, rather than displaces, private banking activity. In previously unbanked municipalities, its presence catalyzes market creation, leading to sustained growth in private lending, deposits, and institutional presence. Private banks expand their market share even in areas long ignored by the formal sector. The absence of client reallocation or crowding-out indicates genuine market deepening rather than redistribution. Overall, the findings highlight the potential catalytic role of public banks in expanding financial intermediation by operating as market pioneers, thereby fostering the development of sustainable credit markets in underserved regions.

Keywords: Public banks; Financial intermediation; Crowding-in; Banking competition; Difference-in-differences; Colombia.

JEL Codes: G21, O16, O18, H81, C23

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1 Introduction

Public banks¹ remain a significant feature of financial systems around the world², especially in emerging economies (Xu et al., 2021). Governments often justify public banks as a remedy for market failures in credit markets, aiming to spur lending in underserved areas or to sectors deemed vital for development. After decades of relative neglect, stemming from the disappointing performance of public banks across many regions in the 1980s and 1990s³, international policy agendas have increasingly placed these institutions at the core of strategies to expand financial access. The recent 2025 Seville Commitment, for example, calls for strengthening public development banks’ role in mobilizing finance for underserved sectors (United Nations, 2025). A central element of this renewed mandate, particularly in emerging economies, is the expectation that public banks will mobilize private finance in underserved markets, rather than replace it (Viganò, 2021; Gutierrez and Kliatskova, 2021). Critics, however, have long argued that public banks may hinder private sector development by politicizing credit or crowding out private banks. The academic debate reflects these contrasting views: developmental theories suggest public banks can foster financial inclusion and catalyze economic activity, whereas political theories warn that government ownership of banks may distort markets and suppress competition (La Porta et al., 2002).

Despite the importance of this debate, causal evidence on how public banks shape private banking activity at the local level remains limited. This paper contributes to filling that gap by examining two core questions: 1) how does the entry of a public bank affect the behavior of private banks, and 2) does public bank expansion into previously

¹Here “public” refers to state-owned institutions, not to be confused with publicly listed banks. Vicente and De Luna-Martinez (2012) define a public bank as a financial institution with at least 30% state-owned equity and a legal mandate to pursue socioeconomic goals in a region, sector, or market segment; Xu et al. (2021) use a 50% threshold.

²In 2024, more than 530 public development and commercial banks operated across 155 countries, collectively managing approximately USD 23 trillion in assets (Finance in Common, 2024).

³A large literature documents the disappointing performance of development banks in the 1980s and 1990s and the distortions associated with subsidized credit programs. Seminal critiques include Adams et al. (1985) and Pischke (1981a,b), which were instrumental in shaping the subsequent retrenchment of public banking. More recent contributions revisit the role of development banks, emphasizing their potential to address market failures while aligning with broader development and ESG objectives; see, among others, De Luna-Martínez et al. (2018), Xu et al. (2020), and Ocampo and Ortega (2022).

unserved areas attract private banking (“crowding-in”) or deter it (“crowding-out”)? We address these questions by exploiting the unique, large-scale expansion of Colombia’s public commercial bank over the past quarter-century and studying its impact on private banks’ local presence and activity.

Colombia provides a compelling empirical setting due to persistent credit-market frictions and the unique role of its public commercial bank. Widespread credit constraints - stemming from high origination costs, asymmetric information, and risk in sectors like smallholder farming - have required policy remedies such as government-backed credit guarantees ([Arráiz et al., 2014](#); [Gáfaró-González et al., 2025](#)). Private banks’ limited engagement in rural finance ([Gáfaró-González et al., 2025](#)) has left the public Banco Agrario de Colombia (“Banagrario”) as the primary source of formal credit in these areas. Unlike other Colombian state lenders that operate on a second-tier basis, Banagrario functions as a first-tier commercial bank with a nationwide branch network ([Arvai and Letelier, 2022](#)). While studies on Colombia have examined specific interventions and shocks-e.g. partial credit guarantees easing firm credit constraints ([Arráiz et al., 2014](#)), bank branch robberies temporarily affecting loan officers’ decisions ([Morales-Acevedo and Ongena, 2020](#)), or the expansion of domestic banks abroad weakening the local credit channel ([Morales et al., 2022](#)) - much less is known about how public banks shape the structure and development of local financial markets ([Eslava et al., 2014](#)). This gap underscores the relevance of studying Banagrario’s role.

We examine Banagrario’s staggered geographic expansion to identify the causal impact of public bank entry on private-sector financial activity. Following the 1999 banking crisis, Colombia liquidated its longstanding rural lender, Caja Agraria, and created Banagrario to assume its mandate. The new bank initially operated with a leaner footprint, leaving many municipalities unserved in the early 2000s. Over the next two decades, it gradually expanded its first-tier retail network across the country, with a mission to reach rural and remote areas ([Arvai and Letelier, 2022](#)). By 2023, Banagrario operated in 791 of roughly 1,100 municipalities, accounting for more than half of all rural bank branches and often serving as the sole banking institution in small towns ([Camargo et al., 2014](#)). This

gradual, policy-driven rollout created substantial variation in the timing and location of public bank entry.

To leverage this variation, we construct a bank–municipality–quarter panel from 1996 to 2023 and estimate the effects of Banagrario’s arrival on private financial development using a heterogeneity-robust staggered difference-in-differences framework (Callaway and Sant’Anna, 2021). Banagrario typically entered municipalities previously unserved by private intermediaries, generating sharp increases in financial access that are unlikely to reflect contemporaneous local economic shifts. We strengthen identification by implementing a doubly robust estimator that combines inverse probability weighting with regression adjustment, ensuring treated and not-yet-treated municipalities are balanced on pre-entry characteristics and private financial activity. This approach mitigates concerns that branch placement followed unobserved growth trends and enables credible comparisons across municipalities exposed to different entry timings. Event-study estimates further confirm parallel pre-trends and allow us to trace dynamic responses. Together, this strategy provides one of the first causal assessments of how public bank entry shapes the evolution of local private banking markets.

We find that public bank entry significantly expands private banking activity, indicating a crowding-in effect rather than displacement. Across multiple measures, municipalities that received Banagrario experienced stronger growth in private-sector financial activity than otherwise similar municipalities that did not. Almost twenty years after entry, treated municipalities host on average 7.8% more private banks than comparable untreated ones. Private-sector lending volumes are 5–6% higher over the same long-run horizon. These are average total effects, and they remain statistically significant and robust across specifications. Importantly, we find no evidence that the public bank erodes incumbents’ market share; if anything, private portfolios tend to expand alongside Banagrario’s entry.

This study makes several contributions. First, we contribute to the literature on bank ownership and financial development by providing micro-level causal evidence on the competitive effects of public banks. While much of the existing evidence on public

vs. private banks is based on cross-country correlations or aggregate time-series, our bank-municipality-level analysis pinpoints the direct impact of a public bank’s presence on private bank entry and activity. The findings support the notion that, under certain conditions, public banks can complement rather than substitute for private banks - a nuance that informs the classic debate between the developmental and political views of public banking. Second, we add to research on financial inclusion and market expansion, echoing insights from studies like [Burgess and Pande \(2005\)](#) work in India that proactive branch expansion can yield broader economic benefits. However, our focus is distinct in evaluating competition and crowding-in dynamics in the banking sector. Third, from a policy perspective, our results provide guidance to governments considering the use of public banks to expand credit access. The Colombian experience shows that a public commercial bank, operating in gaps left by commercial banks, need not impede private sector growth, and may even pave the way for it. Of course, the ultimate impact may depend on institutional context and implementation, and we discuss these contingencies in the paper.

The remainder of the paper is structured as follows. Section 2 situates the argument within the literature on public banking and financial development. Section 3 provides institutional context on Colombia’s banking system. Section 4 presents the empirical framework. Section 5 reports the main results, and Section 6 focuses on previously unbanked municipalities. Section 8 concludes.

2 Related Literature

The role of public banks has long been contested, with the supply-led finance paradigm facing sustained criticism.⁴ Yet, despite decades of theoretical and empirical inquiry, no consensus has emerged, and the literature remains divided between two broad perspectives.

A benign view sees public banks as necessary substitutes for private banks in projects with positive social but negative private returns ([Greschenkron, 1962](#); [Stiglitz, 1993](#)).

⁴Early and influential critiques include [Patrick \(1966\)](#) and several contributions in [Adams et al. \(1985\)](#).

Under this view, public banks can alleviate frictions, extend credit to underserved sectors, and thereby foster financial development and growth (Yeyati et al., 2007). Yet empirical evidence on whether such interventions enhance financial development and growth remains mixed. Micco et al. (2007) show that public banks underperform private ones in terms of costs, profitability, and loan quality, though such inefficiencies may be consistent with a developmental mandate (Panizza, 2014). In contrast, La Porta et al. (2002) find that higher public ownership is associated with lower financial development and growth. A more skeptical view highlights political capture, noting that public banks may direct credit toward allies, amplify electoral cycles, or discipline firms for political ends. Supporting this, Sapienza (2004) finds that Italian public banks lend more cheaply in politically aligned jurisdictions; Cole (2009) documents electoral lending cycles in India; Khwaja and Mian (2005) show preferential treatment for politically connected firms in Pakistan; and Carvalho (2014) provides similar evidence for Brazil’s National Bank for Economic and Social Development (BNDES). A conciliatory view reconciles both perspectives, recognizing the developmental role of public banks while acknowledging their heightened exposure to agency problems and political influence, which raise costs and weaken efficiency (Marois, 2022; Panizza, 2023).⁵

We build on the literature on public banks and financial development. We shift the focus from financial development per se to the role of public banks in shaping private banks’ behavior, a topic that remains relatively underexplored.⁶ Coelho et al. (2013) is a notable exception, finding neutrality in Brazil; however, their context and methods differ from ours. They show that while private competition raises the minimum market size required to sustain branches, the presence of public banks does not affect private

⁵This view has gained traction with the establishment of Finance in Common (FiCS), the global coalition of more than 530 PDBs managing around \$23 trillion in assets, about 12% of annual global investment (Finance in Common, 2024). Since its creation in 2020, FiCS has sought to align PDB mandates with the Sustainable Development Goals (SDGs), foster collaboration across national, regional, and multilateral institutions, and mobilize private finance for sustainable and inclusive growth (Finance in Common, 2024).

⁶The classical view emphasizes the risk of crowding-out: by relying on preferential funding or regulatory advantages, public banks may compete directly with private institutions, divert already bankable clients, and discourage private banks from developing competitive financial products. Over time, this dynamic can distort credit markets and reduce incentives for new investment (Gutierrez et al., 2011).

banks' branching decisions. They attribute this neutrality to the higher costs and product differentiation associated with public banks' legal mandates, such as rural credit and mortgage provision, which weaken competitive pressures.

A key theoretical reference is [Eslava and Freixas \(2021\)](#), who study public development banks (PDBs) rather than the first-tier public commercial bank examined here. Their model shows that credit underprovision arises because private banks cannot fully appropriate the social returns of high-value projects and fail to internalize the aggregate benefits of screening. Second-tier PDBs optimally address these frictions by channeling subsidized funds to commercial banks, particularly for projects with high social returns, thereby questioning the conventional emphasis on SMEs and highlighting the role of output-maximizing public intervention. While the authors note the relevance of settings in which public institutions compete directly with private lenders, they abstract from this case due to its analytical complexity. Our study addresses this gap empirically by examining a first-tier public commercial bank with a developmental mandate, an institution that closely resembles private intermediaries yet differs in objectives. Using a staggered difference-in-differences design, we document how direct public bank presence shapes local credit markets through market creation and crowding-in effects, extending the discussion on the heterogeneous roles of public financial institutions in credit allocation and local financial development.

Other contributions provide more nuanced evidence. [Jiménez et al. \(2019\)](#), studying a Spanish public bank through a regression discontinuity design, find that public lending generates crowding-in effects: firms receiving public loans are 32 p.p. more likely to obtain new loans from private banks and experience a 30% increase in private credit volume relative to similar firms without public loans. This suggests that public credit can catalyze additional private financing, reinforcing the initial public funds. Likewise, [Micco et al. \(2007\)](#) document that in very poor countries public banks increase the efficiency of private banks by intensifying competitive pressure. Faced with public bank entry, private institutions reduce overhead costs, which in turn leads to lower net interest margins. Importantly, these adjustments do not appear to undermine private bank profitability,

indicating that public banks can foster competition without crowding out private financial activity.

Our contribution provides causal evidence on how the entry of a public bank shapes private sector participation in local credit markets. To the best of our knowledge, this is the first study to apply a staggered difference-in-differences design exploiting variation in the timing of public commercial bank entry at the bank–municipality level. We document both a catalytic effect, whereby public entry spurs private participation in existing markets, and a market-creation effect, in which private institutions subsequently establish operations in municipalities initially served exclusively by the public bank. Methodologically, we advance the literature by employing a within-country, within-bank identification strategy at the institution level, thereby avoiding aggregation bias ([Agarwal et al., 2023](#)) and holding constant the national legal, regulatory, and macroeconomic environment ([Freixas and Pinzon, 2025](#); [Guiso et al., 2002](#)).

3 Institutional Background and Data

3.1 The Landscape of Public Financial Institutions

Latin America’s level of state ownership in banking is broadly in line with the developing-country average ([Micco et al., 2007](#)), yet Colombia’s public financial institutions occupy a distinctive place within this landscape.

The country has a long tradition of state involvement in finance, beginning with the creation of the Caja de Crédito Agrario Industrial y Minero in 1931 to extend credit to small agricultural producers. Over the following decades, the state established a series of specialized institutions - Banco Central Hipotecario, Banco Popular, Banco Cafetero, and Banco Ganadero - to channel subsidized credit to priority sectors facing liquidity constraints ([Ocampo, 2021](#)).

By the 1980s, public banks accounted for nearly half of Colombia’s financial system assets, reflecting both developmental ambitions and the nationalization of several private institutions during episodes of financial distress ([Uribe, 2001](#)). The liberalization reforms

of the 1990s and the 1998 financial crisis triggered a wave of privatizations and liquidations, leaving a smaller group of strategically focused public institutions. Many were restructured as second-tier development finance institutions (DFIs), notably Bancóldex, FINDETER, FINAGRO, and FDN, which provide targeted credit through financial intermediaries rather than directly to the public.

Today, public financial institutions remain central to Colombia’s development and inclusion agenda. They hold roughly 12% of total banking assets and 8% of insurance assets, with mandates that emphasize rural finance, microcredit, and small and medium-sized enterprise (SME) support ([Arvai et al., 2023](#)).

Within this network, Banagrario stands out as the only first-tier PCB—a full-service financial intermediary that combines a commercial banking model with a developmental mandate.⁷ Other public banks function as second-tier DFIs, relying on capital markets, institutional investors, and earmarked public funds rather than retail deposits. Complementary institutions include the Fondo Nacional de Garantías (FNG), which supports MSME and low-income lending; the Fondo Nacional del Ahorro (FNA) and Caja Honor, which manage public employee savings; and regional development banks (INFIs) operating at the subnational level, albeit with limited disclosure. Since 2019, most of these institutions have been consolidated under Grupo Bicentenario, a holding company within the Ministry of Finance designed to strengthen coordination, risk management, and strategic alignment across the public financial system ([Arvai et al., 2023](#)).

3.2 Banagrario

Banagrario was established on June 28, 1999, following the liquidation of the Caja de Crédito Agrario Industrial y Minero (Caja Agraria), a large public bank burdened by chronic mismanagement and mounting liabilities.⁸ Its creation was central to the

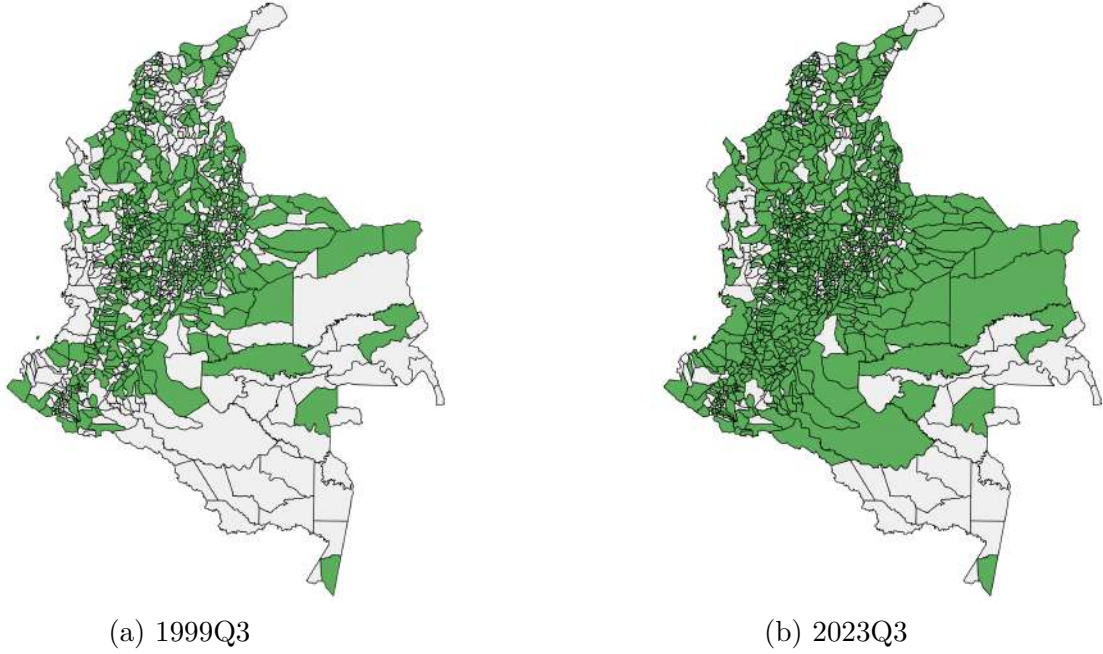
⁷Banagrario accounts for roughly one-third of total public-bank assets ([Arvai et al., 2023](#)). It adopted Basel III standards in 2020, while Bancóldex, FINDETER, FDN, and FINAGRO continue to operate under Basel II.

⁸Caja Agraria’s closure formed part of a broader restructuring of Colombia’s public financial institutions in response to the 1998 crisis, which led to the merger, privatization, or dissolution of several public banks ([Uribe, 2001](#)).

government’s strategy to safeguard rural credit provision while strengthening governance and financial discipline in the public banking system. As part of this restructuring, the authorities adopted a comprehensive plan to rehabilitate the public financial sector (Uribe, 2001). The strategy involved four key steps: (i) cleaning up asset portfolios through the adoption of appropriate provisioning rules; (ii) strengthening equity positions via recapitalization to achieve a solvency ratio of at least 9%; (iii) transferring non-performing or unproductive assets to a specialized recovery agency, Central de Inversiones S.A. (CISA), for their collection and sale; and (iv) implementing extensive administrative and managerial reforms to modernize operations (Uribe, 2001). Caja Agraria was consequently liquidated, and a new public bank, Banagrario, was created with the same core developmental functions but with fresh capital, a leaner branch network, and significantly fewer labor commitments. Fully owned by the state through Grupo Bicentenario, Banagrario was conceived as a policy-oriented financial institution to address the long-standing under-provision of rural credit and the institutional void left by Caja Agraria’s collapse. Unlike most development-oriented banks, Banagrario operates under a full commercial banking license, combining standard retail services with a developmental mandate. It is thus classified as a public commercial bank. By law, at least 70% of Banagrario’s loan portfolio must be directed to rural and primary-sector activities - including agriculture, livestock, forestry, fisheries, and agro-industry. In practice, this mandate makes the bank the primary lender to small and medium-sized agricultural producers while allowing operational flexibility. As of June 2021, 43% of total loans were extended to small rural producers, 27% to medium and large agricultural firms, and the remainder to non-agricultural borrowers.⁹ Roughly 60% of agricultural lending is financed through FINAGRO credit lines, often guaranteed by Agricultural Fund of Guarantees (Fondo Agropecuario de Garantías, FAG), enabling Banagrario to lend at regulated rates while maintaining portfolio soundness. Through its subsidiary Fiduagraria, the bank also provides trust and investment services, including land-title trusts used as collateral (Arvai et al., 2023).

⁹Most recent available figures.

Figure 1: Geographic expansion of Banagrario, 1999Q3 vs. 2023Q3.



Notes: The maps illustrate Banagrario’s geographic expansion across Colombian municipalities from its creation until 2023Q3. Green areas indicate municipalities where Banagrario operates, while gray areas denote municipalities where the bank has never established. The treatment indicator underlying these maps is described in Section 3.3. Figure produced by the authors.

From its inception, Banagrario inherited much of Caja Agraria’s institutional footprint, launching operations in 488 municipalities, nearly half of Colombia’s territory. Over the next two decades, it expanded its reach to 791 municipalities by 2023Q3, covering 96% of all municipalities and all 32 departments. In 484 of these municipalities, Banagrario was the first and often the only financial institution to establish operations. Despite its modest national market share, 2.9% of total loans and 1.9% of deposits as of June 2023, its territorial reach is unmatched, making it the *de facto* financial backbone of rural Colombia.

Beyond intermediation, Banagrario performs key quasi-fiscal and public service functions, including the management of government trust funds, administration of social transfers, and exclusive custody of judicial deposits, which represent roughly one-quarter of its liabilities ([Arvai et al., 2023](#)). Its stable, low-cost funding, largely derived from

FINAGRO resources, combined with an extensive branch and correspondent network, allows it to sustain operations in low-profitability markets where private banks are typically absent.

Although Banagrario’s developmental mandate entails elevated credit risk, particularly in lending to small producers, the bank remains financially robust. Provisioning has increased with the credit cycle, yet capitalization and profitability remain sound.¹⁰

3.3 Data

We construct a balanced panel dataset at the bank–municipality level covering 1996Q2–2023Q3, combining administrative records from three complementary sources. The primary source is the Superintendencia Financiera de Colombia (SFC).¹¹ The SFC provides quarterly microdata on all supervised financial institutions, including unique bank identifiers, bank type, and municipality codes. For each bank–municipality–quarter observation, the dataset reports loan portfolios disaggregated by credit type (commercial, microcredit, mortgage, and consumer), loan quality (A–E), deposits by account type (savings, term, and current), and the number of operating branches. The initial universe comprises 52 banks; however, mergers, failures, privatizations, and exits reduce this number to 36 active institutions.

For comparability, we restrict attention to these 36 commercial institutions¹² and construct a municipality–bank–quarter panel with 4,083,708 observations. From these data, we build two core indicators capturing the presence and activity of Banagrario and private commercial banks.

Our treatment variable, Banagrario activity, is a dummy equal to one in all municipality–quarters where Banagrario records positive lending or deposit activity, and zero otherwise. This indicator identifies the timing of Banagrario’s first entry into

¹⁰As of mid-2024, Banagrario’s non-performing loan ratio stood at 7.4% (versus 6.3% in 2023Q3), with coverage of roughly 117%. The CET1 ratio was 14.5%, and the loans-to-deposits ratio near 99%, indicating a predominantly deposit-financed balance sheet. Operating profit over risk-weighted assets averaged 3.2%, broadly comparable to that of private commercial banks ([Ratings, 2024](#)).

¹¹Superintendencia Financiera de Colombia (SFC). Available at: <https://www.superfinanciera.gov.co>.

¹²Classified as Type 1 in the SFC registry.

each municipality and remains active thereafter, allowing for comparison of outcomes before and after treatment.

Our main outcome variable, private bank activity, is defined analogously but at the level of each private institution. It equals one if a given private commercial bank has any recorded operation (loan or deposit) in a municipality–quarter, and zero if the bank is inactive there. This construction allows us to observe entry and exit dynamics of individual private banks in response to Banagrario’s expansion.

Socio-demographic and geographic variables at the municipality level are taken from the National Administrative Department of Statistics (DANE) and the Center for Studies on Economic Development (CEDE) at Universidad de los Andes.¹³ These sources provide measures of (i) population size, which we use as a proxy for local market potential and urbanization; (ii) an urban–rural classification¹⁴; and (iii) topographic characteristics, including municipal land area, used to compute population density.

Merging these data with the SFC records yields a balanced bank–municipality–quarter panel that traces the evolution of financial activity across Colombia’s diverse geographic and socio-economic landscape. Table A.1 presents descriptive statistics for the main variables used in the analysis.

4 Geographic Patterns of Bank Presence in Colombia

Patterns of bank activity across Colombia reveal sharply contrasting institutional orientations. Private commercial banks typically concentrate their operations in urban centers with higher income levels, greater population density, and stronger market potential, where profitability prospects are more favorable. By contrast, Banagrario follows a developmental and policy-oriented mandate, maintaining operations in underserved

¹³Available at: <https://economia.uniandes.edu.co/cede>.

¹⁴Following [Departamento Nacional de Planeación \(2015\)](#), municipalities are grouped into four categories: cities and agglomerations, intermediate, rural, and dispersed rural areas. Intermediate municipalities (314) are of regional relevance and have moderate to high population density (25,000–100,000 inhabitants or >10 inhabitants/km²), covering 8.9 percent of the national territory. Rural municipalities (373) have fewer than 25,000 inhabitants and densities between 10 and 100 inhabitants/km², accounting for 19.8 percent of the territory. Dispersed rural municipalities and non-municipalized areas (318) have densities below 50 inhabitants/km² and span 64.9 percent of Colombia’s land area.

and economically marginal municipalities where private participation remains limited. To characterize these differences systematically, we estimate the following specification:

$$Y_{b,m,t} = \beta_0 + \beta_1 Rural_{m,t} + \beta_2 Dispersed\ Rural_{m,t} + \beta_3 Intermediate_{m,t} \quad (1) \\ + \alpha_b + \alpha_t + \delta_{b,t} + \mu_{m,t} + \varepsilon_{b,m,t},$$

where $Y_{b,m,t}$ is a binary indicator equal to one if bank b operates in municipality m during quarter t . Rurality categories follow [Departamento Nacional de Planeación \(2015\)](#), with “Cities and Agglomerates” serving as the omitted category. The model includes quarter fixed effects (α_t), municipality-by-quarter fixed effects ($\mu_{m,t}$), bank fixed effects (α_b), and bank-by-quarter fixed effects ($\delta_{b,t}$) to absorb unobserved time-varying heterogeneity at multiple levels.

The estimates in Table 1 reveal a clear spatial segmentation between Banagrario and private banks. Banagrario’s likelihood of being active rises significantly in less urban areas: relative to cities and agglomerations, its probability of activity is about 5–6 p.p. higher in rural and intermediate municipalities, and roughly 4–5 p.p. higher in dispersed rural areas. Private institutions, by contrast, display the opposite pattern. Their activity probability falls by 13–16 p.p. outside urban centers, underscoring a strong urban bias in private financial provision.

These results illustrate the complementary roles of public and private institutions within Colombia’s banking landscape. Banagrario systematically operates where private banks are least present, rural, sparsely populated, and economically peripheral municipalities, consistent with its developmental mandate. Private banks, instead, cluster in dense, high-income areas where operating costs are lower and market potential is greater.

This baseline contrast is crucial for interpreting the causal analysis that follows. It shows that, *ex ante*, Banagrario and private banks operated in distinct geographic markets. The next section examines whether Banagrario’s entry affects the activity of

Table 1: Geographic Distribution of Bank Activity across Municipality Types

	Banagrario Activity (1)	Private Bank Activity (2)
Rural	0.056*** (0.0068)	-0.156*** (0.0044)
Dispersed Rural	0.047*** (0.0071)	-0.163*** (0.0044)
Intermediate	0.053*** (0.0070)	-0.127*** (0.0046)
Constant	0.542*** (0.0059)	0.167*** (0.0044)
Quarter FE	✓	✓
Municipality $\times$ Quarter FE	✓	✓
Bank FE	✓	✓
Bank $\times$ Quarter FE	✓	✓
Observations	4,083,708	4,083,708
Clusters (Bank–Municipality)	35,822	35,822
Adj. R-squared	0.2085	0.1487

Notes: This table reports estimates from high-dimensional fixed-effects regressions at the bank–municipality–quarter level. The dependent variable equals one if the corresponding bank is active in a given municipality–quarter. Rurality categories follow [Departamento Nacional de Planeación \(2015\)](#), with “Cities and Agglomerates” as the omitted category. All regressions include quarter, municipality-by-quarter, bank, and bank-by-quarter fixed effects. Standard errors, clustered at the bank–municipality level, are reported in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

private banks, while the subsequent section investigates how its expansion into previously unbanked municipalities spurs private sector interest, specifically, whether it encourages private institutions to follow and establish in areas they had previously avoided.

5 Effects of Banagrario on Private Banks’ Activity

5.1 Estimation Strategy

The descriptive evidence in Table 1 shows a sharp spatial segmentation in Colombia’s financial system: Banagrario’s footprint is concentrated in rural and dispersed rural municipalities, whereas private banks cluster overwhelmingly in urban areas. Descriptives alone, however, cannot determine whether the public bank’s presence merely fills gaps left by private intermediaries or actively reshapes these markets. To evaluate whether

Banagrario’s expansion alters private-sector behavior, we move from descriptive patterns to causal inference. Our empirical strategy exploits the staggered timing of Banagrario’s entry across municipalities and estimates its effects on private banking activity using a difference-in-differences (DiD) framework designed to accommodate heterogeneity in both treatment exposure and treatment effects. This allows us to isolate whether the arrival of a public commercial bank catalyzes, crowds out, or leaves unaffected private financial participation in newly served markets.

We first present our baseline, “static” two-way fixed effects (TWFE) specification:

$$Y_{b,m,t} = \alpha_b + \alpha_m + \alpha_t + \beta D_{m,t} + \mathbf{X}'_{m,t} \boldsymbol{\gamma} + \varepsilon_{b,m,t} \quad (2)$$

In this specification, $Y_{b,m,t}$ is a binary variable equal to 1 if private commercial bank b operates in municipality m at time t , and 0 otherwise. The variable $D_{m,t}$ equals 1 from the quarter in which Banagrario first becomes active in municipality m and remains 1 thereafter. The vector $\mathbf{X}'_{m,t}$, includes pre-expansion municipal covariates (measured in 1998). The terms α_b , α_m , and α_t denote bank, municipality, and quarter fixed effects, respectively, which absorb unobserved heterogeneity across banks, locations, and time periods. Standard errors are clustered at the bank–municipality level to account for serial correlation within bank–municipality pairs over time. The coefficient β captures the average effect of Banagrario’s entry on the likelihood that private banks operate in a given municipality, averaging across banks, municipalities, and quarters.

Although informative, TWFE (Equation (2)) is ill-suited for our context for three reasons.

First, Banagrario’s branch placement is not random. Its historical mandate and legacy design imply that it may have targeted municipalities with weaker financial infrastructure or greater socioeconomic need ([Burgess and Pande, 2005](#)). TWFE estimates would then confound the effect of Banagrario’s entry with pre-existing differences in economic trajectories.

Second, treatment effects are likely heterogeneous - across banks, municipalities and over time - owing to variation in market potential, institutional capacity, and the speed

of private sector adjustment.

Third, with staggered adoption and heterogeneous effects, TWFE is known to recover a non-convex, sometimes sign-reversing average of cohort-specific effects (Callaway and Sant’Anna, 2021; de Chaisemartin et al., 2022; Wooldridge, 2021). In this setting, TWFE cannot be interpreted as a consistent estimate of the ATT.

These concerns motivate an estimation designed explicitly for staggered adoption with heterogeneous effects. We rely on the doubly robust difference-in-differences estimator,¹⁵ proposed by Sant’Anna and Zhao (2020) and formalized in Callaway and Sant’Anna (2021)¹⁶. This method is designed for staggered treatment adoption, accommodates treatment effect heterogeneity across cohorts and periods, and yields unbiased estimates of the Average Treatment Effect on the Treated (ATT).

The estimator combines inverse probability weighting (IPW) with an outcome regression adjustment. IPW balances municipalities that receive Banagrario early with those treated later (or not-yet treated) based on pre-entry characteristics and private banking activity; the regression adjustment then absorbs residual differences in covariates. The double robustness property ensures consistency if either the propensity-score model or the outcome-regression model is correctly specified.¹⁷ This design mitigates selection concerns arising from the public bank’s targeting choices and ensures that comparisons occur only among municipalities with comparable exposure windows and pre-treatment

¹⁵Double robustness means that the resulting estimand consistently identifies the ATT if either the propensity score model or the outcome regression model is correctly specified (but not necessarily both). This property combines the strengths of each approach while mitigating their respective weaknesses (Sant’Anna and Zhao, 2020).

¹⁶Formally, the doubly robust DiD estimator is defined as:

$$ATT_{DR}(g, t) = \mathbb{E} \left[\left(\frac{G_g}{\mathbb{E}[G_g]} - \frac{\frac{p_g(X)C}{1-p_g(X)}}{\mathbb{E} \left[\frac{p_g(X)C}{1-p_g(X)} \right]} \right) (Y_t - Y_{g-1} - m_{g,t}(X)) \right].$$

$ATT_{DR}(g, t)$ denotes the ATT for the cohort first treated in period g , evaluated at time t . G_g is an indicator for belonging to the treatment cohort g , $p_g(X)$ is the generalized propensity score conditional on covariates X , C is an indicator for belonging to the control group, and $m_{g,t}(X)$ is the estimated outcome regression for cohort g at time t . The estimator combines inverse probability weighting (IPW) based on $p_g(X)$ with an outcome regression adjustment via $m_{g,t}(X)$. Consistency holds if either the IPW model or the outcome regression model is correctly specified, but not necessarily both.

¹⁷Double robustness implies that identification holds even if one—but not both—of the models is misspecified (Sant’Anna and Zhao, 2020).

characteristics.

Our identification strategy relies on the standard parallel-trends assumption: absent Banagrario’s entry, treated municipalities would have followed similar private-bank trajectories as not-yet-treated municipalities. We assess this assumption using event-study specifications that show treatment dynamics and allow us to verify the absence of differential pre-trends. Post-treatment coefficients then trace how private banking activity evolves as Banagrario becomes established in the municipality.

5.2 Aggregate Effects on Banks Across Municipalities

We begin by examining whether Banagrario’s expansion affected the overall presence of private banks across municipalities. On average, the results indicate a positive effect, indicating that the entry of the public bank did not crowd-out private banking activity.

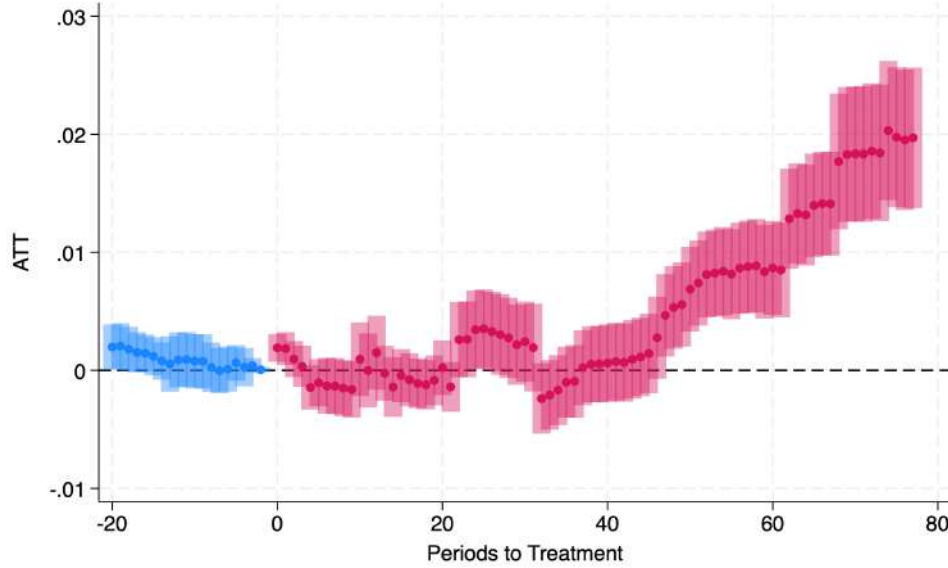
Figure 2 shows event-study DiD estimates of Banagrario’s effect on municipal-level private commercial bank activity. The corresponding average treatment effects (ATT) and pre-trend diagnostics are reported in Table 6. Two key findings emerge.

First, treated and never treated municipalities exhibit nearly identical trends prior to Banagrario’s entry. The pre-treatment coefficients are small and statistically indistinguishable from zero, supporting the parallel trends assumption and lending credibility to the subsequent causal interpretation.

Second, Banagrario’s arrival modestly, but persistently, crowds-in private banks. As reported in Table 6, the average treatment effect implies that the likelihood of private bank activity increases by roughly 0.46 p.p. after Banagrario’s entry.¹⁸ The event-study coefficients indicate that this effect materializes gradually: private banks begin expanding several years after Banagrario enters, with the estimates becoming economically meaningful around eleven years (47 quarters) post-entry. The coefficients remain positive and statistically significant thereafter, reflecting sustained increases in private-sector presence rather than short-lived competitive responses. This dynamic pattern suggests that Banagrario’s presence improves local financial conditions in ways

¹⁸Computed as $(\exp(0.0045394) - 1) \times 100 = 0.464$.

Figure 2: Banagrario Entry - Event Study



Notes. The figure displays staggered DiD event-study estimates using the doubly robust approach of [Callaway and Sant’Anna \(2021\)](#). Dependent variable: private banks activity. Covariates (measured in 1998): population density, rurality index, private bank activity. Identification relies on conditional parallel trends. Dots represent point estimates and vertical lines show 95% confidence intervals. Pre-treatment coefficients are shown in blue and post-treatment effects in red. Standard errors are clustered at the bank-municipality level. The horizontal axis denotes event time relative to Banagrario’s entry, with $t = 0$ marking the quarter of entry. For corresponding ATT estimates and a pre-trend test, see Table 6.

that take time to translate into new private activity, consistent with mechanisms such as information spillovers, improved payment infrastructure, or enhanced perceptions of local creditworthiness.

While the aggregate effect points clearly to crowding-in, one concern is that Banagrario may have expanded into municipalities already on a path toward greater private penetration. To address this, we examine heterogeneity in Section 6 by separating municipalities that were initially unbanked from those already served by private institutions. This allows us to distinguish whether Banagrario followed private trends or actively created new markets. The results rule out the former: Banagrario has no detectable impact in municipalities with four or more incumbent banks, suggesting that the aggregate effect is not driven by more developed areas. Because Banagrario was

Table 2: Banagrario Entry - Single Parameter Estimate

Private Bank Activity	
Average Treatment Effect (ATT)	0.0045*** (0.0013)

Notes: This table reports the aggregated average treatment effect on the treated (ATT), computed as weighted averages of cohort- and period-specific effects, $ATT(g, t)$, following [Callaway and Sant'Anna \(2021\)](#). Estimation uses the doubly robust inverse probability weighting (DR-IPW) approach, with never-treated municipalities as the comparison group. The dependent variable is private bank activity. Covariates (measured in 1998) include population density, the rurality index, and initial private bank activity. Standard errors (in parentheses) are clustered at the bank-municipality level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Joint test of pre-treatment coefficients: $\chi^2(19) = 18.81$, $p = 0.4690$.

created after the liquidation of Caja Agraria, we also consider whether our estimates might capture legacy networks rather than new public entry. Event-study specifications controlling for historical Caja Agraria presence (Figure B.2) yield coefficients almost identical to the baseline (Figure 2), indicating that our findings are not driven by pre-existing branch infrastructure or lingering credit relationships. Finally, our results speak to broader debates on public bank competition. In Brazil, [Fonseca and Matray \(2024\)](#) document modest displacement effects on private bank activity (−2.2 p.p.), while public banks nonetheless contribute to overall credit expansion. Similarly, [Coelho et al. \(2013\)](#) show that public entry in concentrated Brazilian markets does little to expand private participation. In contrast, [Jiménez et al. \(2019\)](#) document strong crowding-in in Spain, where public lending strengthens borrower relationships and stimulates private credit.

Our findings suggest that Colombia aligns more closely with the crowding-in pattern documented in Spain. Banagrario expands the reach of formal banking without crowding out private competitors, consistent with a market-creation dynamic.

6 Banagrario’s Impact on Previously Unbanked Municipalities

Having shown that Banagrario’s presence can stimulate private participation on average, we now examine a more demanding question: can a public bank create entirely new markets? A sizable share of Colombian municipalities remain “banking deserts”, where private institutions, deterred by low profitability, sparse populations, and severe informational frictions, have never operated (Gutierrez et al., 2011). These are precisely the settings in which public banking is most justified. With higher risk tolerance and an explicit developmental mandate, a public bank may act as a market maker rather than a mere gap-filler (Gutierrez and Kliatskova, 2021).

We identify 484 municipalities, out of 1,098 nationwide we can observe, in which Banagrario was the first bank to establish operations during 1996Q3–2023Q2. Each had experienced at least three consecutive years without any bank presence prior to entry, ensuring that Banagrario entered genuinely unbanked markets. We then track the subsequent activity of private institutions to assess whether Banagrario’s arrival activated these dormant markets.¹⁹

Table 3 reports aggregated average treatment effects for private bank activity. Banagrario’s entry increases the probability of subsequent private presence by 0.28 p.p. While the level may appear small, it is economically meaningful: baseline private activity in these locations is essentially zero. The relevant margin is thus not incremental growth but the appearance of private banking in places where entry would otherwise have been extremely unlikely. A shift of 0.28 p.p. reflects the creation of new markets rather than expansion within existing ones.²⁰

Heterogeneity by area type reveals meaningful differences. In rural unbanked municipalities, where operational and informational frictions are most severe, the effect

¹⁹Because private activity is mechanically zero before treatment, we follow Callaway and Sant’Anna (2021) and use not-yet-treated municipalities as the comparison group at each event time. This ensures valid counterfactuals within the staggered adoption design.

²⁰Formally, the ATT compares treated municipalities post-entry to municipalities that have not-yet received Banagrario at the same time. Once treated, municipalities exit the donor pool.

Table 3: Simple Average Treatment Effects by Area Type

	Private Bank Activity
ATT - Unbanked (Overall)	0.0028392*** (0.0003005)
ATT - Rural Unbanked	0.0026546*** (0.0003422)
ATT - Urban Unbanked	0.0059249*** (0.0010578)

Notes: Estimates report aggregated average treatment effects on the treated (ATT), computed as weighted averages of cohort- and period-specific effects $ATT(g, t)$ following [Callaway and Sant’Anna \(2021\)](#). Estimation uses the doubly robust inverse probability weighting (DR-IPW) approach, with not-yet-treated municipalities serving as the comparison group. The dependent variable is private bank activity. Covariates (measured in 1998) include population density, the rurality index, and initial private bank activity. Results are reported separately for rural and urban municipalities. Standard errors (in parentheses) are clustered at the bank–municipality level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

is 0.27 p.p. In urban unbanked municipalities, the effect is larger (0.59 p.p.) consistent with private banks scaling more quickly where underlying conditions (density, formality, infrastructure) better support commercial operations.²¹

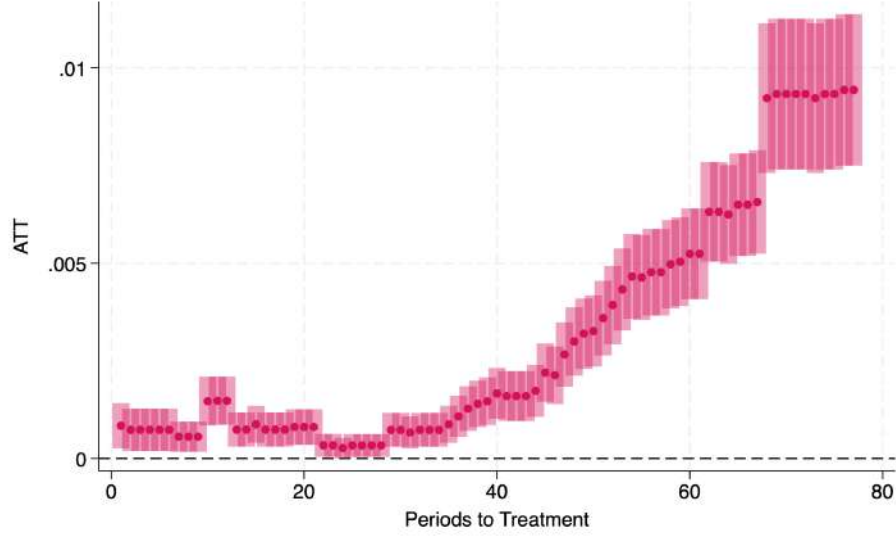
Because long-run averages may mask the timing of adjustment, we examine how the probability of private entry evolves with exposure to Banagrario’s presence. Figure 3 plots event-study coefficients for previously unbanked municipalities. The timing patterns reveal slow but persistent adjustment.

In the pooled sample (Figure 3a), the post-entry coefficients rise gradually and monotonically, with no evidence of mean reversion after entry. The effect continues to accumulate over time, reaching roughly 0.9 p.p. relative to pre-entry levels by around 70 quarters (approximately 17 years). This pattern indicates persistent and cumulative market activation, rather than a transitory adjustment.²² In rural municipalities (Figure 3b), the trajectory is similar but unfolds more slowly. Effects remain close to zero

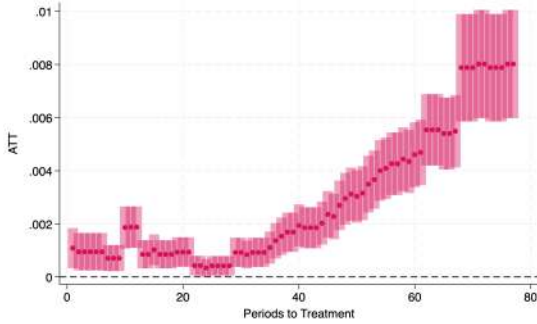
²¹Table B.3 lists Banagrario’s followers. Lulo Bank, a digital-only institution, is the most frequent follower. Excluding Lulo Bank does not materially alter the results. Traditional banks also follow, including Banco Santander, which entered 288 of the 484 previously unbanked municipalities.

²²The fact that the effect grows steadily for roughly seventeen years indicates that private entry is not an immediate reaction to Banagrario’s arrival; rather, it reflects a gradual process of market building, information diffusion, and perceived viability. Once private banks enter, they tend to stay, consistent with persistent market activation.

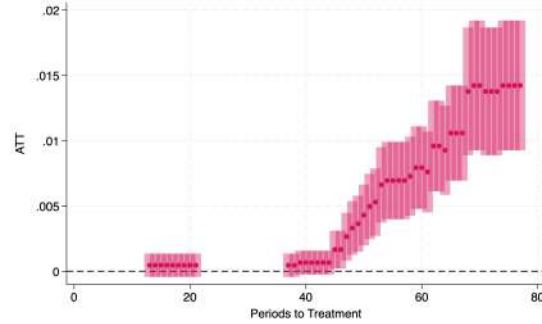
Figure 3: Banagrario Entry in Previously Unbanked Municipalities: Event-Study Estimates



(a) Unbanked Municipalities



(b) Rural Unbanked Municipalities



(c) Urban Unbanked Municipalities

Notes: The figure reports staggered DiD event-study estimates using the doubly robust estimator of [Callaway and Sant'Anna \(2021\)](#). The dependent variable is private bank activity. Covariates (measured in 1998) include population density, rurality index, and private banks' activity. Identification relies on conditional parallel trends. Dots represent point estimates; vertical bars are 95% confidence intervals. Standard errors are clustered at the bank–municipality level. The horizontal axis denotes event time relative to Banagrario's entry, with $t = 0$ marking the quarter of entry.

for the first six to seven years after entry, consistent with the greater informational and operational frictions in dispersed markets, before rising steadily to around 0.8 p.p. fifteen to twenty years after entry. The lagged yet sustained response reflects the time required for private banks to assess viability in more remote locations. In urban municipalities (Figure 3c), effects emerge later, becoming significant only after roughly 20 quarters (around eleven years), but ultimately reach larger magnitudes, up to 1.4 p.p. by the end of the observation window. This indicates that once Banagrario establishes a foothold in more commercially dense settings, private banks respond more strongly and more durably.

These delayed responses are consistent with Banagrario acting as a market catalyst that gradually reduces information frictions and signals local creditworthiness. We next examine whether this catalytic effect extends beyond the extensive margin, analyzing its implications for financial deepening and intermediation intensity.

6.1 Effects on Private Banks’ Number, Lending, and Deposits

Market creation along the extensive margin is meaningful only if private institutions expand credit and deposit-taking activity once they enter. We therefore estimate how Banagrario’s arrival affects private banks’ lending volumes, deposits, and the number of operating private institutions, again using the staggered DiD framework of [Callaway and Sant’Anna \(2021\)](#).

Because municipalities treated by Banagrario have zero private credit and deposits prior to entry, we apply the inverse hyperbolic sine (IHS) transformation to all financial volumes.²³ This allows percentage-change interpretations while accommodating zeros.

Table 4 shows sizable increases across all private financial outcomes following Banagrario’s entry. Private deposits rise by roughly 4.7%, and lending increases by 5–6% across commercial, microcredit, and consumer segments.²⁴ The number of private banks in a municipality increases by 7.8%. These estimates should be interpreted as

²³The IHS of X is defined as $\log(X + \sqrt{X^2 + 1})$, approximates X for small values, and is log-like for larger ones. It is defined at zero and preferable to $\log(X + 1)$ in settings with mass points at zero.

²⁴For example, $(\exp(0.0457) - 1) \times 100 \approx 4.7\%$.

Table 4: Simple Average Treatment Effects on Financial Outcomes

	Deposits	Commercial	Microcredits	Consumer	N. of Banks
ATT	0.0457*** (0.0061)	0.0551*** (0.0062)	0.0537*** (0.0061)	0.0474*** (0.0061)	0.0751*** (0.0017)

Notes: Estimates report aggregated average treatment effects on the treated (ATT), computed as weighted averages of cohort- and period-specific effects $ATT(g, t)$ following Callaway and Sant’Anna (2021). Estimation uses the doubly robust inverse probability weighting (DR-IPW) approach, with not-yet treated municipalities serving as the comparison group. The dependent variable is IHS-transformed private banks’ lending, deposits, and number. Covariates (measured in 1998) include population density, the rurality index, and initial private bank activity. Standard errors (in parentheses) are clustered at the bank–municipality level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

post-activation growth: before Banagrario’s arrival, treated municipalities have no private financial activity. Thus, the effects capture how private intermediation evolves once the local market is opened relative to municipalities where this transition has not-yet occurred. In this sense, the estimated effects reflect expansion along the extensive and early intensive margins: municipalities move from having no private presence to experiencing measurable increases in credit volumes, deposit mobilization, and the number of institutions.²⁵

Figure 4 traces the dynamic effects. Across outcomes, the coefficients display similar patterns. Following entry, private deposits and lending begin to increase gradually, with statistically discernible effects appearing after roughly 8–10 quarters of exposure. The effects continue to grow over time. In the long run, private deposits rise by about 9%, and credit volumes by approximately 15–18%, relative to municipalities that have not-yet received Banagrario. The trajectories are close to monotonic across loan categories, indicating that once private financial activity emerges, it accumulates rather than dissipates, consistent with a process of sustained market development. The number of private banks operating in the municipality increases shortly after Banagrario’s entry, stabilizing around 20–25% above the level observed in not-yet-treated municipalities after roughly fifteen years.

This persistence reinforces the interpretation that Banagrario’s entry does not merely accompany private expansion; it helps build conditions for private intermediation that

²⁵Thus, the percentage increases do not represent “growth from zero,” but the growth rate once the market becomes active.

strengthen over time.

The pattern documented here is consistent with evidence from Spain, where [Jiménez et al. \(2019\)](#) show that public credit supply not only increased the likelihood of private-bank lending to beneficiary firms but also expanded credit volumes from previously uninvolved banks, thereby ruling out “zombie lending” and improving maturity structures. Firms receiving public loans were 32 p.p. more likely to obtain new private loans and experienced a 30% increase in private credit volumes relative to comparable firms without public support. Our findings also relate to, but diverge from, [Fonseca and Matray \(2024\)](#)’s evidence for Brazil, where financial expansion in unbanked areas was driven almost entirely by public banks, with limited private-sector participation. In contrast, Banagrario’s entry into unbanked Colombian municipalities coincides with a marked and sustained rise in private credit and deposits. Whereas Brazil’s state banks largely substituted for private provision, Banagrario appears to have facilitated it, acting as a first mover that reduced informational and infrastructural frictions and enabled coexistence with private intermediaries.

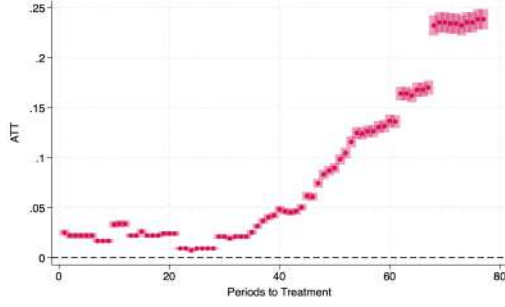
Overall, Banagrario’s entry catalyzes private-sector expansion along both the extensive and intensive margins. Whether this expansion translates into broader financial inclusion, particularly across risk segments, is the focus of the next section.

6.1.1 Impact Across Loan Quality Types

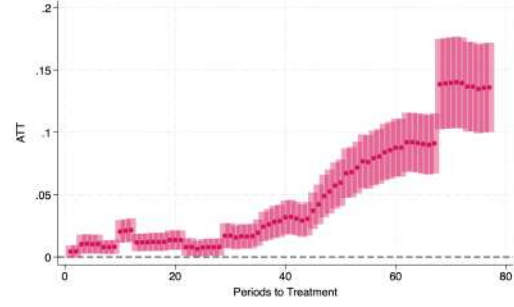
We next examine whether private institutions entering newly activated markets “cherry-pick” safer borrowers. If private banks primarily refinance low-risk clients screened by Banagrario, the public bank would bear the riskiest part of the portfolio. A different concern is that Banagrario itself might retain safer borrowers while private lenders specialize in riskier segments, implying crowding-out along the intensive margin.

To distinguish between these mechanisms, we analyze lending responses by loan quality classification. Using supervisory data from the SFC, which categorizes loans into five regulatory grades (A–E), we construct two groups: AB (higher-quality loans) and CDE (riskier credit). Loan-quality data are available quarterly from 2005Q1–2023Q3. We

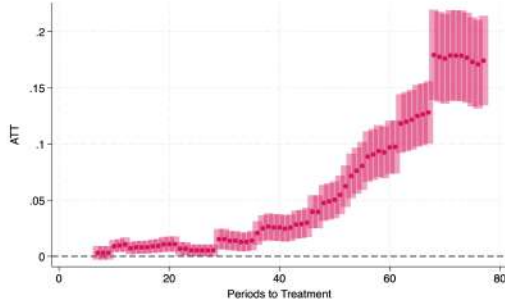
Figure 4: Banagrario Impact - Unbanked Municipalities - Event Study



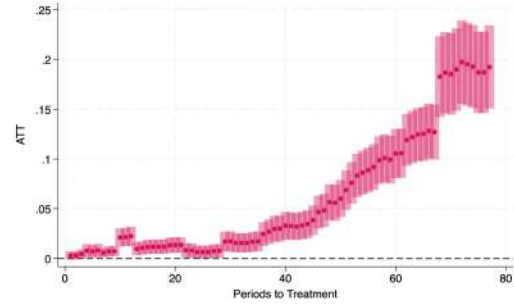
(a) Number of Private Banks



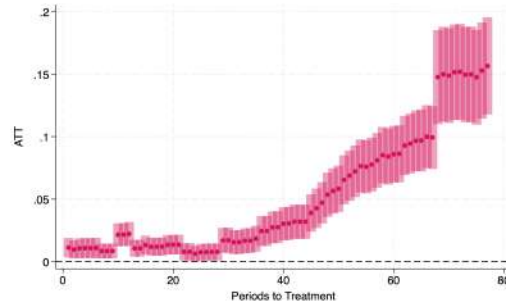
(b) Deposits



(c) Microcredits



(d) Commercial Credit



(e) Consumer Credit

Notes: The figures display DiD event-study estimates using the doubly robust approach of [Callaway and Sant'Anna \(2021\)](#). Dependent variable refers to IHS amounts relative to private banks. Covariates (measured in 1998): population density, rurality index, private banks activity. Dots represent point estimates and vertical lines 95% confidence intervals. Standard errors are clustered at the bank-municipality level. The horizontal axis denotes event time relative to Banagrario's entry, with $t = 0$ marking the year of entry.

estimate heterogeneous treatment effects for each loan type and quality segment.

Table 5: Average Treatment Effects by Credit Type and Quality Segment

	Microcredit		Commercial		Consumer	
	AB	CDE	AB	CDE	AB	CDE
ATT	0.0606*** (0.0068)	0.0479*** (0.0055)	0.0664*** (0.0075)	0.0421*** (0.0056)	0.0563*** (0.0073)	0.0452*** (0.0060)

Notes: Estimates report aggregated average treatment effects on the treated (ATT), calculated as weighted averages of cohort- and period-specific effects $ATT(g, t)$ following [Callaway and Sant’Anna \(2021\)](#). Estimation employs the doubly robust inverse probability weighting (DR-IPW) approach, using not-yet-treated municipalities as the comparison group. The dependent variable is the IHS-transformed volume of private bank lending. Each loan type is classified as either AB (higher-quality) or CDE (lower-quality) credit. Covariates (measured in 1998) include population density, the rurality index, and initial private bank activity. Standard errors, reported in parentheses, are clustered at the bank–municipality level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 5 reports the long-run average treatment effects on the composition of private credit, comparing municipalities after Banagrario’s entry to those that have not-yet been treated. Private lending rises between 4–7%, with somewhat stronger responses in the AB-rated category. However, lending to riskier CDE borrowers also increases materially. The presence of positive CDE effects, rather than a flat or negative response, is inconsistent with pure cherry-picking. The event-study estimates in Figure A.1 reveal similar dynamic patterns across credit types. Two features stand out. First, both AB and CDE lending grow gradually and persistently, mirroring the long-run expansion seen on the extensive margin. Second, riskier CDE lending responds with a short lag, AB portfolios expand first and more strongly, while CDE portfolios become significant around 10–15 quarters after entry and stabilize at 13–15% long-run increases relative to not-yet-treated municipalities. This risk-sensitive gradient is consistent with standard models of borrower screening and information acquisition: safer borrowers are easier to evaluate and enter the market earlier, but riskier segments expand as local information accumulates, repayment histories form, and lender-borrower relationships deepen. Importantly, the CDE response is positive, sustained, and economically meaningful, contradicting the view that private banks restrict lending to only the safest borrowers. Instead, markets activated by Banagrario appear to mature over time, with private lenders gradually extending credit down the risk

distribution.

These patterns support two complementary mechanisms. First, private banks initially target safer borrowers and gradually expand lending to riskier clients as Banagrario reduces informational frictions. This is consistent with Colombia’s unified credit bureau system, which records Banagrario’s lending behavior and makes repayment histories visible to all intermediaries.²⁶ Second, some of the observed growth in CDE lending may reflect portfolio reclassification rather than deliberate movement into riskier segments. Loans graded as A–B at origination can migrate to lower categories as borrower quality becomes observable over time. These two channels have different implications for long-run market viability. To distinguish between them, we next examine how Banagrario’s entry affects the composition of private portfolios, specifically, how the share of CDE loans evolves within total private lending. This allows us to assess whether the markets activated by Banagrario evolve into sustainable credit environments or generate risk concentrations that may threaten long-run intermediation.

6.1.2 Portfolio Quality Composition

To assess whether the expansion of private credit following Banagrario’s entry reflects genuine market deepening or increased exposure to credit risk, we examine how the composition of private loan portfolios evolves. Specifically, we track the shares of high-quality (AB-rated) and lower-quality (CDE-rated) loans within total private credit. These ratios distinguish broad-based financial expansion - where total lending grows without disproportionately increasing risk-from risk-shifting, in which lower-quality lending rises faster than overall portfolio growth. Figure 5 plots event-study estimates tracing the evolution of portfolio composition after Banagrario enters previously unbanked municipalities. Each coefficient compares municipalities exposed to Banagrario for e quarters with municipalities not-yet treated at the same event time, ensuring that the dynamics reflect how portfolio composition evolves after market activation rather than

²⁶Colombia’s 2008 Habeas Data Law created a unified credit bureau system. Banagrario’s lending generates verifiable repayment records observable to private banks, consistent with information spillovers documented in [Bos et al. \(2017\)](#).

cross-sectional differences in underlying development.²⁷

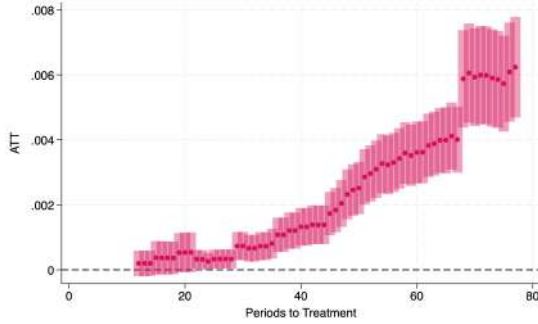
Two patterns stand out clearly from Figure 5. First, both high-quality (AB) and lower-quality (CDE) shares increase gradually over time, with no corresponding decline in the AB segment. The parallel rise of AB and CDE shares, combined with the strong expansion in total private lending documented in Figures 4 and A.1, implies that the growth in riskier credit does not crowd out safer lending. Second, the increases in CDE shares are modest relative to total credit growth, and there is no indication of a material worsening in the overall risk profile of private portfolios. The level trajectories of AB shares illustrate this stability.²⁸ Overall, the expansion in CDE lending occurs alongside, not at the expense of, high-quality lending. This indicates controlled broadening of access, not systematic erosion of portfolio quality.

These patterns yield two key insights. First, the growth in CDE lending is not driven by deterioration of existing portfolios. The simultaneous rise in AB and CDE volumes, together with stable or gradually declining AB shares, is consistent with new origination to borrowers previously excluded from formal credit markets. Private banks are not simply relabeling or downgrading pre-existing loans; they are extending credit to new, riskier borrowers as local information improves. Second, private institutions expand across the risk distribution in a manner consistent with standard portfolio management. The gradual increase in CDE lending reflects a progressive deepening of the feasible credit frontier—rather than a shift toward riskier composition per se. Banagrario’s presence appears to relax information frictions, create verifiable repayment histories, and improve local screening, allowing private lenders to assess and price risk more accurately. In short, Banagrario’s entry does not induce risk-taking at the expense of portfolio quality. Instead, it supports simultaneous growth in high- and low-quality lending, consistent with sustainable market development rather than risk migration.

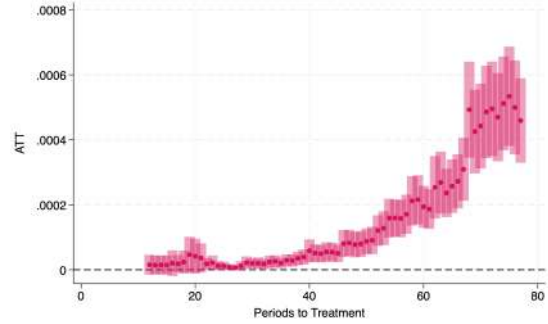
²⁷Municipalities exit the comparison group once treated, following the staggered DiD framework of [Callaway and Sant’Anna \(2021\)](#).

²⁸Consumer credit: AB share remains near 95% through 2015 and stabilizes around 93% by 2021, consistently above Banagrario’s share; Commercial credit: AB share declines only moderately, from 98% (2005) to 91% (2021), remaining substantially higher than Banagrario’s; Microcredit: AB share falls from 97% (2005) to 87% (2021), closely tracking Banagrario but without evidence of deterioration associated with the public bank’s entry

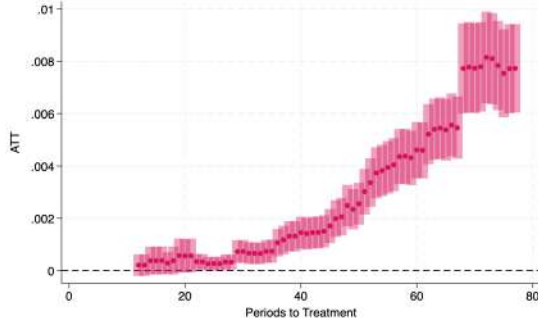
Figure 5: Evolution of Portfolio Composition by Credit Type and Loan Quality (AB and CDE Shares)



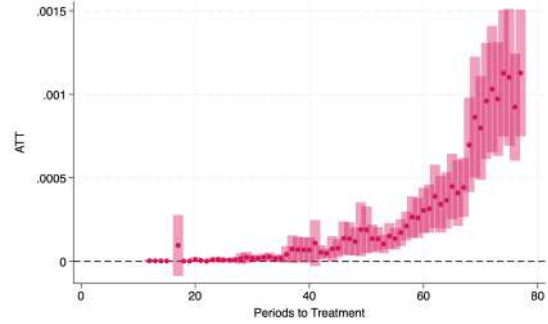
(a) AB Consumer / Total Consumer



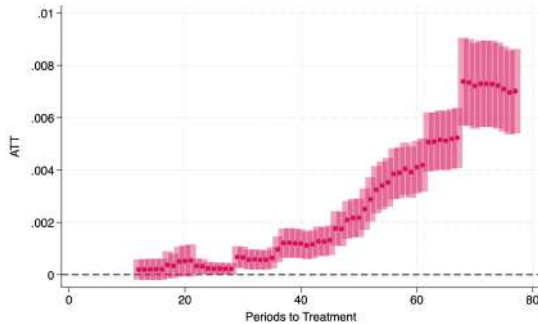
(b) CDE Consumer / Total Consumer



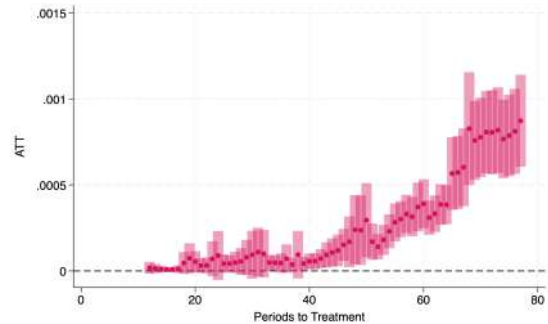
(c) AB Commercial / Total Commercial



(d) CDE Commercial / Total Commercial



(e) AB Microcredits / Total Microcredits



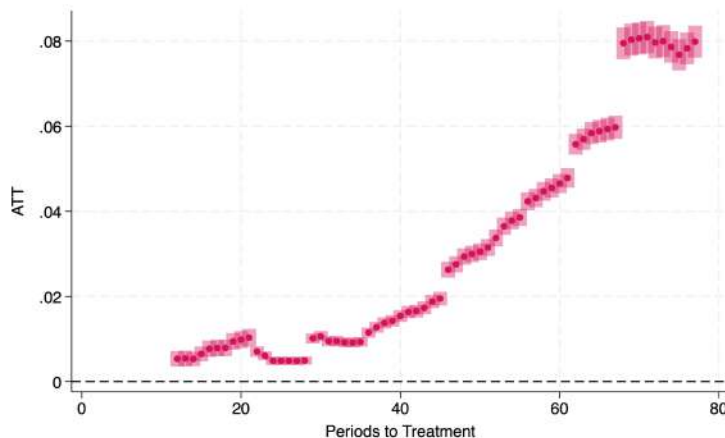
(f) CDE Microcredits / Total Microcredits

Notes: Panels display event-study estimates from a difference-in-differences specification using the doubly robust estimator of [Callaway and Sant'Anna \(2021\)](#). The dependent variable is the ratio of AB- or CDE-quality credit to total credit of the same type for private banks. Covariates (measured in 1998) include population density, rurality index, and initial private-bank activity. Dots represent point estimates and vertical lines denote 95% confidence intervals. Standard errors are clustered at the bank-municipality level. The horizontal axis indicates event time relative to Banagrario's entry, with $t = 0$ marking the year of entry.

6.1.3 Private Banks' Market Share

To assess whether the rise in private lending reflects genuine changes in market structure rather than a mechanical increase in total credit, we examine how Banagrario's entry affects private banks' market share, defined as the ratio of total private lending to total municipal lending, including Banagrario's loans.²⁹

Figure 6: Banagrario Entry in Unbanked Municipalities: Event-Study Estimates



Notes: The figure displays event-study estimates from a difference-in-differences design using the doubly robust approach of [Callaway and Sant'Anna \(2021\)](#). The dependent variable is the private banks' market share in municipalities first served by Banagrario. Covariates (measured in 1998) include population density, a rurality index, and baseline private bank activity. Points denote coefficient estimates; vertical lines are 95% confidence intervals. Standard errors are clustered at the bank-municipality level. The horizontal axis denotes event time relative to Banagrario's entry, with $t = 0$ indicating the year of entry.

Figure 6 plots event-study estimates from the doubly robust DiD framework. The coefficients trace how private banks' share evolves as municipalities remain exposed to Banagrario's presence. The pattern is clear: market share increases gradually and persistently, with no indication of mean reversion or short-lived adjustments. Consistent with this dynamic trajectory, the long-run ATT in Table 6 indicates that Banagrario's entry raises private banks' market share by about 3 p.p.. This is a sizeable shift in municipalities where Banagrario was the only lender at the time of entry: private banks not only enter and expand their loan volumes, but they also capture a growing fraction of total intermediation over time.

²⁹Market share is total private lending divided by total lending (private + Banagrario).

Taken together, these results show that Banagrario’s presence does more than enable private lending in absolute terms, it rebalances the structure of local credit markets. Private intermediaries progressively account for a larger share of total lending in municipalities that lacked any formal banking presence before Banagrario arrived.

Table 6: Banagrario Entry - Single Parameter Estimate

Private Bank Market Share	
Average Treatment Effect (ATT)	0.031*** (0.00078)

Notes: This table reports the aggregated average treatment effect on the treated (ATT), computed as weighted averages of cohort- and period-specific effects, $ATT(g, t)$, following [Callaway and Sant’Anna \(2021\)](#). Estimation uses the doubly robust inverse probability weighting (DR-IPW) approach, with not-yet treated municipalities as the comparison group. The dependent variable is private banks market-share. Covariates (measured in 1998) include population density, the rurality index, and initial private bank activity. Standard errors (in parentheses) are clustered at the bank–municipality level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

This pattern suggests that private institutions scale their operations by leveraging the information, borrower track records, and reputational spillovers generated by Banagrario’s early presence. While borrower-level substitution cannot be fully ruled out, a question that would require microdata beyond the scope of this study, the aggregate evidence aligns most closely with market creation rather than client displacement. Overall, Banagrario acts as a first mover that transforms previously unbanked municipalities into viable credit markets. Private banks subsequently expand within these markets at a pace that shifts the composition of lending toward private intermediation. This mechanism echoes the emerging view that public banks can serve as market coordinators, reducing early-stage frictions, establishing baseline infrastructure, and crowding-in private credit-rather than competing with private intermediaries ([Burgess and Pande, 2005](#); [Jiménez et al., 2019](#); [Fonseca and Matray, 2024](#)).

7 Discussion

The evidence presented in this paper points to a structural and persistent reshaping of local financial markets, rather than to a transitory, policy-induced shock associated with the entry of public banks into new markets. The fact that deposits, loan volumes across credit types, the number of active private institutions, and private banks' market share all rise steadily after Banagrario's entry, and continue to do so for nearly two decades, suggests that the state-led expansion pulled previously excluded municipalities into the formal financial system. The pattern is consistent with Banagrario acting as a market pioneer: lowering entry barriers, mitigating information asymmetries, and establishing the institutional preconditions under which private intermediaries can later enter and scale. The durability of these effects rules out interpretations based on short-lived liquidity injections or transitory subsidized lending. Policies relying on such mechanisms often generate boom–bust dynamics, in which credit volumes expand rapidly but subsequently contract as subsidies are withdrawn, borrower risks materialize, and the accumulating costs of these strategies undermine institutional sustainability (Kane, 1984). In contrast, the trajectories observed here exhibit steady accumulation, with no sign of mean reversion even twenty years after entry. This underscores that financial market formation is a long-horizon process. The gradual build-up of information, trust, and borrower histories implies that short-run evaluations of public banking interventions will systematically miss their core effects.

While these findings highlight the effectiveness of Banagrario's expansion in catalyzing private intermediation, they do not imply that the policy was costless or universally efficient. Establishing and maintaining branch infrastructure in sparsely populated or remote municipalities likely required substantial fixed and recurrent expenditures. A full welfare assessment would require detailed data on operational costs, implicit subsidies, and the opportunity cost of public funds. Such data are not currently available. Still, the longevity and scale of private entry suggest that the initial public investment generated enduring informational and relational externalities that private banks later leveraged. Banagrario's role resembles sequential market building: the public bank absorbs

early-stage uncertainty, produces verifiable repayment records, and reduces screening and monitoring costs. Private intermediaries enter once market opacity diminishes and expected profitability improves.

Why did the Colombian public bank spur, rather than stifle, private sector banking? The institutional context points to several mechanisms. Banagrario predominantly entered financially underserved municipalities—locations that were often too small or too risky for commercial banks to serve efficiently on their own. In these areas, the public bank likely filled a critical void by providing basic banking infrastructure (e.g. payments, savings accounts, and credit). Such development may have made these markets more attractive to private banks over time (for instance, by demonstrating new client demand or by improving borrowers’ credit histories). Additionally, Banagrario operates under a public service mandate that tempers a purely profit-maximizing strategy, leading its lending to focus on small farmers and social programs—segments that private lenders have often neglected. Our results suggest this differentiation allowed room for private banks to expand lending once the overall financial ecosystem in the municipality improved. The Colombian case thus illustrates how a public bank can act as a market maker in thin credit markets, jump-starting financial intermediation without displacing private institutions and, instead, encouraging their subsequent entry. Although implemented in a different institutional context, this strategy can be viewed as an early example of the type of public–private collaboration, often framed as public–private partnerships (PPPs), that is now widely regarded as a successful approach in modern development banking ([Xu et al., 2020](#)).

Whether these results generalize to other contexts is less clear. The effectiveness of state-led financial expansion depends critically on institutional design and the nature of the market failures being targeted. Banagrario operates as a regulated public commercial bank with a dual commercial–development mandate. Its ability to crowd in private lenders appears to hinge on this hybrid structure: committed enough to reach underserved markets, yet disciplined enough to generate credit relationships that private institutions view as credible inputs. Other models of public banking, fully developmental, retail-oriented

public banks, may not produce similar crowding-in dynamics and could instead entrench dependence or distort credit allocation.

The findings therefore should not be interpreted as evidence that public banking is a universal or unconditional solution to financial exclusion. Rather, they point to a more nuanced conclusion: when institutional design is aligned with the frictions being addressed, and when public banks operate under clear mandates and competitive discipline, state-led expansion can shift the feasibility frontier for private intermediation. Matching the structure of the public intermediary to the specific market failures at hand is essential for ensuring that public presence complements rather than substitutes for private initiative.

8 Conclusion

This paper provides, to our knowledge, the first causal evidence on how a public commercial bank shapes the private banks activity and entry decision at the local level. Using a bank–municipality–quarter panel and a heterogeneity-robust staggered DiD framework, we exploit the nationwide expansion of Banagrario over more than two decades. The results reveal a clear and persistent crowding-in dynamic. When looking across all municipalities, Banagrario’s entry does not crowd-out private banks in terms of activity. Furthermore, in municipalities that previously lacked any formal financial presence, Banagrario’s arrival as the first mover consistently triggers the entry and expansion of private institutions into markets they had long overlooked. These positive effects appear across multiple outcomes, including deposits, lending (commercial, microcredit, and consumer), and the number of private banks active in the municipality, and strengthen over time. Importantly, the growth of private credit is not restricted to safer borrower segments. Although private banks expand along both higher- and lower-quality loan categories, the expansion is dominated by higher-quality lending. Consequently, the aggregate risk profile of private bank portfolios remains stable despite broader risk exposure. Taken together, these findings speak directly to broader debates on the role of public banks in modern financial systems. At a time when renewed attention is being paid to the role of public–private

complementarities in addressing market failures and enhancing the developmental impact of finance, our findings show that public commercial banks can function as effective market pioneers. By entering underserved municipalities first, they stimulate private sector participation and expand the depth and reach of local financial markets.

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A Appendix

A.1 Tables

Table A.1: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>Panel A. All Municipalities</i>					
Private bank active	4,083,708	0.0376	0.1903	0	1
Banagrario active	4,083,708	0.5884	0.4921	0	1
Rural	4,083,708	0.3350	0.4720	0	1
Dispersed rural	4,083,708	0.2490	0.4324	0	1
Intermediate	4,083,708	0.2933	0.4553	0	1
Cities and agglomerates	4,083,708	0.1124	0.3159	0	1
Rurality index (1998)	3,969,936	0.6026	0.2340	0.003	1
Population density (1998)	3,226,405	138.37	578.25	0	12,347.35
Private bank active (1998)	4,083,708	0.0243	0.1541	0	1
<i>Panel B. Unbanked Municipalities</i>					
Private bank active	1,859,910	0.0062	0.0787	0	1
Private institutions (IHS)	1,859,910	0.1561	0.4216	0	2.78
Microcredit AB (IHS)	1,859,910	0.4422	3.111	0	24.88
Microcredit CDE (IHS)	1,859,910	0.3714	2.675	0	23.43
Consumer AB (IHS)	1,859,910	0.3804	2.722	0	25.83
Consumer CDE (IHS)	1,859,910	0.2254	1.966	0	23.59
Commercial AB (IHS)	1,859,910	0.4174	2.949	0	26.52
Commercial CDE (IHS)	1,859,910	0.3029	2.380	0	25.21
Population density (1998)	1,460,641	45.16	47.13	0	378.79
Rurality index (1998)	1,814,766	0.6848	0.1733	0.085	1
Private bank active (1998)	1,859,910	0	0	0	0
Deposits (IHS)	1,859,910	0.5481	3.263	0	26.94
Commercial lending (IHS)	1,859,910	0.5541	3.293	0	26.53
Consumer lending (IHS)	1,859,910	0.5102	3.047	0	25.91
Microcredit lending (IHS)	1,859,910	0.5385	3.381	0	25.10

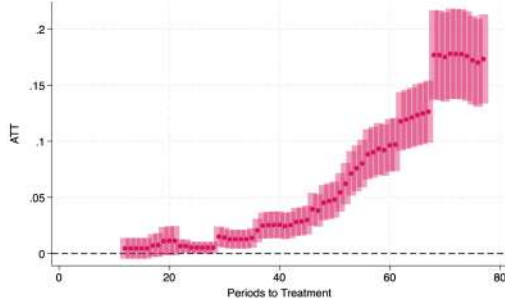
Notes: This table reports descriptive statistics for the main variables used in the analysis. Panel A covers all municipalities, while Panel B focuses on municipalities that were initially unbanked prior to Banagrario's entry. All variables are measured at the bank-municipality-quarter level unless otherwise noted. IHS refers to the inverse hyperbolic sine transformation.

Table A.2: Number of Municipalities and Observations by First Treatment Quarter

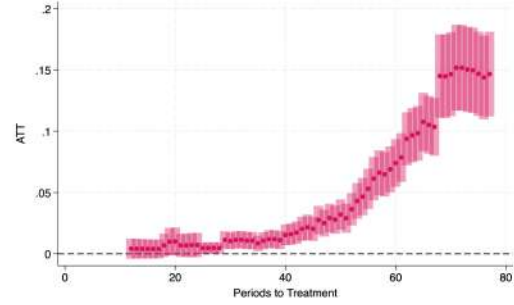
Cohort	Mun.	Obs.	Cohort	Mun.	Obs.
Never treated	306	1,025,544	2011q4	1	3,762
1999q3	488	1,902,888	2012q3	1	3,990
2000q3	15	57,684	2013q1	1	3,876
2001q2	1	3,876	2013q3	1	3,876
2002q1	171	647,748	2013q4	1	3,990
2002q3	1	3,876	2014q2	1	3,990
2002q4	21	80,598	2014q4	2	7,980
2003q2	1	3,876	2015q1	3	11,514
2003q3	4	15,390	2015q2	1	3,876
2003q4	1	3,876	2016q1	1	3,876
2004q2	2	7,752	2016q2	1	3,876
2004q4	5	19,494	2017q3	3	11,742
2005q1	9	33,858	2017q4	2	7,866
2005q2	6	23,142	2018q1	5	19,380
2005q3	4	15,162	2018q2	2	7,524
2005q4	1	3,762	2018q3	3	11,514
2006q1	1	3,762	2018q4	3	11,628
2006q3	1	3,762	2019q1	2	7,638
2006q4	1	3,876	2019q2	3	11,514
2007q4	4	15,162	2019q4	2	7,866
2008q4	2	7,638	2020q4	1	3,762
2009q1	1	3,762	2021q1	1	3,876
2009q4	2	7,524	2021q3	2	7,638
2010q1	1	3,762	2022q3	2	7,524
2010q4	1	3,762	2022q4	1	3,876
2011q2	1	3,876	2023q1	1	342
Total treated		791			3,058,164
Never treated		306			1,025,544
Overall total		1,097			4,083,708

Notes: “Cohort” is the calendar quarter in which a municipality is first exposed to Banagrario’s entry. “Mun.” is the number of unique municipalities first treated in that quarter (or never treated). “Obs.” is the number of bank-municipality-quarter observations in that cohort/status.

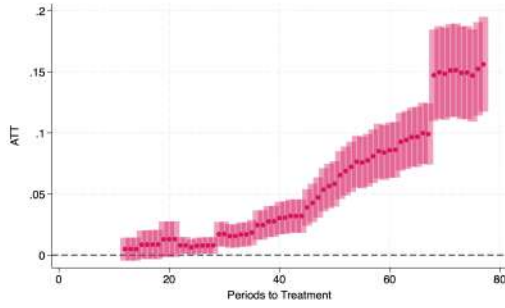
Figure A.1: Banagrario Impact on Unbanked Municipalities: Event-Study Estimates



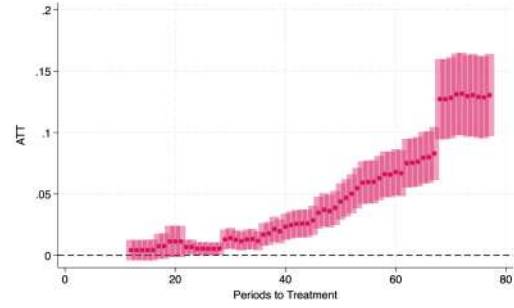
(a) Microcredits AB



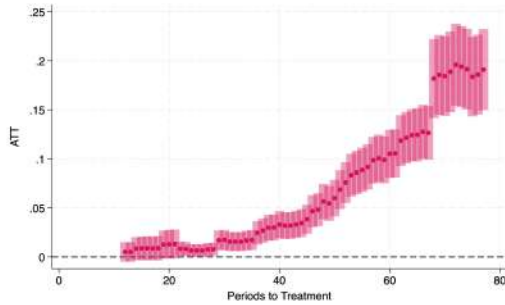
(b) Microcredits CDE



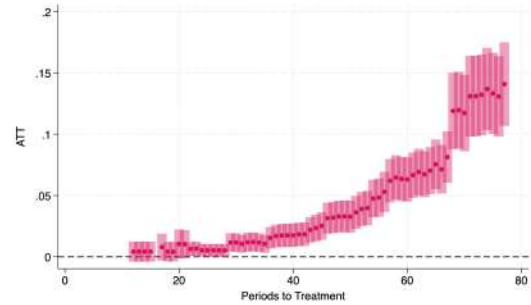
(c) Consumer AB



(d) Consumer CDE



(e) Commercial AB



(f) Commercial CDE

Notes: The panels display event-study estimates from a difference-in-differences design using the doubly robust approach of [Callaway and Sant'Anna \(2021\)](#). The dependent variable is the inverse hyperbolic sine (IHS) of credit amounts relative to private banks. Covariates (measured in 1998) include population density, rurality index, and private bank activity. Dots are point estimates and vertical lines are 95% confidence intervals. Standard errors are clustered at the bank-municipality level. The horizontal axis denotes event time relative to Banagrario's entry, with $t = 0$ indicating the year of entry.

B Online Appendix

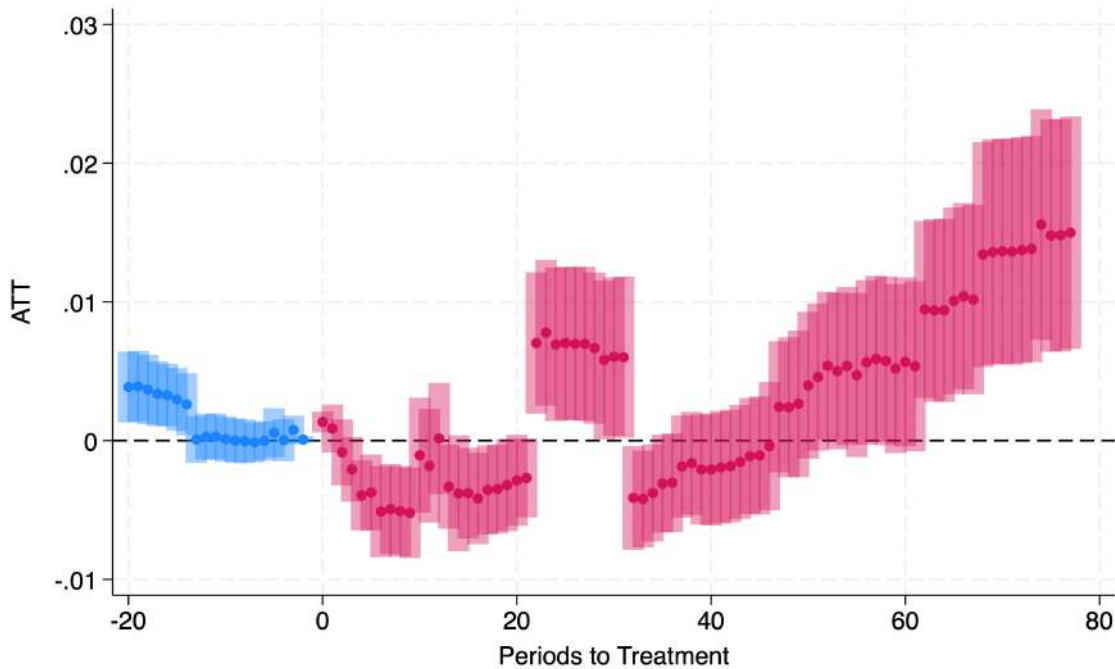
B.1 Additional Results

B.2 Robustness

Previously Caja Agraria–Treated Municipalities

A key concern in interpreting the baseline results is that Banagrario’s observed expansion might partly reflect operations initiated by its predecessor, Caja Agraria, which was liquidated in 1999. To address this, we control explicitly for Caja Agraria’s historical presence across municipalities.

Figure B.2: Banagrario Impact: Event-Study



Notes: The figure reports staggered DiD event-study estimates using the doubly robust estimator of [Callaway and Sant’Anna \(2021\)](#). Dependent variable: private bank activity. Covariates (measured in 1998): population density, rurality index, and private bank activity, while we also control for the presence of Caja Agraria as of 1999 to account for preexisting public banking infrastructure. Identification relies on conditional parallel trends. Vertical bars are 95% confidence intervals. Standard errors are clustered at the bank-municipality level. The horizontal axis denotes event time relative to Banagrario’s entry, with $t = 0$ marking the year of entry.

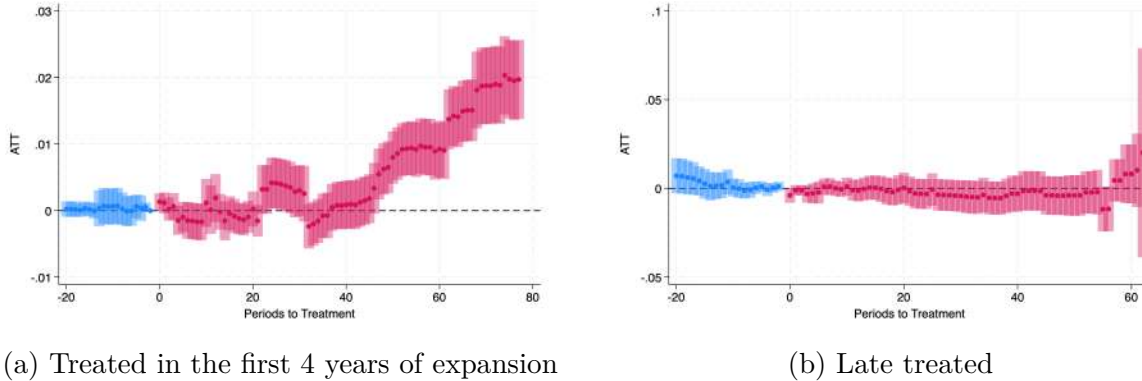
Figure B.2 presents the corresponding event-study estimates. The dynamics closely

mirror those in Figure 2, indicating that controlling for Caja Agraria’s earlier footprint does not materially alter the results.

B.2.1 Early vs. Late Treated Municipalities

As an additional robustness exercise, we test whether Banagrario’s effects are driven primarily by municipalities incorporated early in its expansion or by those treated later. Municipalities are divided into two cohorts: those receiving Banagrario within the first four years of operation and those treated thereafter. The four-year cutoff reflects both institutional and empirical considerations. As shown in Table A.2, Banagrario’s rollout was highly front-loaded, with most entries occurring in the initial years. Distinguishing early from late entrants therefore helps assess whether the observed impacts are concentrated in the most intensive phase of network creation.

Figure B.3: Banagrario Impact: Event-Study



Notes: The figure reports staggered DiD event-study estimates using the doubly robust estimator of [Callaway and Sant’Anna \(2021\)](#). Dependent variable: private bank activity. Covariates (measured in 1998): population density, rurality index, and number of private bank branches. Identification relies on conditional parallel trends. Results are shown separately for rural and urban municipalities. Dots represent point estimates; vertical bars are 95% confidence intervals. Standard errors are clustered at the bank-municipality level. The horizontal axis denotes event time relative to Banagrario’s entry, with $t = 0$ marking the year of entry.

Figure B.3 reports the event-study estimates by cohort. Panel (a) shows results for municipalities treated within the first four years, while Panel (b) displays those incorporated later. For early-treated municipalities, the response is positive but gradual: coefficients remain close to zero for roughly 30–40 quarters after entry before rising steadily

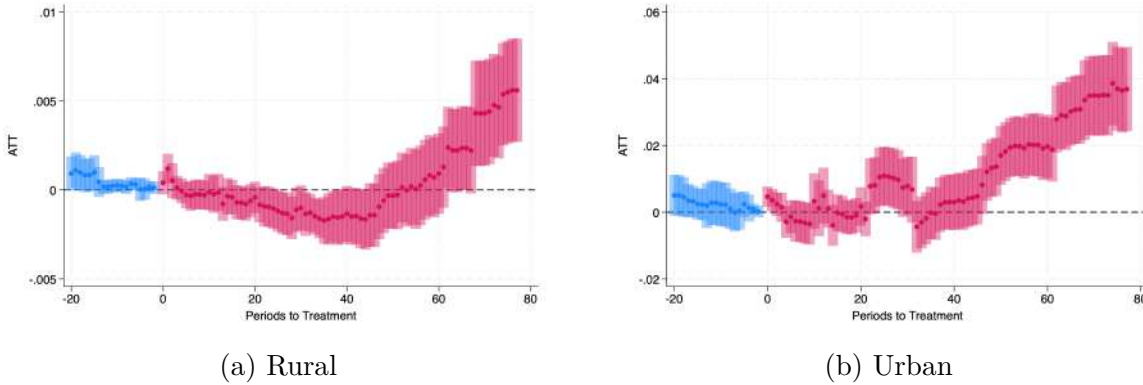
to economically meaningful levels. By 60–80 quarters post-treatment, the estimated effect on private bank activity is clearly positive and continues to strengthen. By contrast, in municipalities where Banagrario entered later, the estimated effects remain close to zero throughout the post-treatment window. Apart from some noise at the endpoints, driven by limited post-treatment observations for the most recent cohorts, there is little evidence of systematic crowding-in among late entrants. Results indicate that Banagrario’s expansion had its strongest and most persistent effects in municipalities reached early in its rollout. Notably, the trajectory in Panel (a) closely mirrors the patterns observed in the full sample event-study (Figure 2).

B.2.2 Banagrario Entry in Rural versus Urban Municipalities

Having established that Banagrario’s effects unfold gradually and vary by entry timing, we next assess whether they differ across local market environments. The rationale for public banking is strongest where market failures are most severe—particularly in rural areas, where high transaction costs and asymmetric information constrain access to finance for small and first-time borrowers ([Gutierrez et al., 2011](#)). In Colombia, these frictions remain pronounced, private banks have historically offered products ill-suited to rural production structures ([World Bank, 2003](#)), and large segments of the rural economy remain excluded despite recent inclusion gains ([World Bank, 2023](#)).

Figure B.4 reports event-study estimates for rural and urban municipalities. Pre-treatment coefficients are close to zero in both panels, indicating parallel trends between treated and control municipalities. Following Banagrario’s entry, adjustment paths diverge markedly in both timing and magnitude. In rural areas (Panel a), estimated effects are small or slightly negative for nearly a decade, suggesting limited immediate spillovers and potential short-run displacement. Around sixty quarters post-entry (roughly fifteen years), coefficients turn positive and statistically significant, reaching about 0.5 p.p., a delayed but persistent crowding-in pattern consistent with gradual market creation. In urban municipalities (Panel b), the response is considerably stronger. While effects remain modest during the first decade, a sharp and sustained increase emerges thereafter,

Figure B.4: Banagrario Entry: Event-Study



Notes: The figure reports staggered DiD event-study estimates using the doubly robust estimator of [Callaway and Sant'Anna \(2021\)](#). Dependent variable: private bank activity. Covariates (measured in 1998): population density, rurality index, and private banks' activity. Identification relies on conditional parallel trends. Results are shown separately for rural and urban municipalities. Dots represent point estimates; vertical bars are 95% confidence intervals. Standard errors are clustered at the bank-municipality level. The horizontal axis denotes event time relative to Banagrario's entry, with $t = 0$ marking the year of entry.

with impacts rising between 2 and 4 p.p..

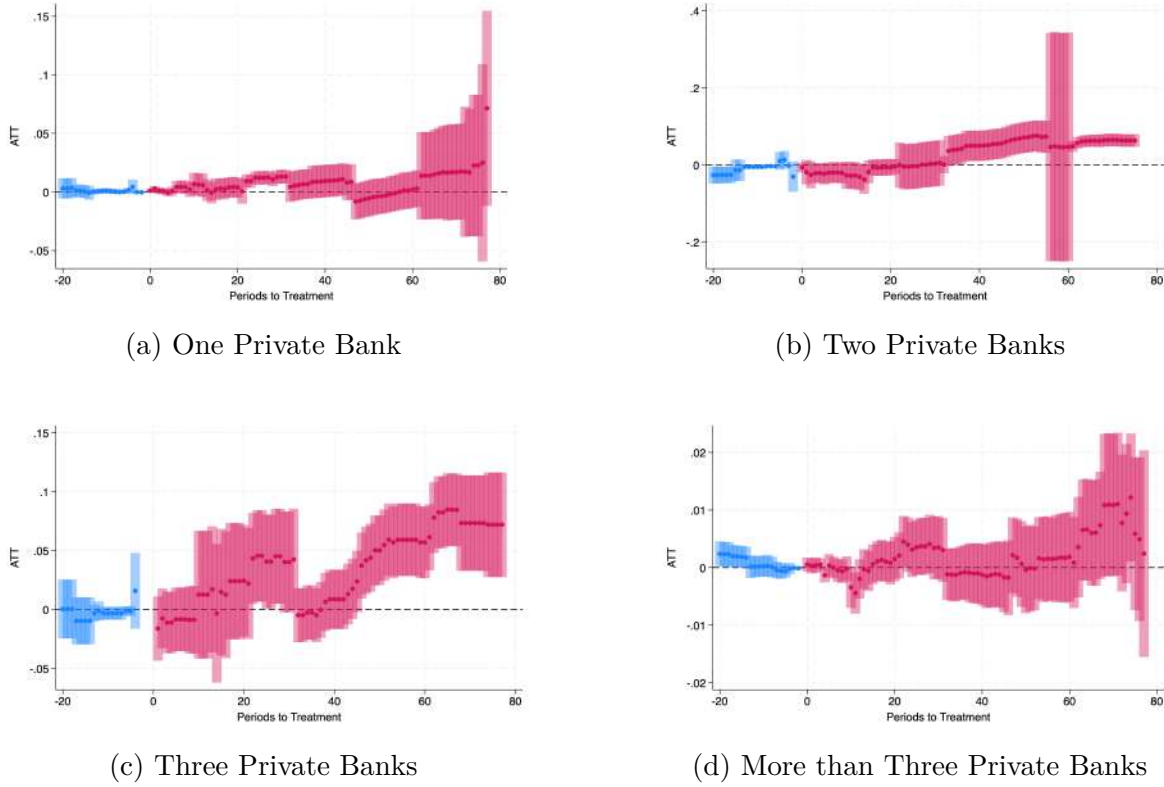
Banagrario's presence appears to have reinforced private activity rather than displaced it, consistent with a crowding-in mechanism driven by enhanced competition, improved information flows, and greater market confidence. The contrast between urban and rural trajectories underscores the structural constraints private banks face when lending in previously unbanked, rural markets.

B.2.3 Impact on Municipalities Initially Served by Private Banks

A potential concern is that Banagrario's effects may simply reflect expansion into municipalities already characterized by strong private bank presence. To assess whether its impact extends beyond previously unbanked areas, we examine how Banagrario's entry affected municipalities that initially hosted private institutions. This distinction helps clarify whether the public bank merely filled financial gaps or also strengthened competition and intermediation in markets already served by private institutions. We group municipalities by their initial market structure, those with one, two, three, or more incumbent private banks, and estimate separate event-study using the [Callaway and](#)

[Sant’Anna \(2021\)](#) framework. This approach identifies how Banagrario’s entry interacted with different levels of local financial development.

Figure B.5: Impact of Banagrario’s Entry in Municipalities Initially Served by Private Banks



Notes: Each panel displays event-study estimates from a difference-in-differences design using the doubly robust approach of [Callaway and Sant’Anna \(2021\)](#). The sample is restricted to municipalities that, prior to Banagrario’s entry, had one, two, three, or more than three private banks. The dependent variable is private bank activity. Covariates (measured in 1998) include population density, the rurality index, and initial private bank activity. Dots represent point estimates and vertical bars denote 95% confidence intervals. Standard errors are clustered at the bank–municipality level. The horizontal axis denotes event time relative to Banagrario’s entry, with $t = 0$ corresponding to the year of entry.

Results in Figure B.5 show that Banagrario’s entry complements rather than crowds out private finance. In quasi-monopoly markets with a single incumbent, private presence remains broadly unchanged following entry. By contrast, in municipalities with two or three incumbent banks, Banagrario’s arrival is followed by a clear and persistent expansion in private activity, indicating reinforcement rather than substitution. The event-study trajectories display distinct post-entry breaks in trend, inconsistent with

simple continuation of pre-existing dynamics. In more mature markets, those with four or more private institutions (Panel d), no additional effects are detected, consistent with market saturation. Overall, Banagrario's entry reinforces private activity in moderately developed markets, where information frictions and infrastructure constraints remain binding but not prohibitive, while leaving both underdeveloped and mature markets largely unaffected. This heterogeneity sharpens the interpretation of Banagrario's role. Its influence extends beyond expanding access in unbanked areas: by facilitating private expansion in intermediate markets, Banagrario functions as a complementary, rather than substitutive, force in local banking development.

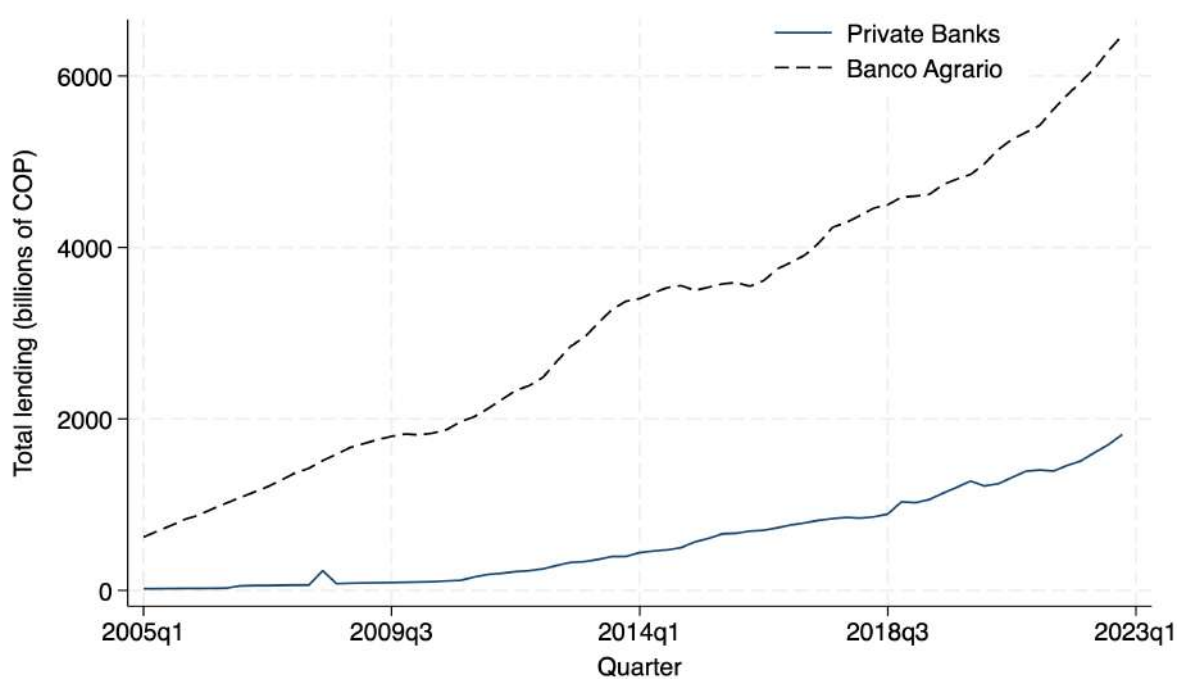
B.3 Figures

Table B.3: Private Banks Following Banagrario into Previously Unbanked Municipalities

Bank	Municipalities	Share
Lulo Bank	449	0.482
Banco Santander	288	0.309
Bancolombia	32	0.034
Bancamía	29	0.031
Banco de Bogotá	28	0.030
Banco Mundo Mujer	27	0.029
Contactar	25	0.027
Davivienda	10	0.011
BBVA	10	0.011
Banco W	7	0.008
Banco Popular	6	0.006
Banco Occidente	5	0.005
Banco AvVillas	4	0.004
MiBanco	4	0.004
Credifinanciera	2	0.002
Coopcentral	1	0.001
Itaú	1	0.001
Pichincha	1	0.001
Scotiabank Colpatria	1	0.001
Caja Social	1	0.001
Crédito	1	0.001

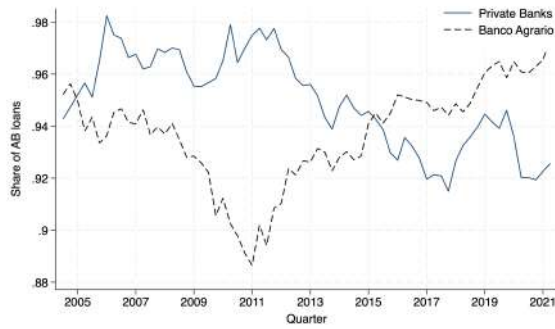
Notes: This table reports private banks that entered municipalities where Banagrario was the first bank in previously unbanked areas. “Municipalities” indicates the number of distinct municipalities in which each bank became active after Banagrario’s entry. “Share” represents the proportion of total follower entries.

Figure B.6: Total Loans Banagrario vs. Private in Unbanked Municipalities

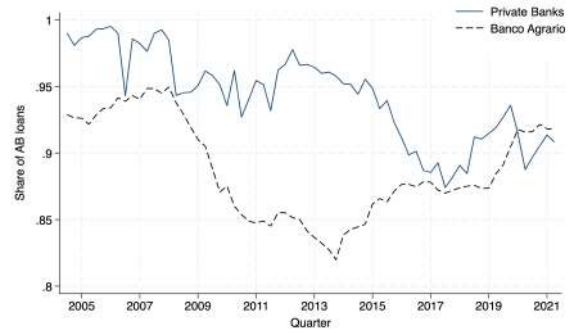


Notes: The figure display the average loan amounts, expressed in billions of Colombian pesos, for Banagrario (dashed line) and private banks (solid line) over time, calculated for municipalities that were initially unbanked.

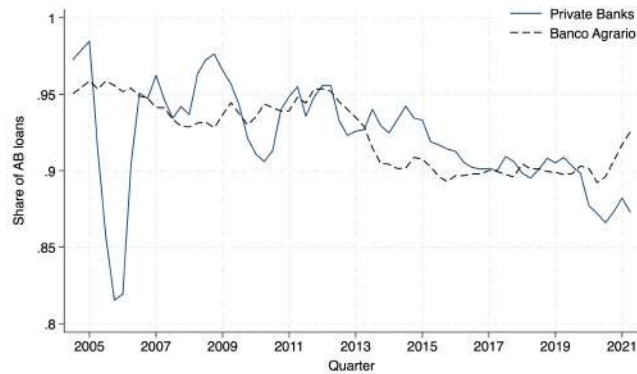
Figure B.7: Evolution of High-Quality (AB) Loan Shares by Credit Type in Previously Unbanked Municipalities



(a) AB share — Consumer



(b) AB share — Commercial



(c) AB share — Microcredits

Notes: The figures show the average share of high-quality (AB-rated) loans in Banagrario's (dashed line) and private banks' (solid line) credit portfolios over time, computed for municipalities that were initially unbanked. Each panel corresponds to a different credit segment.

List of Figures

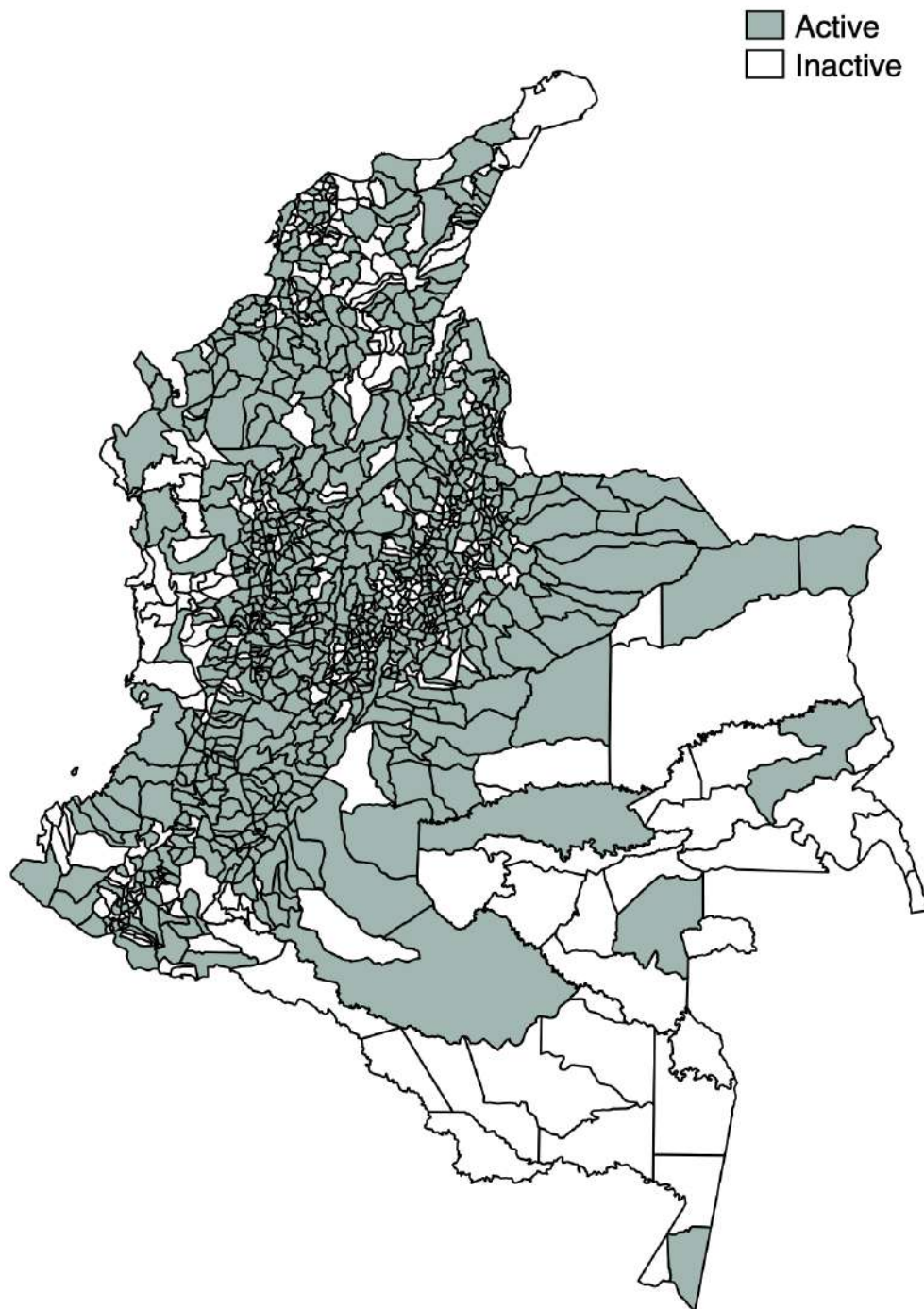
1	Geographic expansion of Banagrario, 1999Q3 vs. 2023Q3.	11
2	Banagrario Entry - Event Study	19
3	Banagrario Entry in Previously Unbanked Municipalities: Event-Study Estimates	23
4	Banagrario Impact - Unbanked Municipalities - Event Study	27
5	Evolution of Portfolio Composition by Credit Type and Loan Quality (AB and CDE Shares)	31
6	Banagrario Entry in Unbanked Municipalities: Event-Study Estimates . .	32
A.1	Banagrario Impact on Unbanked Municipalities: Event-Study Estimates .	46
B.2	Banagrario Impact: Event-Study	47
B.3	Banagrario Impact: Event-Study	48
B.4	Banagrario Entry: Event-Study	50
B.5	Impact of Banagrario's Entry in Municipalities Initially Served by Private Banks	51
B.6	Total Loans Banagrario vs. Private in Unbanked Municipalities	54
B.7	Evolution of High-Quality (AB) Loan Shares by Credit Type in Previously Unbanked Municipalities	55
B.8	Caja Agraria branch presence, Q1 1999 (onset of liquidation)	58

List of Tables

1	Geographic Distribution of Bank Activity across Municipality Types . . .	15
2	Banagrario Entry - Single Parameter Estimate	20
3	Simple Average Treatment Effects by Area Type	22
4	Simple Average Treatment Effects on Financial Outcomes	25
5	Average Treatment Effects by Credit Type and Quality Segment	28
6	Banagrario Entry - Single Parameter Estimate	33
A.1	Descriptive Statistics	44

A.2	Number of Municipalities and Observations by First Treatment Quarter .	45
B.3	Private Banks Following Banagrario into Previously Unbanked Municipalities	53

Figure B.8: Caja Agraria branch presence, Q1 1999 (onset of liquidation)



Notes: Municipalities with an active Caja Agraria branch in 1999Q1, the quarter when the liquidation process began. Figure by the authors.