



# **Internal Markets and M&A Efficiency Gains: Evidence from Bank Branch-level Data**

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## Abstract

We study how firms reallocate internal resources following mergers and acquisitions (M&As), leveraging a novel branch-level administrative dataset that links employee and financial information across the entire network of large banks in Brazil—a large developing economy rarely examined at this level of granularity. The unique richness of the data allows us to trace the reallocation of labor and internal funds across branches after consolidations. We find that M&As significantly expand internal labor and capital markets, enabling banks to strategically reassign human and financial resources toward more productive parts of the organization. This internal restructuring boosts profitability at both acquirer and target branches, even after accounting for local

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market power effects. Gains are especially pronounced in municipalities with deeper internal labor markets, highlighting the role of internal organizational dynamics in driving operational improvements. Our findings underscore the importance of internal markets as a mechanism for efficiency gains following M&As.

## 1 Introduction

M&As can be an important source of productivity gains in the economy. Although synergies are pointed out as one of the leading motives behind these gains, the literature analyzing how synergies materialize is still evolving. Since M&As can also be driven by motives unrelated to efficiency, such as increases in market power, documenting how these gains materialize and in which cases they are larger is crucial to understanding when efficiency might outweigh other motives.

We add to this literature by focusing on efficiency gains that stem from the substantial expansion of internal capital and labor markets that occurs after these transactions. These gains can be particularly sizeable when the firms involved in the operation are large and possess multiple, geographically dispersed establishments, such as retail chains. We document how newly-formed consolidated firms exploit their expanded pool of human and capital resources to redesign their organization, relocate workers and inputs, and boost efficiency.

Documenting the joint role of internal capital and labor markets in the creation of efficiency gains post-consolidation is challenging. First, it requires matched establishment-employee data along with establishment-level financial information to trace capital and

labor movements within the newly-formed firm. Second, it requires metrics of plant-level productivity before and after the consolidation. Finally, as M&As lead to increases in concentration, it is important to rule out that changes in productivity proxies (such as profitability) derived from revenue and expenditure data are attributable to enhanced market power in both input and output markets (Arnold, 2021; De Loecker and Syverson, 2021).

The M&As of large banks in Brazil in the late 2000s provide an ideal setting to overcome these challenges. First, using matched employee-branch data along with branch-level financial information, we are able to track how these firms allocate their funding and human resources across the branch network. Second, we can build branch-level productivity measures before and after consolidations and control for different measures of market power gains. Finally, using pre-M&A ownership information, we classify branches as target or acquirer branches and, despite establishment identifiers changing after a consolidation, we continue to follow branches using their transaction-invariant address. Therefore, we can document heterogeneous effects on the acquirer and target branches and track employment and capital flows from target to acquirer branches and vice-versa.

We focus on consolidations of large private banks that have an extensive branch network and operate in several local markets. A M&A involving institutions with these characteristics has several attractive features. First, a single M&A event leads to different increases in local market shares, depending on the position of the acquirer and target firms before the consolidation. As a result, we can include as controls heterogeneous gains in local market power and reduce concerns that increases in profitability are explained by higher markups in output markets or markdowns in input markets.<sup>1</sup> This strategy would

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<sup>1</sup>If customers value attributes such as the safety of the bank and the size of the branch network, market

not be feasible if the firms that participated in the transactions had only a small number of branches. Second, since banks are large and diversified retail banks, it is reasonable to assume they operate in the same market. If banks were small and specialized in serving particular types of clients or in providing particular services (e.g., [Blickle et al., 2023](#); [Paravisini et al., 2023](#)), this assumption would no longer hold, leading to mismeasurement in our metrics of market power gains.

We show that consolidations lead to a substantial internal reallocation of resources. The restructuring engenders profitability gains at both target and acquirer branches beyond those that result from increases in market power. We employ a stacked difference-in-differences empirical strategy using as controls branches of similar institutions (that is, large private banks) that eventually took part in a consolidation but that operated as separate entities during our sample period. Our approach compares branches within the same municipality, which is our definition of a market. Our within-municipality approach allows us to control for time-varying shocks at the local level, ruling out confounders such as changes in local demand or deterioration of the local economic activity that affects the creditworthiness of borrowers and the performance of existing loans. Moreover, this approach further alleviates concerns that the effects are explained by larger market power, as the local competitors that comprise our control group can act strategically and increase mark-ups in reaction to the M&A.

First, we provide evidence of labor reallocation across the branch network: the number of employees at acquirer branches increases while it decreases at target branches.

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power can increase even in non-overlapping markets, in which there is no increase in *local* market power. However, as banks in our treatment and control groups are similar in terms of size and geographical presence, and were large enough to be perceived as too-big-to-fail even before the M&As, we believe the consolidations in our sample do not lead to a significant competitive edge with respect to these characteristics.

The increase in employment at acquirer branches is due to internal transfers from target branches, not external hiring. Not only does the number of employees increase at acquirer branches, but the skill of the employees also increases, particularly of loan officers, suggesting that banks use M&As to access a scarce source of talent that is crucial to running their activity (Hertzberg et al., 2010; Ouimet and Zarutskie, 2020; Chen et al., 2021).

We then focus on how firms use their internal capital market to reallocate resources. As pointed out by previous research, banks reallocate funds obtained from deposits and other funding instruments across their establishments in response to changes in economic conditions (Campello, 2002; Cremers et al., 2011; Gilje et al., 2016; Bustos et al., 2020; D'Andrea and Limodio, 2024; Aguirregabiria et al., 2025). Moreover, the use of internal capital markets to reallocate resources in response to local shocks is not exclusive to firms in the banking sector (Stein, 1997; Mathews and Robinson, 2008; Boutin et al., 2013). Adding to those findings, we document that the new bank engages in significant reallocation of resources across their branches using their internal capital markets. In particular, the ratio of the stock of lending to the stock of deposits increases sharply at acquirer branches, suggesting that they are funding their lending activity with resources raised at other branches. The increase in this ratio is not driven by a drop in deposits; on the contrary, acquirer branches increase the collection of deposits by 22.4%. Consistent with both labor and funding being reallocated toward the acquirer branches, there is an increase of 37.4% in lending at those branches compared to control branches operating in the same market, suggesting that the consolidated bank jointly uses the internal labor and capital markets to redesign the organization.

Next, we investigate whether this reallocation of human and capital resources is associ-

ated with enhanced operating efficiency. Profits per worker increase at both acquirer and target branches after the consolidation, even after controlling for local increases in market power engendered by the consolidation. The rise in profits per worker in acquirer branches arises from increased lending provision and deposit collection productivity, while in target branches it arises from cost-cutting, as both labor and other costs contract after the consolidation. Furthermore, productivity gains at acquirer and target branches accrue slowly after the M&A, peaking at around four years after the event. As restructuring is a lengthy process while gains from increases in market power can be harvested in a more expedited manner after the M&A, the timing of the effects provides reassuring evidence that the restructuring process plays an essential role in M&A value creation beyond increases in market power.<sup>2</sup>

To shed some light on whether opposite effects on target and acquirer branches offset each other, we create synthetic observations of the consolidated bank prior to the M&A by aggregating target and control branches in a given municipality. We proceed analogously with banks in the control group that eventually merged but that during our sample period were independent firms. We show that lending increases post-consolidation in the consolidated bank, that is, the positive effect we observe at acquirer branches dominates the negative effects observed at target branches. At the same time, the number of employees decreases. These two effects generate an increased level of lending per worker.

Finally, we explore the fact internal labor markets are more fluid when plants are near each other, as transferring a worker to a branch located in the same municipality is less

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<sup>2</sup>Restructuring is a lengthy process due to several factors, including the need for negotiations with workers and unions over labor force adjustments, as well as the gradual implementation of changes in management practices and organizational culture.

costly than transferring a worker to a branch in a distant location (Cestone et al., 2023). Therefore, municipalities with a larger local internal labor market post-consolidation can reap more benefits from labor reallocation than municipalities with only a few workers. Given the extensive geographical presence of banks in our sample, we can explore large heterogeneity in the size of local internal labor markets post-consolidation to test this hypothesis. We show that productivity increases in places with sizeable local internal labor markets are twice as large as those in localities in which the new consolidated banks had a smaller internal labor market. As moving funding across distant branches is less costly than moving workers, we find that the size of local internal capital markets matters less for productivity boosts.

Our paper ties into a literature that inquires into how M&As boost firm value. A branch of the literature focuses on market power gains in output (e.g., Hastings and Gilbert, 2005; Garmaise and Moskowitz, 2006; Dafny et al., 2012; Joaquim et al., 2019) and input markets, particularly labor markets (e.g., Arnold, 2021; Guanziroli, 2023). Other branch focuses on synergy gains. By focusing on direct measures of branch-level productivity and profitability, our work is related to papers that use plant-level data to uncover the sources of efficiency created by M&As.<sup>3</sup> While recent papers focus on labor restructuring post-consolidation, which can come from the elimination of duplicated occupations (e.g., Lee et al., 2018) and internal reallocation, they do not link directly restructuring and productivity gains (Dessaint et al., 2017; Gehrke et al., 2021; Lagaras, 2021; Tate and Yang, 2024). Moreover, they do not analyze how the reallocation of capital complements the realloca-

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<sup>3</sup>See, among others, Braguinsky et al. (2015), Demirer and Karaduman (2024), Li (2013), Macchiavello and Morjaria (2022), Maksimovic and Phillips (2001), Maksimovic et al. (2011), Maksimovic et al. (2013), and Schoar (2002).

tion of the labor force. We explore the richness of our data and document the joint importance of the internal reallocation of human and physical resources, and how it engenders productivity gains. Finally, our results also add to the recent literature on the effects of internal labor and capital markets on firm performance ([Huneus et al., 2021](#); [Cestone et al., 2023](#)). Specifically, we provide evidence that internal markets play an essential role in efficiency gains post-consolidation.

## 2 Empirical and Institutional Setting

### 2.1 The Banking Sector in Brazil and M&A Activity Involving Large Private Banks

We consider M&As of large private banks that took place in the late 2000s. Prior to these M&As, the banking sector in Brazil was already dominated by a small number of private and government-owned banks ([Cortes and Marcondes, 2018](#)). In December 2006, the five largest commercial banks accounted for 57.8% of total assets held by financial institutions, 58.6% of total credit, and 63.8% of total deposits.<sup>4</sup> Government-owned commercial banks were relevant in terms of size. The two largest government-owned commercial banks accounted for 28% of total assets held by financial institutions. The largest banks had an extensive branch network, with most of them having more than 1,000 branches and some of them having more than 4,000 branches.

The banking industry experienced the consolidation of large private banks starting

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<sup>4</sup>We exclude development banks from these calculations.

in 2007. Four private commercial banks, which accounted for 30.8% of the total credit granted by financial institutions in 2006, took part in M&A transactions. The share of total credit granted by the target banks alone was 13.5%. The first transaction happened in 2007 and was the result of an consolidation that involved two parent companies headquartered in other countries. The second occurred in 2008 and involved large national banks headquartered in Brazil. The second transaction was a consolidation that had been negotiated for years and was accelerated by the Lehman Brothers collapse in September 2008.<sup>5</sup> These two M&As sparked increases in concentration measures, which remained stable thereafter (Figure A1 in the Online Appendix). Contrary to large M&As in the US in which the Fed played an important role in the selection of target companies, the Central Bank of Brazil did not incentivize the M&As in our sample; its role was limited to the approval of the deals.

The great financial crisis primarily defined the timing of these consolidations. In Brazil, the main effects of the crisis manifested themselves after the Lehman Brothers bankruptcy and were short-lived in comparison to other countries (De Mello and Garcia, 2012). GDP only fell for two quarters (the last quarter of 2008 and the first quarter of 2009) and then started to grow again (Figure A2 in the Online Appendix). The stock of credit to firms was stable for two quarters and then resumed its growth trajectory. Banks did not fail, in part because of measures taken after the Lehman collapse by the Central Bank to alleviate the lack of liquidity (Mesquita and Torós, 2010). Moreover, large banks – the ones we study – were perceived as too-big-to-fail, and, as a result, the liquidity drought sparked by the

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<sup>5</sup>Other countries also experienced the consolidation of large banks in the aftermath of the Lehman debacle, such as Spain (Montes, 2014) and the US (Financial Crisis Inquiry Commission, 2011). See also the McKinsey report *Strategic M&A in US banking: Creating value in uncertain times* ([link](#)).

crisis was less strict for them (Oliveira et al., 2015).

Table 1 shows characteristics of the M&A episodes considered in our analyses.<sup>6</sup> We focus on large private banks with extensive branch networks and operations in multiple local markets. These characteristics are essential for addressing our research question, as it enables us to account for variations in local market power and study the internal reallocation of resources. To mitigate concerns about selection into consolidation, the control group consists of large private banks that participated in a M&A in 2015 – after the period of our analysis, which ranges from 2004 to 2015. We do not include government-owned banks in our sample because there is ample evidence suggesting their objectives differ significantly from those of private banks in Brazil. (Coelho et al., 2013; Coleman and Feler, 2015; Cortes et al., 2019; Mariani, 2020; Garber et al., 2021). The banks in our sample accounted for 48% of the total credit granted by financial institutions and had a total of 9,727 branches in December 2006 (51% of all bank branches). All banks had a presence in hundreds of municipalities, which is our definition of a local market and follows previous research in our setting (Sanches et al., 2018; Joaquim et al., 2019). Figure 1 depicts the geographical location of the branches. It shows that the banks in our sample had a significant presence in many municipalities throughout the country.

## 2.2 Data

Our analysis relies on micro-data which we draw from a variety of sources. The first is the *Relação Anual de Informações Sociais* (RAIS), an annual employer-employee matched dataset provided by the Brazilian Ministry of Labor. It contains labor data at the establishment

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<sup>6</sup>As we use confidential labor data, we chose not to disclose the names of the banks.

(branch, in the case of banks) level for the universe of firms and workers in the formal sector, covering the totality of banks' employees. It includes information on job position characteristics, such as salary, occupation, as well as workers' characteristics, including age, education, and gender. The information on the salary and starting and separation dates allows us to compute the total labor costs of each branch. As both branches and employees have a unique taxpayer identifier, we can follow workers across branches.

Branch- and bank-level data come from the Central Bank of Brazil. The branch-level yearly information comes from the ESTBAN database. We focus on the period between 2004-2015.<sup>7</sup> This dataset is derived from a mandatory form that all banks are required to complete, and it includes the branch municipality, the taxpayer identifier, balance sheet information (such as assets, loans, and deposits), and aggregate profits and costs. We provide additional details about these data and the variables we construct in Appendix Section A1.1.

The branch taxpayer identifier is a 14-digit number, out of which the first 8 digits are the taxpayer identifier of the bank. This identifier enables us to merge the labor data with branch- and bank-level data. It also allows us to identify the branches that participated in the M&As that occurred in 2007 and 2008 (treated branches) and the ones that participated in the large M&A that occurred in 2015 (control branches). We can also classify as target branches those that changed their taxpayer number after the M&As.

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<sup>7</sup>The analysis is restricted to this period due to the availability of branch address information. While ESTBAN is available monthly, labor data is only reported at the end of each year (December). As a result, we use end-of-year data to maintain consistency between financial and labor observations. Additionally, end-of-year data helps minimize noise caused by changes in taxpayer identifiers resulting from the M&As. In some cases, a gap of a few months may appear in the data, meaning that we do not observe the establishment that changes its identifier for a couple of months. Therefore, relying on end-of-year data further reduces such noise.

We obtain detailed address information of the active branches in a given month from RAIS and the *Relação de Agências e Postos de Atendimento das Instituições Financeiras*. The data contain the bank branch taxpayer identifier and detailed address information, which is crucial to our paper in that it allows us to keep following a branch even when its taxpayer identifier changes because of the M&A. Finally, we use bank-level information from IF.data. These data are available on a quarterly frequency and include detailed balance sheet and income statement information. This dataset also contains the 8-digit taxpayer identifier of each bank.

### 2.3 Descriptive Statistics

In Table 2, we present descriptive statistics of the branches of banks in the treated and control groups before the M&As. Control and treated banks have 9,341 active branches in December 2006, which we define as branches that have at least one employee and a positive stock of credit and deposits. The average stock of lending and deposits was 23 million BRL and 24 million BRL in December 2006 (around 11 million USD), respectively. Branches have on average 16 workers (median 11). The average market share of a branch in the lending market is 10% (median 1.2%) and 12% in the deposit market (median 1.5%). The average profit per employee is 106 thousand BRL (median 107).

As we use municipality-time fixed effects in our regressions, municipalities that do not have a control or treatment branch end up being dropped. When we restrict the sample to branches located in municipalities with both control and treatment branches, the characteristics of the branches do not change significantly. Branches are slightly larger in terms

of lending, deposits, and the number of employees and have smaller market shares.

Some variables are highly right-skewed, with a ratio mean to median reaching 4.4 in the case of the stock of credit and 2.1 in the case of the stock of deposits. This is due to the presence of some outliers and motivates us to use the inverse hyperbolic sine transformation to the outcome variables because such transformation approximates the natural logarithm while retaining zero-valued and negative-valued observations (Bellemare and Wichman, 2020), which can arise, for instance, when we analyze profits per employee.<sup>8</sup>

In Table 3, we present summary statistics by branch status – acquirer, target, and control. The branches in our sample do not differ statistically in terms of size (total assets) or profits per employee in December 2006. In particular, acquirer and target branches display similar profits per employee. However, we do observe some differences in terms of the stock of lending and deposits. For instance, lending is statistically larger in target branches in comparison to control branches. In comparison to control branches, the number of employees and loan officers is smaller in acquirer branches and larger in target branches.

The fact that characteristics at the bank branch levels are not strikingly different is reassuring. However, to further guarantee that differences in observables do not threaten the plausibility of the hypothesis that treatment and control branches would follow similar trajectories had the M&As not occurred, we will add controls for characteristics that might be correlated with post-treatment performance in our empirical strategy.

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<sup>8</sup>In Section 4.4, we use the natural logarithm of the outcome variables plus one as robustness and the results are quantitatively similar to our baseline results.

## 2.4 Empirical Strategy

Our empirical strategy exploits branch-level information and the timing of the M&A events to establish a link between the restructuring that follows a consolidation and branch outcomes. We also exploit variation in branches' ownership before the consolidation to investigate heterogeneous effects on target and acquirer branches. As our treatment is staggered (one event in 2007 and one in 2008), we implement a stacked regression estimation (Baker et al., 2022). We construct two event-specific datasets (one for each M&A) and stack them (Online Appendix Figure A4). We refer to each event-specific dataset as a *cohort*. For each cohort, the control group consists only of private bank branches that did not participate in a bank M&A during the time window of our estimation but that participated in these events in the future. We define the control variables for each cohort by interacting them with cohort-specific indicators. We use an estimation window of 10 years: three years before and six years after the event. We restrict the main analyses to branches that remain open during the window and for which we can measure outcome variables. Using the same stacked approach, we also check the parallel trends assumption and the dynamic treatment effects after the M&A events.

We estimate the following model:

$$y_{i,g,t} = \delta_1 Post_{i,t} \times Target_i + \delta_2 Post_{i,t} \times Acquirer_i + \alpha_{i,g} + \alpha_{g,m,t} + \gamma MP_i \times Post_{i,t} \times Treated_i + \beta_{g,t} X_i + \epsilon_{i,g,t} \quad (1)$$

in which  $i$  represents the bank branch,  $g$  the cohort,  $t$  calendar year, and  $m$  the municipality.

The dummy variable  $Target_i$  ( $Acquirer_i$ ) takes the value 1 when branch  $i$  belongs to a bank that was the target (acquirer) party in one of the M&A transactions of our sample. The dummy variable  $Treated_i$  takes the value 1 when branch  $i$  is either an acquirer or a target branch. The coefficient  $\delta_1$  represents the M&A effect on the target branches, and the coefficient  $\delta_2$  represents the M&A effect on the acquirer branches. We control for any fixed unobserved branch characteristics by using branch fixed effects  $\alpha_{i,g}$  (interacted with cohort dummies). To account for time-varying changes at the local level that are common to all branches, such as demand shocks, we include municipality-by-time-by-cohort fixed effects  $\alpha_{g,m,t}$ .<sup>9</sup> We also control for other possible confounding effects that might be correlated with post-consolidation performance by using branch pre-M&A characteristics (measured in 2006) interacted with cohort and time dummies.<sup>10</sup>

We account for the heterogeneous market power gains resulting from the consolidation, which are measured by the sum of the market shares in total lending of the target and acquirer branches in a given municipality prior to the M&A ( $MP_i$ ).<sup>11</sup> Controlling for these gains is essential in our setting since it enables us to isolate the effects of resource restructuring from direct impacts led by changes in local market power. Since both the treated and control banks in our sample are large and diversified retail banks, it is reasonable to assume they operate in the same market. If banks were small and specialized in serving particular types of clients or services (e.g., [Blickle et al., 2023](#), [Paravisini et al.,](#)

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<sup>9</sup>As we are considering two big consolidations that happen at different times, these fixed effects also capture spillover effects that could arise from other M&A transactions occurring within the same market as long as treated and control branches are equally affected by these events.

<sup>10</sup>These characteristics include bins of the branch size (measured by total assets) and the number of employees.

<sup>11</sup>In Section 4.6, we provide evidence that our baseline results are robust to different measures of market power gains.

2023), this assumption would no longer hold, leading to mismeasurement in our metrics of market power gains. M&As involving large banks offer the added advantage of creating significant variation in market power gains across municipalities (Figure A3 in the Online Appendix). Without such variation, controlling for market power gains would be infeasible. Finally, as banks were already large and diversified pre-consolidation, market power gains that are common across all markets (such as those resulting from a large network of branches or concerns about banks being perceived as “too big to fail”) play a smaller role in this context.

Our “within market” approach is convenient because the large M&As we study coincide with the onset of the 2007-2008 financial crisis. As a result, in the absence of the M&A events, different markets could have had distinct performances. For instance, firms in markets with more branches per population could be more levered or exposed to disruptions in international markets through trade relationships. Our municipality-by-time-by-cohort fixed effects approach deals with those possibilities.

One concern about our empirical strategy is that banks that participate in consolidations are not randomly selected. Therefore, unobserved factors can cloud the magnitude of our coefficients. For instance, compared to control branches, target and acquirer branches might experience an increase (or decrease) in productivity even in the absence of the M&A, a possibility that a parallel trends test would not detect. This concern is common to all M&A studies, and no perfect solution has been proposed in the literature. We seek to minimize this issue in several ways. First, our control branches belong to banks that participate in a large M&A after our sample period. Second, we add baseline branch characteristics interacted with time dummies to alleviate concerns that heterogeneity across

banks branches our results. Finally, certain features of the M&As we study further mitigate these concerns. One M&A was the result of an operation that involved companies with headquarters in foreign countries. The other had been negotiated for years and was accelerated by the Lehman collapse. As a result, its timing was relatively exogenous.

A second confounder could arise from a different reaction of treated and control banks during the financial crisis. However, as explained in Section 2.1, the crisis in Brazil was short-lived, mild, and did not spark bank failures. Moreover, our sample is comprised of large banks only, and these banks experienced an inflow of funding because they were perceived as too-big-to-fail (Oliveira et al., 2015).

## 3 Results

### 3.1 Consolidation and Internal Reallocation of Resources

In Table 4, we examine how M&As change the growth in the branches' number of employees, total external hiring, and the total number of employees internally transferred during the period. Target branches decrease the number of employees by 21.2% in comparison to control branches, while acquirer branches experience an increase of 6.8%.<sup>12</sup> In target branches, two combined factors seem to explain the large change in the number of employees: the lower number of new net hirings and the increased number of workers transferred to other branches. The increase in the number of employees in acquirer branches comes solely from a large increase in the net number of transfers from

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<sup>12</sup>Even though we use the inverse hyperbolic sine transformation of the original variables, we interpret coefficients as percentage growth. The approximation works well when coefficients are not so large (Bellemare and Wichman, 2020).

other branches (16%). These results point to an active internal labor reallocation post-consolidation. Moreover, they square with a literature that documents a reallocation of credit toward acquirer branches and heterogeneous effects of consolidations on target and acquirer borrowers (e.g., [Degryse et al., 2011](#); [Di Patti and Gobbi, 2007](#); [Karceski et al., 2005](#)).

We then analyze how this labor reallocation impacts the average skill of target and control branches' employees. We measure ability by employing an approach inspired by the methodology proposed by [Abowd et al. \(1999\)](#).<sup>13</sup> We use information on the occupation of workers and conduct separate analyses for loan officers and other employees, primarily consisting of bank tellers and administrative staff who do not interact directly with customers. The results in [Table 5](#) show that while there is no significant change in the ability of other employees in target and acquirer branches, the ability of loan officers increases substantially (9%) in acquirer branches. As previous research has shown, this type of bank employee is crucial to running the activity of credit provision ([Hertzberg et al., 2010](#); [Agarwal and Ben-David, 2018](#)).

In [Table 6](#), we look at the effects of M&As on deposits. Banks obtain resources to fund their credit provision activity mainly from deposits, which are at the same time an important source of income through the deposit spread (e.g., [Egan et al., 2022](#)).<sup>14</sup> We find a negative but not statistically significant effect on target branches' deposits after the consolidations. In line with our previous result on labor reallocation, we show that acquirer branches experience an increase in deposits of 22.4%.

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<sup>13</sup>See [Section A2](#) of the Online Appendix for a description of the construction of the skill variables.

<sup>14</sup>Deposits provide payment convenience and are liquid and information-insensitive. Since deposit services are costly and banks have market power, deposit rates tend to be smaller than the interest rates that securities with comparable liquidity and risk pay (e.g., [Drechsler et al., 2017](#)).

Also in Table 6, we study the effects on the internal allocation of funding. Funding obtained in a given branch is easily reallocated to other branches (e.g., [Bustos et al., 2020](#); [Aguirregabiria et al., 2025](#)). We show that the increase in deposits in acquirer branches is smaller in magnitude than the increase in lending. The lending-to-deposit ratio in acquirer branches increases by 7.9%, indicating that acquirer branches borrow more from other branches through the internal capital market following consolidations. We also test this conjecture directly by studying the impact on the amount that each branch lends to the other members of the consolidated bank. Columns 5 and 6 show that acquirer branches decrease the amount of capital they lend to other branches as a share of the deposits they collect. These results complement the recent literature on internal capital markets by shedding light on its use during the restructuring process.

M&As prompt a substantial increase in the pool of capital and labor available to the newly formed bank. Overall, our results in this section suggest the internal capital and labor markets play an essential role post-consolidation. Moreover, they show that these markets complement each other. In the next section, we analyze how the restructuring process that we document in this section took place with a concomitant increase in productivity measures.

### 3.2 M&A Value Creation: Productivity Gains<sup>15</sup>

This section documents how M&As engender productivity and profitability gains as well as the mechanisms underpinning these improvements, such as cost-cutting or revenue increases. Table 7 documents the effects of M&As on different measures of productivity. We show that, despite an increase in the total number of employees, lending per employee and deposits per employee increase in acquirer branches in comparison to control branches (30.6% and 15.5%, respectively). This result is in line with our results regarding the reallocation of highly skilled loan officers to acquirers. However, we do not observe a statistically significant effect on those variables at target branches after controlling for market power gains.

When we examine productivity as measured by profits per employee, we observe that both acquirer and target branches exhibit large and significant gains after the consolidation. To guarantee that these results are not driven by higher markups in lending markets or markdowns in input markets, we explicitly control for the local gain in market power.

To highlight the drivers of these results, in Table 8, we analyze the sources of the increases in profits by explicitly analyzing the effects of the consolidation on branches' costs and revenues. Leveraging information on wages, we decompose total costs into labor costs and other costs. On the one hand, we show that increases in profits in acquirer branches are driven by large increases in revenues (23.3%). Despite an increase in other costs, the

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<sup>15</sup>In this section, we use income statement data at the branch level. Some of the coefficient magnitudes are large, which may be due to mismeasurement, as the allocation of certain costs to branches is not straightforward. These costs include bank-wide expenses, such as those for computer systems and non-retail funding instruments. However, although the magnitudes should be interpreted cautiously, it is reassuring that deposits and lending per employee – variables more directly linked to branches – point in the same direction.

gain in revenues is such that the net effect on profits is positive. Although revenues in target branches decreased by 11.2%, profits increased due to cost-cutting measures, with wages reduced by 29.4%.

Our results in this section add to the literature on M&A value creation that draws on plant-level data (among others, [Blonigen and Pierce, 2016](#); [Braguinsky et al., 2015](#); [Demirer and Karaduman, 2024](#); [Macchiavello and Morjaria, 2022](#)). We document different sources of gains on target and acquirer branches. Moreover, our results on the reallocation of labor and capital identify a new channel underlying these gains.

### **3.3 Effects on Lending and Aggregate Effects**

We then move to the effects of the consolidations on lending at target and acquirer branches. Previous results point out that effects differ among target and acquirer branches ([Sapienza, 2002](#); [Di Patti and Gobbi, 2007](#); [Degryse et al., 2011](#)). In [Table 9](#), we present the heterogeneous change in lending across branches of the acquirer and target banks after the consolidation events. On the one hand, lending in acquirer branches increases by 37.4%. On the other hand, lending at target branches contracts by 15.5% in comparison to control branches in the same municipality.

Given the contrasting results for target and acquirer branches, we next investigate the local aggregate effects of the consolidation by combining the target and acquirer branches at the municipality level, both before and after the M&As. As before, we form the control group by using banks that participated in an M&A after our analysis period, treating them as a consolidated firm throughout the sample. As in our branch-level specifications, we

use a stacked difference-in-differences specification with data at the bank-municipality-year level.

Our results in Table 10 provide evidence that the new banks increase their lending productivity after consolidations when compared to other consolidated banks that were formed just after our period of analysis. We show that the consolidated banks disproportionately increase their lending and reduce employment, generating an increase in their lending per worker after the consolidation.

### 3.4 The Role of Internal Labor and Capital Markets

To highlight the impacts of internal markets on these results, we use an approach similar to [Cestone et al. \(2023\)](#), which analyzes how firms use their local internal labor markets when economic conditions change. Reallocating a worker to a close branch is less costly than reallocating a worker to a distant branch. For instance, workers might demand higher wages to uproot their families and move to a distant location, or it might take time for them to acquire soft information about the customers in the market to which they are moving ([Liberti and Petersen, 2019](#)). In contrast, moving deposits across distant branches is less costly, and banks might allocate capital until the marginal return is equalized across branches ([Drechsler et al., 2017](#)). As a result, internal labor markets are more segmented geographically than internal capital markets.

We create measures of the size of local internal labor markets using the boundaries of the municipalities in Brazil. By combining branches that operated independently, M&As lead to instant increases in the size of local internal labor markets. We create the dummy

variable *Large Local ILM* that takes the value one if the number of employees per branch of treated branches in a given municipality is above the median. The intuition for this measure is that it is hard to reallocate workers when branches only have a few key employees who perform multiple functions and have a lot of branch-specific knowledge that is hard to transmit.<sup>16</sup> Treated banks in municipalities where the variable *Large Local ILM* takes the value one have 85 employees and 5 branches on average, whereas in municipalities where *Large Local ILM* takes the value zero, they have 1 branch and 5 employees on average.

In Table 11, we investigate whether the size of these markets affects credit provision, labor allocation, and efficiency gains. Our results provide evidence that increases in productivity are twice as large in municipalities in which the banks had large internal labor markets (above the median number of employees per branch) ( $32.7\% = 15.9\% + 16.8\%$ ) compared to places where the consolidated bank had small internal labor markets (15.9%). These results add to the literature by highlighting how internal local markets play a significant role in generating productivity gains during the restructuring process that follows M&A episodes.

Interestingly, we do not find any evidence indicating that the size of local internal capital markets contributes to the effects on productivity (Table A2 of the Online Appendix).<sup>17</sup> This result aligns with previous research highlighting that banks can reallocate funding easily in our setting, even for municipalities far from the branch where the deposit was issued (Bustos et al., 2020).

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<sup>16</sup>Cestone et al. (2023) exploits the total number of employees in the firm in the same labor market. In Table A3 of the Online Appendix, we also use the measure proposed by Cestone et al. (2023) and find similar results.

<sup>17</sup>For our measure of local internal capital markets, we use the average consolidated deposits per branch in a given municipality.

## 4 Dynamic Effects, Identification Threats and Robustness Checks

### 4.1 Dynamic Effects and Resource Reallocation

In this section, we discuss the dynamic effects of the M&As on our main variables. The goals of this exercise are twofold. First, by showing that treated and control branches followed similar trajectories pre-M&A, we alleviate concerns of selection into consolidation. For example, we show that, in comparison to control branches, acquirer branches are not becoming more productive in the years that precede the transaction. Second, even though our estimations take into account local market power gains prompted by the M&A episodes, the results could be driven by increases in market power at a more aggregate level, such as the size of the ATM and branch network, brand reputation, and safety. As these market power gains can be more timely exercised than restructuring gains, a gradual improvement in productivity variables is a further indication that restructuring gains are playing an important part.

In Figures 2, 3, 4 and 5, we study the dynamics of resource reallocation and lending productivity during the consolidation. Such figures provide evidence that the effects take some time to materialize, which is consistent with our hypothesis that the productivity increases we uncover are due to the reallocation of labor and funding across the branch network. Moreover, the changes in the allocation of labor force and lending supply coincide with each other, which provides further evidence of the mechanism behind the

changes in productivity that we observe.

In Figure 2 we analyze the branches' labor dynamics around the consolidation announcement period. We observe that employment decreases slowly over the years in target branches pushed by the increased number of internal transfers of employees, which starts right after the announcement. At the same time, we see an increase in the number of employees at the acquirer, which is consistent with the transfers from the target branches to acquirer branches. Moreover, we provide evidence that loan officer ability increases in the acquirer, and the dynamics of this change align with the dynamic effects of internal transfers. Additionally, our dynamic results show that in the long run, loan officer ability in the target remains unchanged.

In Figure 3, we show that lending grows gradually after the event in acquirer branches, peaking at around four years after the M&A and remaining at this level thereafter. Lending declines gradually at target branches. These dynamic effects on lending supply are consistent with the decrease in labor force observed in Figure 2. Importantly, we also show that the dynamics of the internal labor market and the internal capital markets (Figure 4) are also consistent with the improvements in acquirer lending productivity observed in Figure 3. Also in line with our baseline results, Figure 5 shows that increases in profit per worker take some years to materialize, supporting our hypothesis that M&A-driven resource reallocation is a driver of the observed productivity gains.

Our results in this section provide further evidence that the results we observe in M&A value creation are consistent with the banks' improved allocation of resources.

## 4.2 Branch Closings

In this section, we analyze if the consolidation impacts branch closings. Previous research documents detrimental effects of closings on credit provision (Nguyen, 2019; Bonfim et al., 2021). In Table A1, we show that branch closings increase after these episodes at target bank branches (3.7%), while acquirer branches close less often in comparison to the control group (-3.9%). However, as we show in Table 10, the closure effects do not seem to prevail, as the local combined credit provision of target and acquirer branches increases after the M&A.

## 4.3 Parallel Trends

One possible identification concern is that the target banks in our control group might be facing different growth paths than the banks that form our treatment group. Although the results in Section 4.1 provide reassuring evidence in favor of our empirical strategy, in this section, we show that our results are robust to a different set of control groups and violations of the parallel trends assumption (Rambachan and Roth, 2023).

First, in Table A4, we replicate our main results using only the banks that acted as acquirers in M&A deals after the period of our analysis. This would reduce concerns that our control group might be facing different trends before the consolidation in 2015.<sup>18</sup> The results presented in this table are quantitatively in line with our baseline results, which are obtained by including in the control group both acquirer and target firms that take

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<sup>18</sup>In another robustness, in Tables A9 and A10, we include productivity measures interacted with cohort and time dummies to account for possible differences in productivity before the consolidations. The results in these tables are in line with our baseline results.

part in M&A operations that occur after the end of our estimation window.<sup>19</sup>

Second, we employ the methodology proposed by [Rambachan and Roth \(2023\)](#) to assess the sensitivity of our results to parallel trends violations. Specifically, we allow for differences in linear trends between treated and not-yet-treated units and quantify the magnitude of departures required to yield null results. We consider a range of values  $M$ , where  $M = 0$  means linear violations of the trends and  $M > 0$  allows for deviations in linearity. In [Figures A5, A6, A7, and A8](#) we provide evidence that our statistically significant results in [Figures 2, 3 4, and 5](#) reported in red, are robust to linear and relatively large non-linear violations of the parallel trends assumption.

#### **4.4 Alternative Transformation of Outcome Variables**

In our baseline specifications, we apply the inverse hyperbolic sine transformation to the outcome variables because such transformation approximates the natural logarithm of that variable and allows retaining zero-valued and negative-valued observations ([Belle-mare and Wichman, 2020](#)). In this section, we apply an alternative transformation to those variables: the natural logarithm of the original variable plus one. Such a transformation allows us to retain the zero-valued observations, but we lose the negative-valued ones. As we cannot keep negative values in his specification, we suppress the results on profits (which are potentially negative). In [Table A5](#) in the Online Appendix, we replicate our main results using this alternative transformation. The results presented in this table are quantitatively similar to our baseline results.

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<sup>19</sup>The only deviation from the baseline results is that, while our baseline analysis shows an increase in the number of employees at acquirer branches, we find a statistically insignificant reduction in [Table Table A4](#).

## 4.5 Excluding Municipalities Treated at Both M&A events

Another identification challenge arises from the fact that some markets had branches of banks involved in consolidations during both 2007 and 2008. As a result, spillover effects from one consolidation may influence the analysis of the other. To address this, our controls include municipality-by-time-by-cohort fixed effects in our baseline results, which should mitigate this issue if spillovers are common to treated and control banks. Moreover, in Table A6, we replicate our main results using only municipalities affected by a single consolidation (either in 2007 or 2008). Although the sample is reduced by more than 90%, and the confidence intervals widen, the point estimates in this table are still consistent with our baseline results. There are two notable differences from the baseline results. First, while the baseline shows an increase in the number of employees at acquirer branches, we find a statistically insignificant reduction in Table A6. Second, we observe improvements in target productivity metrics and no significant changes in revenue, while at baseline we find non-significant results for productivity and a decline in revenues for target firms. Additionally, most of the significant results from our baseline specification remain statistically significant. Overall, our findings that human capital reallocation from the target to the acquirer is an important driver of productivity gains are confirmed in this subsample.

## 4.6 Alternative Market Power Controls

One additional concern is that our market power controls focus solely on the credit market, and may not fully capture the competitive dynamics in local banking markets. In particu-

lar, we are excluding other markets that can impact profitability, such as deposit and labor markets. In Table A7, we add as controls changes in market power in these markets.<sup>20</sup> In Table A8, we use the change in HHI caused by the M&A events interacted with the post M&A dummy as a control variable.<sup>21</sup> These tables show that all our baseline results are robust for controlling for alternative measures of market power controls.

## 5 Conclusion

This paper sheds light on the role that the internal markets play in post-consolidation efficiency gains. We leverage detailed branch-level data on employees, balance sheet, and income statement items to show that banks reallocate funding and labor across their branch network. We also provide evidence that these reallocations increase productivity and that the restructuring is heterogeneous at acquirer and target branches. While the productivity of acquirer branches increases as a result of higher levels of lending productivity, that of target branches increases due to cost-cutting.

Our results contribute to the buoyant literature that studies the ex-post effects of M&As on productivity. We show that the restructuring process is an essential contributor to productivity increases. As the financial firms in our sample have an extensive, geographically dispersed branch network, there is a sizeable cross-sectional variation in increases in market share due to the consolidation. This fact allows us to control directly for increases in local market power, thereby reducing the likelihood that the observed productivity growth

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<sup>20</sup>We also add to our market power control measures the only credit product present in our dataset – agricultural loans. In our dataset, we also have information on mortgages. However, this type of product is highly concentrated in public banks, which are not included in our analysis.

<sup>21</sup>For the change in HHI caused by the M&A events, we consider the market shares in 2006.

is attributed to higher markups or decreases in funding and labor costs. The extensive branch network further allows us to test how local internal labor markets can enhance efficiency gains.

Overall, our paper highlights a mechanism that is often ignored by the literature due to the lack of plant-level information: the effects of the reallocation of internal resources during consolidations. We show that this mechanism is essential to operational efficiency improvements after a M&A (Blonigen and Pierce, 2016; Braguinsky et al., 2015). Moreover, our results complement recent studies that emphasize the use of internal markets in response to changing economic conditions (Cestone and Fumagalli, 2005; Cestone et al., 2023). While our analysis focuses on the banking sector, the underlying mechanisms are likely to apply to other industries with large, geographically dispersed operations, such as retail chains. Finally, our paper contributes to the policy debate on the potential efficiency gains generated by consolidations in the financial industry and in sectors with geographically dispersed establishments.

A venue for future research would be to study how technology adoption and changes in management practices during the consolidation process may interact with our reallocation channel and amplify its effects. Understanding these interactions could provide a more comprehensive picture of the factors driving post-M&A performance improvements.

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## Tables

**Table 1: M&As involving large private banks 2007-2015**

	Banks in the sample			Other banks
	Bank 1 - Bank 2	Bank 3 - Bank 4	Bank 5 - Bank 6	
Year M&A	2007	2008	2015	-
Treatment status	Treated	Treated	Control	-
Market share assets	12%	17%	15%	56%
Market share credit	12%	18%	17%	52%
Market share demand deposits	10%	18%	21%	51%
Market share savings deposits	7%	16%	16%	61%
Market share time deposits	16%	11%	18%	55%
Market share deposits	12%	13%	16%	59%
Number of branches	2,168	3,584	3,975	9,322
Number of municipalities	747	1,128	1,527	2,918

Notes: The M&A year is the year of the announcement. All measures are from December 2006. The number of municipalities refers to the number of municipalities where banks have a branch. We exclude government-owned development banks from the calculations. All variables are calculated with the IF.data database from the Central Bank of Brazil, except for the number of municipalities, which is calculated with the *Estatística Bancária Mensal* (ESTBAN) database, also from the Central Bank of Brazil.

**Table 2: Branch-level Descriptive Statistics**

Variable	N	Mean	SD	p1	p50	p99	mean/p50
<i>Panel A: Unrestricted sample</i>							
Assets	9,341	285	11,575	0.9	31	598	9.1
Lending	9,341	23	423	0.1	5	176	4.4
Deposits	9,341	24	192	0.5	11	142	2.1
Number of workers	9,341	16	29	1	11	82	1.4
Profit per employee	9,341	0.11	1.50	-0.07	0.11	0.60	1.0
Lending - local market share (%)	9,341	10	23	0.0003	1.2	100	8.0
Deposits - local market share (%)	9,341	12	24	0.0012	1.5	100	7.8
<i>Panel B: Conditional on municipalities that have a control and a treatment branch</i>							
Assets	8,034	329	12,480	0.9	37	743	8.8
Lending	8,034	26	456	0.1	6	210	4.2
Deposits	8,034	27	207	0.4	14	154	2.0
Number of workers	8,034	17	31	2	12	86	1.4
Profit per employee	8,034	0.10	1.62	-0.08	0.11	0.63	1.0
Lending - local market share (%)	8,034	4	8	0.0002	0.4	35	9.2
Deposits - local market share (%)	8,034	4	8	0.0011	0.7	38	6.6

Notes: Descriptive statistics as of December 2006. All monetary variables are in one million BRL. We exclude the headquarters establishments. We only consider active branches, which we define as branches that have at least one employee and a positive stock of credit and deposits. Local market shares refer to the market share of a branch in the municipality where it is located. In Panel A, the sample consists of all treatment and control branches. In Panel B, we restrict the sample to municipalities that have both treated and control branches.

**Table 3: Acquirer, Target, and Control Branches in 2006**

	(1)	(2)	(3)	(4)	(5)	(6)
	Mean			P-Value		
	Acquirer (A)	Target (T)	Control (C)	A C	T C	A T
<i>Panel A: Unrestricted sample</i>						
Assets	296	469	181	0.62	0.33	0.67
Lending	21	47	13	0.33	0.00	0.09
Deposits	20	24	28	0.09	0.50	0.40
Lending - local market share (%)	13.7	4.4	8.7	0.00	0.00	0.00
Deposits - local market share (%)	14.1	2.7	13.8	0.66	0.00	0.00
Lending over deposits	3.5	1.8	0.5	0.11	0.00	0.53
Number of workers	13	19	16	0.00	0.01	0.00
Profit per employee	0.12	0.11	0.09	0.30	0.10	0.86
Share loan officers (%)	0.16	0.13	0.10	0.00	0.00	0.00
Ability all workers (AKM)	-0.28	-0.29	-0.20	0.00	0.00	0.24
Ability loan officers (AKM)	-0.05	0.05	0.07	0.00	0.04	0.00
<i>Panel B: Conditional on municipalities that have a control and a treatment branch</i>						
Assets	349	481	218	0.64	0.42	0.77
Lending	24	48	15	0.36	0.00	0.16
Deposits	23	25	33	0.09	0.21	0.80
Lending - local market share (%)	4.3	3.7	3.2	0.00	0.02	0.01
Deposits - local market share (%)	3.9	2.0	6.1	0.00	0.00	0.00
Lending over deposits	4.1	1.8	0.5	0.12	0.00	0.45
Number of workers	15	19	19	0.00	0.68	0.00
Profit per employee	0.12	0.12	0.08	0.41	0.10	0.94
Share loan officers (%)	0.18	0.13	0.11	0.00	0.00	0.00
Ability all workers (AKM)	-0.28	-0.29	-0.21	0.00	0.00	0.18
Ability loan officers (AKM)	-0.05	0.05	0.06	0.00	0.13	0.00

Notes: Descriptive statistics as of December 2006. The p-values in column 4 refer to a means test between acquirer and control branches; those in column 5 refer to a means test between target and control branches; and those in column 6 refer to a means test between acquirer and target branches.

**Table 4: M&As and Labor Reallocation**

	(1)	(2)	(3)	(4)	(5)	(6)
	Employees		Net Int. Transfers		Net Hirings	
Post M&A × Target	-0.149*** (0.039)	-0.212*** (0.045)	-0.099 (0.086)	-0.192** (0.096)	-0.322** (0.134)	-0.194 (0.132)
Post M&A × Acquirer	0.124*** (0.026)	0.068** (0.028)	0.241*** (0.076)	0.160** (0.062)	-0.136 (0.096)	-0.022 (0.072)
Observations	84264	84264	83971	83971	83971	83971
R Squared	0.933	0.933	0.235	0.235	0.460	0.461
Branch × Cohort FE	✓	✓	✓	✓	✓	✓
Municipality × Time × Cohort FE	✓	✓	✓	✓	✓	✓
Branch Size × Time × Cohort FE	✓	✓	✓	✓	✓	✓
Market Power Controls × Post M&A		✓		✓		✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Dependent variables are the inverse hyperbolic sine transformation of the original variables. The estimation sample consists of branches that remained open throughout the estimation window (three years before and six years after the events). Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006 (before the M&As). Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share in the credit market before the M&A. Standard errors are clustered at branch-cohort and bank-time-cohort levels.

**Table 5: M&As and Labor Ability**

	(1)	(2)	(3)	(4)	(5)	(6)
	Employees Ability		Loan Officer Ability		Other Employees Ability	
Post M&A × Target	0.010 (0.007)	-0.001 (0.010)	-0.027 (0.024)	-0.013 (0.027)	-0.006 (0.009)	0.004 (0.013)
Post M&A × Acquirer	0.046*** (0.009)	0.037*** (0.011)	0.077*** (0.018)	0.090*** (0.021)	-0.001 (0.011)	0.007 (0.016)
Observations	84264	84264	84264	84264	83646	83646
R Squared	0.815	0.815	0.760	0.760	0.769	0.769
Branch × Cohort FE	✓	✓	✓	✓	✓	✓
Municipality × Time × Cohort FE	✓	✓	✓	✓	✓	✓
Branch Size × Time × Cohort FE	✓	✓	✓	✓	✓	✓
Market Power Controls × Post M&A		✓		✓		✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Dependent variables are the inverse hyperbolic sine transformation of the original variables. For further details about the ability variable, see Section A2 of the Online Appendix. The estimation sample consists of branches that remained open throughout the estimation window (three years before and six years after the events). Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006 (before the M&As). Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share in the credit market before the M&A. Standard errors are clustered at branch-cohort and bank-time-cohort levels.

**Table 6: M&As Effects on Deposits and Internal Capital Markets**

	(1)	(2)	(3)	(4)	(5)	(6)
	Deposits		Lending Deposits		ICM Assets Deposits	
Post M&A × Target	-0.029 (0.097)	-0.148 (0.091)	-0.112* (0.059)	-0.070 (0.050)	-0.005 (0.022)	0.005 (0.019)
Post M&A × Acquirer	0.330*** (0.050)	0.224*** (0.042)	0.041* (0.021)	0.079** (0.030)	-0.080*** (0.016)	-0.071*** (0.020)
Observations	84264	84264	84260	84260	84260	84260
R Squared	0.929	0.930	0.843	0.843	0.819	0.819
Branch × Cohort FE	✓	✓	✓	✓	✓	✓
Municipality × Time × Cohort FE	✓	✓	✓	✓	✓	✓
Branch Size × Time × Cohort FE	✓	✓	✓	✓	✓	✓
Market Power Controls × Post M&A		✓		✓		✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Dependent variables are the inverse hyperbolic sine transformation of the original variables. The estimation sample consists of branches that remained open throughout the estimation window (three years before and six years after the events). The variable ICM Assets is a proxy for resources a given branch lends to the consolidated firm (other branches). Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006 (before the M&As). Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share in the credit market before the M&A. Standard errors are clustered at branch-cohort and bank-time-cohort levels.

**Table 7: M&As and Branch Productivity**

	(1)	(2)	(3)	(4)	(5)	(6)
	<u>Lending</u> Employees		<u>Deposits</u> Employees		<u>Profits</u> Employees	
Post M&A × Target	0.099** (0.043)	0.058 (0.051)	0.121 (0.093)	0.065 (0.081)	1.134** (0.488)	1.152*** (0.405)
Post M&A × Acquirer	0.342*** (0.049)	0.306*** (0.048)	0.206*** (0.050)	0.155*** (0.050)	0.612** (0.306)	0.630** (0.259)
Observations	84264	84264	84264	84264	84264	84264
R Squared	0.881	0.881	0.846	0.846	0.634	0.634
Branch × Cohort FE	✓	✓	✓	✓	✓	✓
Municipality × Time × Cohort FE	✓	✓	✓	✓	✓	✓
Branch Size × Time × Cohort FE	✓	✓	✓	✓	✓	✓
Market Power Controls × Post M&A		✓		✓		✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Dependent variables are the inverse hyperbolic sine transformation of the original variables. The estimation sample consists of branches that remained open throughout the estimation window (three years before and six years after the events). Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006 (before the M&As). Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share in the credit market before the M&A. Standard errors are clustered at branch-cohort and bank-time-cohort levels.

**Table 8: M&As and Branch Profitability**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Profits		Reveneues		Wage Costs		Other Costs	
Post M&A × Target	1.169*	1.105**	-0.008	-0.112**	-0.197***	-0.294***	-0.208	-0.128
	(0.587)	(0.478)	(0.043)	(0.056)	(0.042)	(0.050)	(0.397)	(0.508)
Post M&A × Acquirer	0.828**	0.772**	0.325***	0.233***	0.125***	0.038	1.672***	1.744***
	(0.383)	(0.318)	(0.039)	(0.036)	(0.025)	(0.029)	(0.288)	(0.426)
Observations	84264	84264	84264	84264	84264	84264	84264	84264
R Squared	0.626	0.626	0.881	0.881	0.912	0.912	0.846	0.846
Branch × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓
Municipality × Time × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓
Branch Size × Time × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓
Market Power Controls × Post M&A		✓		✓		✓		✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Dependent variables are the inverse hyperbolic sine transformation of the original variables. The estimation sample consists of branches that remained open throughout the estimation window (three years before and six years after the events). Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006 (before the M&As). Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share in the credit market before the M&A. Standard errors are clustered at branch-cohort and bank-time-cohort levels.

**Table 9: M&As effects on Lending Supply**

	(1)	(2)	(3)
	Lending		
Post M&A × Target	-0.056 (0.055)	-0.051 (0.052)	-0.155** (0.072)
Post M&A × Acquirer	0.475*** (0.058)	0.467*** (0.048)	0.374*** (0.050)
Observations	84264	84264	84264
R Squared	0.896	0.900	0.900
Branch × Cohort FE	✓	✓	✓
Municipality × Time × Cohort FE	✓	✓	✓
Branch Size × Time × Cohort FE		✓	✓
Market Power Controls × Post M&A			✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Dependent variables are the inverse hyperbolic sine transformation of the original variables. The estimation sample consists of branches that remained open throughout the estimation window (three years before and six years after the events). Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006 (before the M&As). Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share before in the credit market the M&A. Standard errors are clustered at branch-cohort and bank-time-cohort levels.

**Table 10: Consolidated Bank M&A Effects at the Municipality Level**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Lending			Employees			<u>Lending</u> <u>Employees</u>		
Post M&A	0.096*** (0.018)	0.099*** (0.025)	0.165*** (0.040)	-0.058*** (0.010)	-0.070*** (0.013)	-0.103*** (0.020)	0.146*** (0.015)	0.153*** (0.018)	0.258*** (0.028)
Observations	48549	48405	25070	48549	48405	25070	48079	47936	24856
R Squared	0.948	0.949	0.975	0.952	0.952	0.991	0.857	0.862	0.921
Bank × Municipality × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Size × Time × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Market Power Controls × Post M&A		✓	✓		✓	✓		✓	✓
Municipality × Time × Cohort FE			✓			✓			✓

Notes: Dependent variables are the inverse hyperbolic sine transformation of the original variables. The data is aggregated at the consolidated bank-municipality-year level. We aggregate target and acquirer branches into a single bank before and after the M&As. All regressions include bank-by-municipality-by-cohort fixed effects, municipality-by-year-by-cohort fixed effects, and baseline bank characteristics interacted with time-by-cohort fixed effects. Size variables include the number of employees and total assets quartiles before the M&A at the bank-municipality level. Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share in the credit market before the M&A. Standard errors are clustered at bank-municipality-cohort and municipality-time-cohort levels.

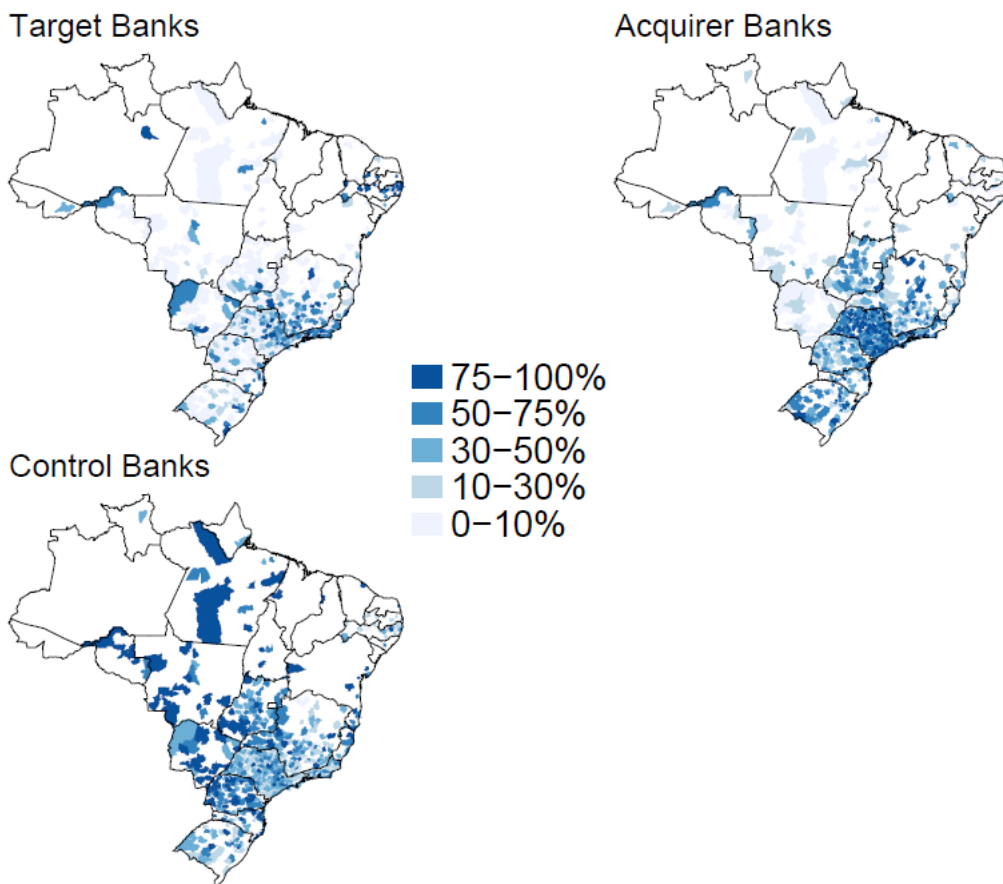
**Table 11: Consolidated Bank M&A Effects at the Municipality Level  
Heterogeneity by Local Internal Labor Market (ILM)**

	(1)	(2)	(3)	(4)	(5)	(6)
	Lending		Employees		$\frac{\text{Lending}}{\text{Employees}}$	
Post M&A	0.008 (0.027)	-0.016 (0.048)	-0.096*** (0.015)	-0.166*** (0.025)	0.093*** (0.023)	0.159*** (0.041)
Post M&A $\times$ Large Local ILM	0.256*** (0.044)	0.312*** (0.061)	0.073*** (0.026)	0.110*** (0.033)	0.168*** (0.028)	0.168*** (0.046)
Observations	48405	25070	48405	25070	47936	24856
R Squared	0.949	0.974	0.951	0.991	0.862	0.920
Bank $\times$ Municipality $\times$ Cohort FE	✓	✓	✓	✓	✓	✓
Size $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓
Municipality $\times$ Time $\times$ Cohort FE		✓		✓		✓

Notes: Dependent variables are the inverse hyperbolic sine transformation of the original variables. The data is aggregated at the consolidated bank-municipality-year level. We aggregate target and acquirer branches into a single bank before and after the M&As. Large Local ILM is a dummy variable that takes the value one if the number of consolidated bank employees per branch at the municipality is above the median in 2006. All regressions include bank-by-municipality-by-cohort fixed effects, municipality-by-year-by-cohort fixed effects, and baseline bank characteristics interacted with time-by-cohort fixed effects. Size variables include the number of employees and total assets quartiles before the M&A at the bank-municipality level. Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share in the credit market before the M&A. Standard errors clustered at bank-municipality-cohort and municipality-time-cohort levels.

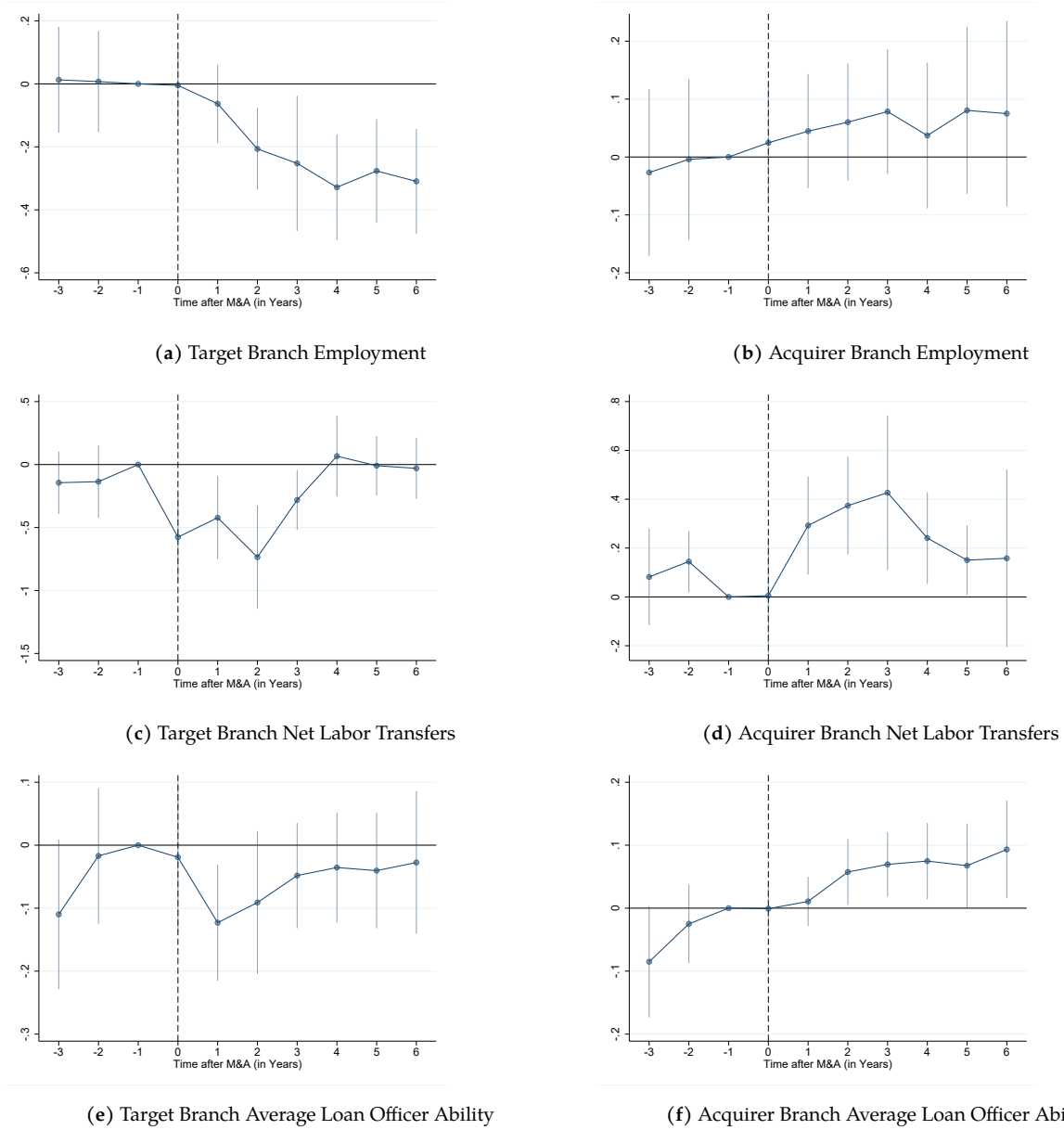
# Figures

**Figure 1: Local Private Market Share in 2006**



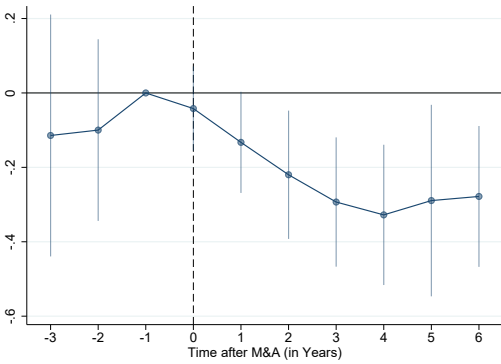
Notes: Geographical presence of the branches that comprise our sample as of December 2006.

**Figure 2: Employment Reallocation**

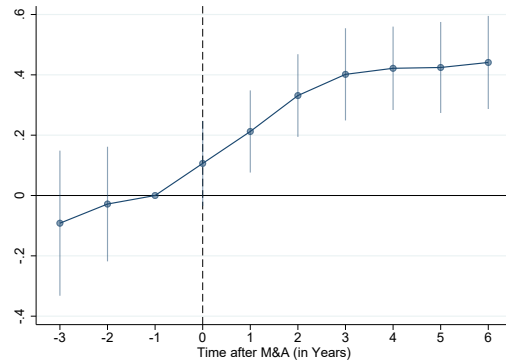


Notes: The figures report coefficients obtained from the estimation of Equation 1. Reported 99% confidence intervals are based on standard errors clustered at the branch-cohort and bank-time-cohort levels. All dependent variables are the inverse hyperbolic sine transformation of the original variables. All regressions include branch-by-cohort fixed effects, municipality-by-year-by-cohort fixed effects, baseline branch characteristics interacted with time-by-cohort fixed effects, and market power controls interacted with the Post M&A dummy.

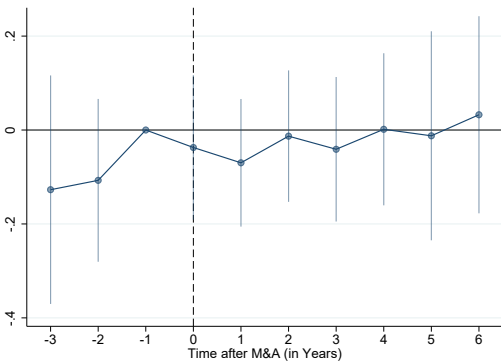
**Figure 3: M&A Effects on Lending Provision**



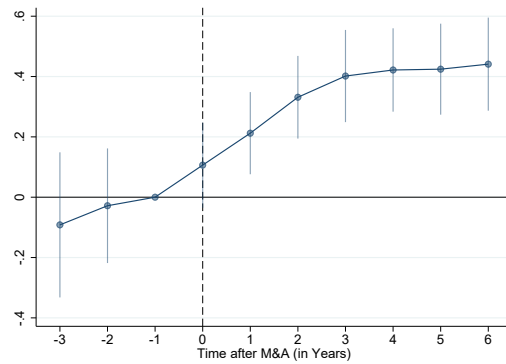
(a) Target Lending



(b) Acquirer Lending



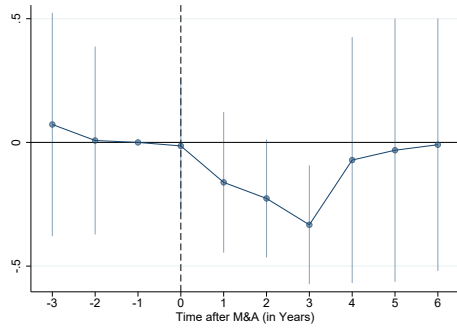
(c) Target Branch Lending Productivity



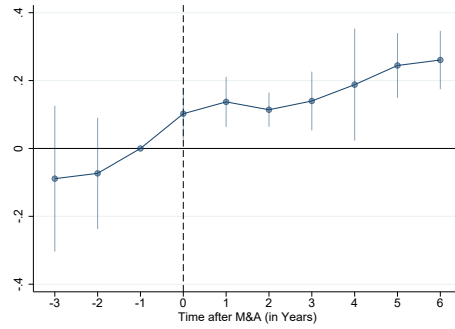
(d) Acquirer Branch Lending Productivity

Notes: The figures report coefficients obtained from the estimation of Equation 1. Reported 99% confidence intervals are based on standard errors clustered at the branch-cohort and bank-time-cohort levels. All dependent variables are the inverse hyperbolic sine transformation of the original variables. All regressions include branch-by-cohort fixed effects, municipality-by-year-by-cohort fixed effects, baseline branch characteristics interacted with time-by-cohort fixed effects, and market power controls interacted with the Post M&A dummy.

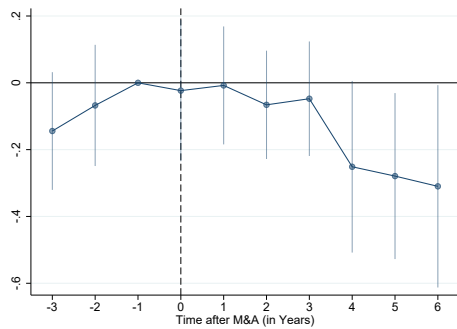
**Figure 4: Funding and Internal Capital Markets Reallocation Branches**



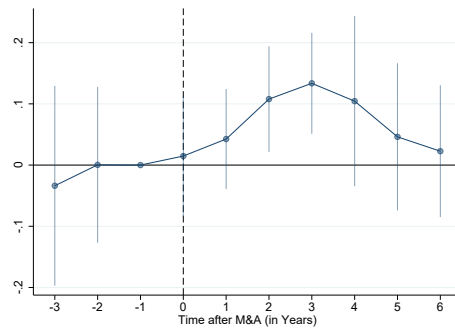
(a) Target Branch Deposits



(b) Acquirer Branch Deposits



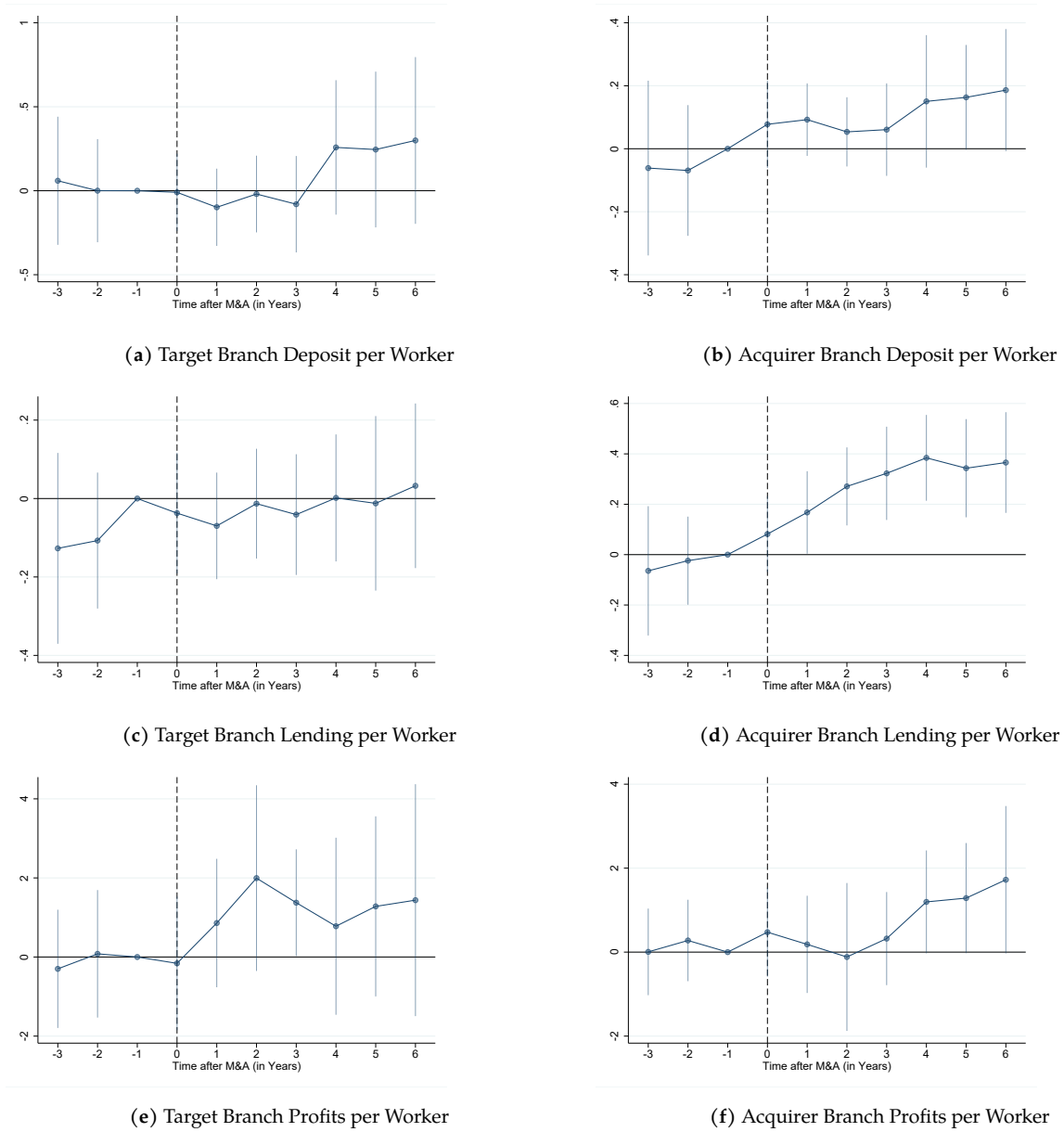
(c) Target Lending-to-Deposits Ratio



(d) Acquirer Lending-to-Deposits Ratio

Notes: The figures report coefficients obtained from the estimation of Equation 1. Reported 99% confidence intervals are based on standard errors clustered at the branch-cohort and bank-time-cohort levels. All dependent variables are the inverse hyperbolic sine transformation of the original variables. All regressions include branch-by-cohort fixed effects, municipality-by-year-by-cohort fixed effects, baseline branch characteristics interacted with time-by-cohort fixed effects, and market power controls interacted with the Post M&A dummy.

**Figure 5: Productivity**



Notes: The figures report coefficients obtained from the estimation of Equation 1. Reported 99% confidence intervals are based on standard errors clustered at the branch-cohort and bank-time-cohort levels. All dependent variables are the inverse hyperbolic sine transformation of the original variables. All regressions include branch-by-cohort fixed effects, municipality-by-year-by-cohort fixed effects, baseline branch characteristics interacted with time-by-cohort fixed effects, and market power controls interacted with the Post M&A dummy.

# Online appendix - *Internal Markets and M&As Value Creation: Evidence from Bank Branch-level Data*

## Contents

A1	Institutional setting and data: additional details . . . . .	2
A1.1	Data and variables description . . . . .	2
A1.2	Concentration ratio: share of the five largest banks . . . . .	3
A1.3	Financial crisis: comparison Brazil versus the US . . . . .	4
A1.4	Distribution of the gains in local market share . . . . .	5
A1.5	Stacked data . . . . .	6
A2	AKM Decomposition . . . . .	7
A3	Robustness checks . . . . .	9
A3.1	M&As and Branch Closings . . . . .	9
A3.2	Heterogeneity: Alternative Measures of Local Internal Markets . . . . .	10
A3.3	Just Acquirer as Control Group . . . . .	12
A3.4	Alternative Transformation of Variable . . . . .	13
A3.5	Excluding Cities Treated in Both M&As . . . . .	14
A3.6	Additional Market Power Controls . . . . .	15
A3.7	Robustness checks based on <a href="#">Rambachan and Roth (2023)</a> . . . . .	19

## A1 Institutional setting and data: additional details

### A1.1 Data and variables description

**Classification of target and acquirer branches.** After a M&A, the branches of the target bank change their 14-digit tax ID number, which is the ID we use to merge with other datasets. Therefore, we need to obtain the new tax ID of the target branches to observe balance sheet and labor information after the consolidation. We use yearly data on the address of the branches and part of the sort code to identify the new 14-digit tax ID. The data we use to perform this operation come from the Central Bank of Brazil and can be downloaded at <https://www.bcb.gov.br/estabilidadefinanceira/agenciasconsorcio>.

**Branch balance sheet and income statement data.** We use ESTBAN, a dataset provided by the Central Bank of Brazil. The database is derived from *Documento nº 13 - Estatística Bancária Mensal*, a monthly mandatory branch-level report submitted by banks to the Central Bank of Brazil ([link to the form](#)). We construct the following variables at the annual frequency using the end-of-year (December) databases: total assets (`verbete_399_total_do_ativo`), loans outstanding (`verbete_160_operacoes_de_credito`), assets in internal capital markets (`verbete_140_rel_interfinanc_e_interdepend`), total deposits (`verbete_401_servicos_publicos + verbete_420_depositos_de_poupanca + verbete_432_depositos_a_prazo`), total revenues (`verbete_711_contas_credoras`) and total costs (`verbete_712_contas_devedoras`).<sup>22</sup>

**Matched branch-employee data.** We use the *Relação Anual de Informações Sociais* (RAIS) data from the Ministry of Labor. The identified microdata is not publicly available. We observe the universe of formal employees in Brazil at the establishment level. In the case of banks, a branch is an establishment. The worker is classified as a loan officer if the first four digits of the occupation code are 1417 ("Service operations managers in a financial intermediation institution"), 2532 ("Banking services sales and consulting professionals"), 1423 ("Sales, marketing and communication managers"), 3541 ("Product promotion and sales experts"), 2525 ("Economic and financial administration professionals"), 1421 ("Administrative, financial, risk and related managers"), or 1231 ("Administrative and financial directors"). We compute the wage bill of a branch in December by aggregating the wages of workers that are employed in that month.

**Bank-level data.** We use bank-level data, including income statement and balance sheet

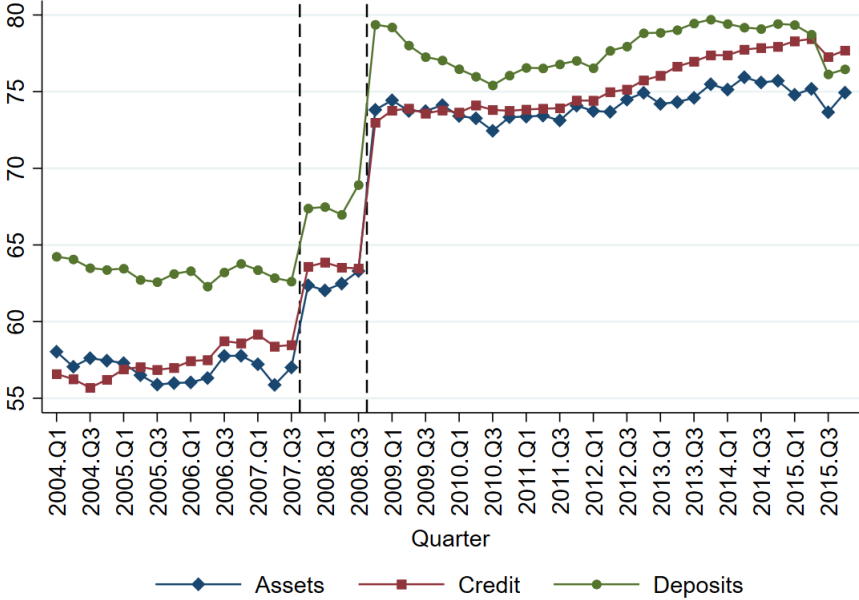
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<sup>22</sup>While balance sheet variables are a December snapshot, income statement variables in December reflect flows from July to December. We divide these flows by 6 to obtain a monthly figure.

information, from IF.data. The data is provided by the Central Bank of Brazil and can be accessed at <https://www3.bcb.gov.br/ifdata/>.

**A1.2 Concentration ratio: share of the five largest banks**

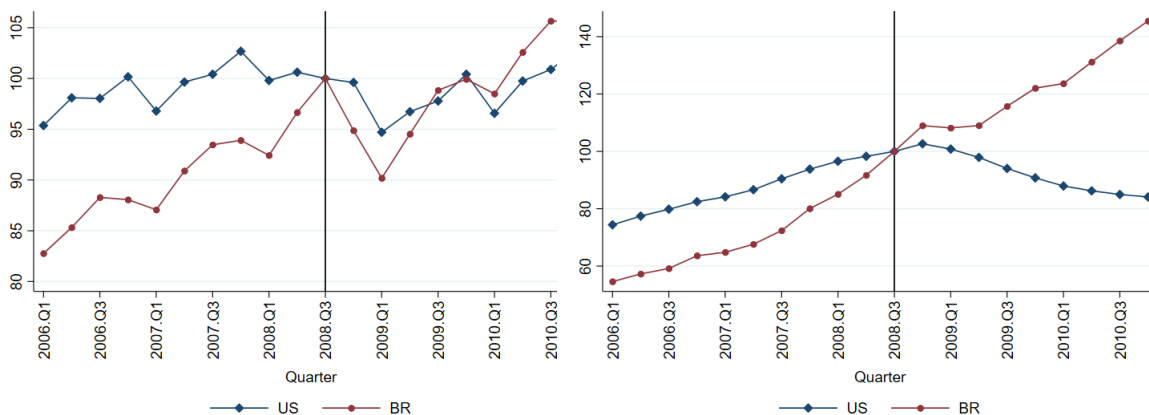
**Figure A1: Share of the five largest banks**



Notes: Share of total assets, credit, and deposits held by the five largest financial institutions. We exclude government-owned development banks. The dashed lines represent the dates of the two M&As we analyze in our study. Data come from the Central Bank of Brazil (IF.data).

### A1.3 Financial crisis: comparison Brazil versus the US

**Figure A2: Effect of the financial crisis: comparison Brazil and US**



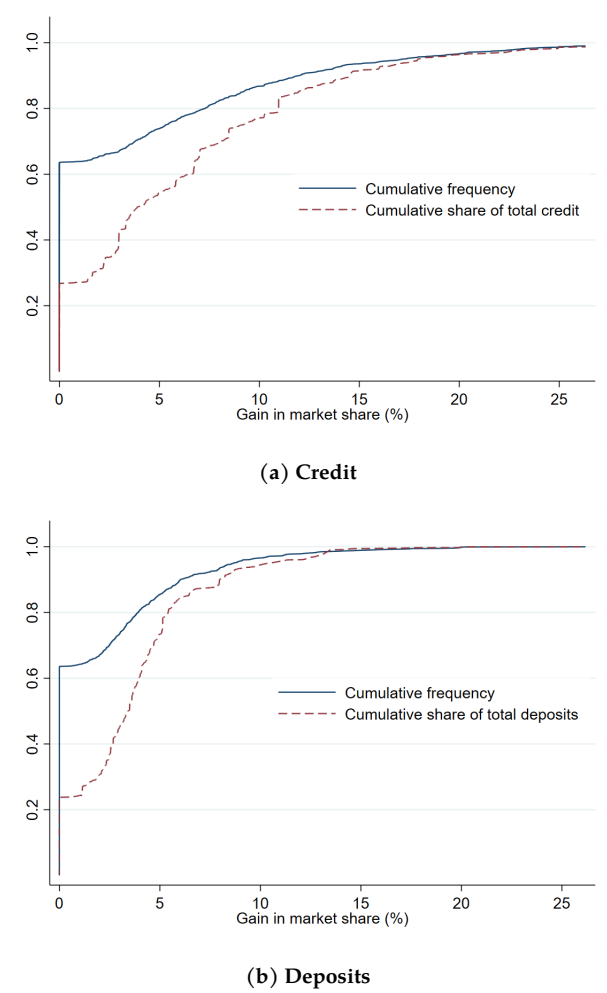
**(a) Quarterly GDP**

**(b) Stock of bank loans to firms**

Notes: Panel (a): quarterly real GDP, not seasonally adjusted. Panel (b): stock of bank loans to firms, not seasonally adjusted. For the US, loans to firms are obtained from the Board of Governors of the Federal Reserve System, H.8, and calculated as the sum of commercial and industrial loans and commercial real estate loans. For Brazil, loans to firms are obtained from the series number 20023, "credit operations in the financial system - Total - to legal entities", access <https://www3.bcb.gov.br/sgspub>. The vertical line in black represents the third quarter of 2008, which is the reference quarter (value=100). The crash of Lehman Brothers took place on September 15, 2008.

A1.4 Distribution of the gains in local market share

Figure A3: Cumulative distribution functions of gains in market share



Notes: Cumulative distribution functions of gains in market share per municipality. The blue line represents the cumulative frequency, while the dashed red line represents the cumulative share of total credit or total deposits. The sample includes municipalities where control banks are present. We use data from December 2006.

## A1.5 Stacked data

**Figure A4:** Stacked data

<p><b>Event-specific dataset 1</b> <i>(cohort 1)</i></p> <p>Acquirer branches involved in the 2007 M&amp;A Target branches involved in the 2007 M&amp;A Control branches (to consolidate in 2015)</p>
<p><b>Event-specific dataset 2</b> <i>(cohort 2)</i></p> <p>Acquirer branches involved in the 2008 M&amp;A Target branches involved in the 2008 M&amp;A Control branches (to consolidate in 2015)</p>

## A2 AKM Decomposition

In this section, we describe how we decompose the earnings in a [Abowd et al. \(1999\)](#) framework. This framework allows us to decompose the workers' ability (unobservables) from workers' observables and bank-branch unobservables. We augment Mincer's framework proposed in [Alvarez et al. \(2018\)](#) in the Brazilian setting to incorporate local, bank, and branch-level components. This allows us to control for workers' changes in observables, local economic conditions, and branch changes from their returns in Mincer equation.

To do so, we regress the log of monthly real earnings on worker observables interacted with municipality-time dummies, occupation interacted with bank-time dummies, and branch-time dummies. Specifically, we include as workers observables: experience<sup>23</sup>, worker tertiary education indicator variable, worker age, and worker gender. Our setting also controls for possible bank-occupation differential earnings and branches change in earnings over time:

$$\begin{aligned} \log(y_{it}) = & (\beta_{mt}^1 age_{it} + \beta_{mt}^2 edu_{it} + \beta_{mt}^3 exp_{it} + \beta_{mt}^4 gender_{it}) \\ & + \beta_{bt} occupation_{it} + \beta_{jt} + \alpha_i + \varepsilon_{it}. \end{aligned} \quad (2)$$

where workers are indexed by  $i$ , branches by  $j$ , municipalities by  $m$ , and banks by  $b$ . In our setting, the first summation incorporates observable changes in workers' characteristics with an interaction term for each municipality time. This set of parameters incorporates any market-specific time-varying effects (municipality-time) of worker characteristics (age, education, experience and gender) on wages. The second set of parameters incorporates bank-time-occupation-specific changes in worker compensation. This component can capture how the banks' characteristics evolve during the integration process, such as through management changes, cost-cutting, or technology upgrades. The third set incorporates possible heterogeneity at the branch level that can be time-varying. This component incorporates any branch-specific change in management quality, technological resources, among other changes happening at the branch-level. Finally,  $\alpha_i$  represents the time-invariant worker component of the earnings that are not explained by all the other components, which we interpret as worker ability.

Our sample consists of the connected group of banks in Brazil between 2003-2015, which in the end comprises all the commercial banks registered in the country. The identification of worker effects comes from the relatively high mobility of workers across bank

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<sup>23</sup>Measured by the years of working experience in the banking sector.

branches under the long period considered: more than 75% of the workers. All our measures of workers' ability rely on the assumptions of exogenous mobility of workers across branches conditional on observables and local shocks (Card et al., 2013; Flabbi et al., 2019).

## A3 Robustness checks

### A3.1 M&As and Branch Closings

**Table A1: M&As and Branch Closings**

	(1)	(2)	(3)
	Branch Closure		
Post M&A × Target	0.046*** (0.016)	0.048*** (0.015)	0.037** (0.015)
Post M&A × Acquirer	-0.020** (0.009)	-0.035*** (0.009)	-0.039*** (0.009)
Observations	108787	108787	108787
R Squared	0.569	0.581	0.589
Branch × Cohort FE	✓	✓	✓
Municipality × Time × Cohort FE	✓	✓	✓
Branch Size × Time × Cohort FE		✓	✓
Market Power Controls × Post M&A			✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Standard errors clustered at branch-cohort and bank-time-cohort levels. Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share in the credit market before the M&A.

### A3.2 Heterogeneity: Alternative Measures of Local Internal Markets

**Table A2:** Inclusion of Information on Local Internal Capital Markets

	(1)	(2)	(3)	(4)	(5)	(6)
	Lending		Employees		$\frac{\text{Lending}}{\text{Employees}}$	
Post M&A	-0.001 (0.028)	-0.037 (0.048)	-0.111*** (0.015)	-0.182*** (0.025)	0.096*** (0.024)	0.157*** (0.042)
Post M&A $\times$ Large Local ILM	0.222*** (0.043)	0.265*** (0.065)	0.017 (0.025)	0.072** (0.033)	0.180*** (0.031)	0.164*** (0.053)
Post M&A $\times$ Large Local ICM	0.067* (0.036)	0.098* (0.053)	0.111*** (0.022)	0.080*** (0.027)	-0.024 (0.025)	0.007 (0.045)
Observations	48405	25070	48405	25070	47936	24856
R Squared	0.949	0.974	0.951	0.991	0.862	0.920
Bank $\times$ Municipality $\times$ Cohort FE	✓	✓	✓	✓	✓	✓
Size $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓
Municipality $\times$ Time $\times$ Cohort FE		✓		✓		✓

Notes: Dependent variables are the inverse hyperbolic sine transformation of the original variables. The data is aggregated at the consolidated bank-municipality-year level. We aggregate target and acquirer branches into a single bank before and after the M&As. Large Local ILM is a dummy variable that takes the value one if the number of employees per branch of the consolidated bank in the municipality is above the median. Large Local ICM is a dummy variable that takes the value one if total deposits per branch of the consolidated bank in the municipality is above the median. Both variables are computed with 2006 figures (before the M&As). Size variables include the number of employees and total assets quartiles at the bank-municipality level before the M&A. Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share in the credit market before the M&A. Standard errors are clustered at bank-municipality-cohort and municipality-time-cohort levels. The estimation sample consists of branches that remained open throughout the estimation window (three years before and six years after the events).

**Table A3: Alternative Measure of Internal Local Internal Labor Markets**

	(1)	(2)	(3)	(4)	(5)	(6)
	Lending		Employees		$\frac{\text{Lending}}{\text{Employees}}$	
Post M&A	0.027 (0.027)	0.014 (0.050)	-0.097*** (0.015)	-0.175*** (0.026)	0.117*** (0.023)	0.201*** (0.044)
Post M&A × Large Local ILM	0.247*** (0.057)	0.301*** (0.082)	0.093*** (0.032)	0.145*** (0.044)	0.124*** (0.032)	0.111* (0.057)
Observations	48405	25070	48405	25070	47936	24856
R Squared	0.949	0.974	0.951	0.991	0.862	0.920
Bank × Municipality × Cohort FE	✓	✓	✓	✓	✓	✓
Time × Cohort FE	✓		✓		✓	
Municipality × Time × Cohort FE		✓		✓		✓

Notes: Dependent variables are the inverse hyperbolic sine transformation of the original variables. The data is aggregated at the consolidated bank-municipality-year level. We aggregate target and acquirer branches into a single bank before and after the M&As. Large Local ILM is a dummy variable that takes the value one if the number of consolidated bank employees in the municipality is above the median in 2006. Size variables include the number of employees and total assets quartiles before the M&A. Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share in the credit market before the M&A. Standard errors are clustered at bank-municipality-cohort and municipality-time-cohort levels. The estimation sample consists of branches that remained open throughout the estimation window (three years before and six years after the events).

### A3.3 Just Acquirer as Control Group

**Table A4: Just Acquirer as Control Group**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Lending	Deposits	Emp.	Int. Transf.	L. O. Ability	$\frac{\text{Lending}}{\text{Emp.}}$	$\frac{\text{Deposits}}{\text{Emp.}}$	Revenues	Costs
Post M&A $\times$ Target	-0.188** (0.073)	-0.141 (0.090)	-0.317*** (0.050)	-0.119 (0.107)	0.046* (0.027)	0.130** (0.049)	0.177** (0.078)	-0.114** (0.056)	-0.425*** (0.142)
Post M&A $\times$ Acquirer	0.350*** (0.051)	0.241*** (0.040)	-0.043** (0.019)	0.225*** (0.066)	0.152*** (0.022)	0.393*** (0.049)	0.284*** (0.043)	0.239*** (0.037)	0.466*** (0.051)
Observations	68586	68586	68586	68300	68586	68586	68586	68586	68586
R Squared	0.902	0.929	0.939	0.250	0.790	0.887	0.856	0.874	0.892
Branch $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municip. $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Size $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Market Power $\times$ Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Dependent variables are the inverse hyperbolic sine transformation of the original variables. Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006 (before the M&As). Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share before the M&A. Standard errors are clustered at branch-cohort and bank-time-cohort levels.

### A3.4 Alternative Transformation of Variable

**Table A5:** Alternative Transformation of Variables ( $\log(1 + \dots)$ )

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Lending	Deposits	Emp.	Int. Transf.	L. O. Ability	$\frac{\text{Lending}}{\text{Emp.}}$	$\frac{\text{Deposits}}{\text{Emp.}}$	Revenues	Costs
Post M&A $\times$ Target	-0.155** (0.072)	-0.148 (0.091)	-0.201*** (0.042)	-0.078** (0.037)	-0.026 (0.029)	0.058 (0.051)	0.065 (0.081)	-0.112** (0.056)	-0.466*** (0.138)
Post M&A $\times$ Acquirer	0.374*** (0.050)	0.224*** (0.042)	0.061** (0.026)	0.051* (0.027)	0.082*** (0.023)	0.306*** (0.048)	0.155*** (0.050)	0.233*** (0.036)	0.421*** (0.051)
Observations	84264	84264	84264	49051	83840	84264	84264	84264	84262
R Squared	0.900	0.930	0.934	0.419	0.744	0.881	0.846	0.883	0.926
Branch $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municip. $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Size $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Market Power $\times$ Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006 (before the M&As). Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share before the M&A. Standard errors are clustered at branch-cohort and bank-time-cohort levels.

### A3.5 Excluding Cities Treated in Both M&As

**Table A6: Excluding Cities Treated in Both M&As**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Lending	Deposits	Emp.	Int. Transf.	L. O. Ability	$\frac{\text{Lending}}{\text{Emp.}}$	$\frac{\text{Deposits}}{\text{Emp.}}$	Revenues	Costs
Post M&A × Target	0.001 (0.138)	-0.117 (0.090)	-0.353*** (0.064)	-0.133 (0.198)	0.137* (0.072)	0.357*** (0.129)	0.239** (0.100)	-0.019 (0.105)	-0.302** (0.145)
Post M&A × Acquirer	0.266*** (0.078)	0.142*** (0.052)	-0.043 (0.037)	0.046 (0.099)	0.098** (0.046)	0.309*** (0.074)	0.185** (0.072)	0.101 (0.063)	0.376*** (0.081)
Observations	6778	6778	6778	6767	6778	6778	6778	6778	6778
R Squared	0.918	0.950	0.953	0.485	0.785	0.911	0.875	0.915	0.900
Branch × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municip. × Time × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Size × Time × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Market Power × Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Dependent variables are the inverse hyperbolic sine transformation of the original variables. Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006. Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share in the credit market before the M&A. Standard errors are clustered at branch-cohort and bank-time-cohort levels.

### A3.6 Additional Market Power Controls

**Table A7: Additional Market Power Controls**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Lending	Deposits	Emp.	Int. Transf.	L. O. Ability	$\frac{\text{Lending}}{\text{Emp.}}$	$\frac{\text{Deposits}}{\text{Emp.}}$	Reven.	Costs
Post M&A $\times$ Target	-0.171** (0.079)	-0.146* (0.085)	-0.228*** (0.047)	-0.189* (0.109)	-0.022 (0.030)	0.058 (0.056)	0.082 (0.078)	-0.132** (0.063)	-0.479*** (0.146)
Post M&A $\times$ Acquirer	0.289*** (0.051)	0.208*** (0.041)	0.080** (0.032)	0.132** (0.061)	0.078*** (0.023)	0.208*** (0.046)	0.127** (0.049)	0.184*** (0.037)	0.386*** (0.051)
Observations	76220	76220	76220	75960	76220	76220	76220	76220	76220
R Squared	0.899	0.932	0.933	0.223	0.758	0.880	0.851	0.880	0.915
Branch $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municip. $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Size $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Baseline M. Power $\times$ Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓
Labor M. share $\times$ Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓
Deposits M. Share $\times$ Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓
Agr. Loan M. Share $\times$ Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Dependent variables are the inverse hyperbolic sine transformation of the original variables. Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006. Market power controls are an indicator variable if the local market overlapped target and acquirer presence and the new consolidated bank local market shares before the M&A of total credit, agricultural lending, deposits and employment. Standard errors are clustered at the branch-cohort and bank-time-cohort levels.

**Table A8: Additional Market Power Controls - HHI**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Lending	Deposits	Emp.	Int. Transf.	L. O. Ability	$\frac{Lending}{Emp.}$	$\frac{Deposits}{Emp.}$	Reven.	Costs
Post M&A × Target	-0.149** (0.074)	-0.138 (0.093)	-0.210*** (0.045)	-0.198** (0.095)	-0.014 (0.028)	0.062 (0.054)	0.072 (0.084)	-0.103* (0.058)	-0.451*** (0.141)
Post M&A × Acquirer	0.380*** (0.051)	0.233*** (0.042)	0.070** (0.028)	0.153** (0.062)	0.089*** (0.021)	0.309*** (0.049)	0.162*** (0.050)	0.241*** (0.038)	0.425*** (0.053)
Observations	84264	84264	84264	83971	84264	84264	84264	84264	84264
R Squared	0.900	0.930	0.933	0.235	0.760	0.881	0.846	0.881	0.917
Branch × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municip. × Time × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Size × Time × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Overlapping M. × Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓
Δ Credit HHI × Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓
Δ Labor HHI × Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓
Δ Deposits HHI × Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓
Δ Agri. Loans HHI × Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Dependent variables are the inverse hyperbolic sine transformation of the original variables. Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006. Market power controls are an indicator variable if the local market overlapped target and acquirer presence and the change in total credit, agricultural lending, deposits and employment HHI caused by the M&A. Standard errors are clustered at branch-cohort and bank-time-cohort levels.

**Table A9: Controlling for Lending per Employee pre-M&A**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Lending	Deposits	Emp.	Int. Transf.	L. O. Ability	$\frac{\text{Lending}}{\text{Emp.}}$	$\frac{\text{Dep.}}{\text{Emp.}}$	Reven.	Costs
Post M&A $\times$ Target	-0.157* (0.079)	-0.144* (0.084)	-0.227*** (0.048)	-0.195* (0.109)	-0.022 (0.029)	0.070 (0.056)	0.083 (0.076)	-0.121* (0.063)	-0.471*** (0.145)
Post M&A $\times$ Acquirer	0.294*** (0.052)	0.209*** (0.041)	0.081** (0.032)	0.130** (0.061)	0.079*** (0.023)	0.212*** (0.047)	0.127** (0.050)	0.187*** (0.037)	0.388*** (0.052)
Observations	76220	76220	76220	75960	76220	76220	76220	76220	76220
R Squared	0.902	0.933	0.933	0.224	0.758	0.883	0.853	0.884	0.918
Branch $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municipality $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Size $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
$\frac{\text{Lending}}{\text{Emp.}}$ $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mkt Pow. Controls $\times$ Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Dependent variables are the inverse hyperbolic sine transformation of the original variables. Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006. Market power controls are an indicator variable if the local market contained both target and acquirer branches interacted with the new consolidated bank's local market share in the credit market before the M&A. Standard errors are clustered at branch-cohort and bank-time-cohort levels.

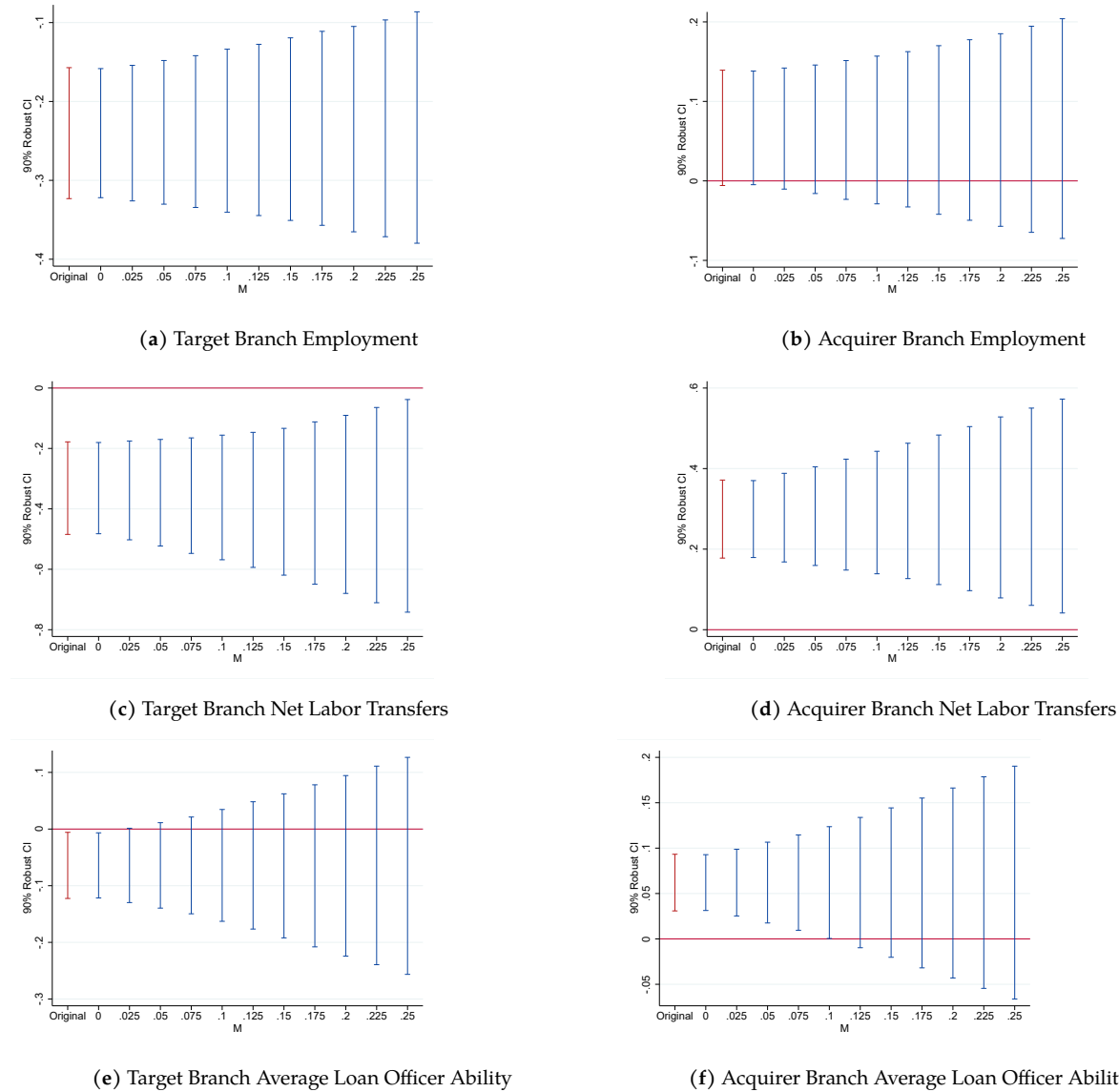
**Table A10: Controlling for Deposits per Employee pre-M&A**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Lending	Deposits	Emp.	Int. Transf.	L. O. Ability	$\frac{\text{Lending}}{\text{Emp.}}$	$\frac{\text{Dep.}}{\text{Emp.}}$	Reven.	Costs
Post M&A $\times$ Target	-0.160** (0.079)	-0.149* (0.083)	-0.225*** (0.048)	-0.194* (0.109)	-0.023 (0.029)	0.065 (0.056)	0.076 (0.074)	-0.123* (0.063)	-0.475*** (0.145)
Post M&A $\times$ Acquirer	0.293*** (0.051)	0.203*** (0.042)	0.083** (0.032)	0.130** (0.061)	0.078*** (0.023)	0.209*** (0.046)	0.120** (0.049)	0.185*** (0.036)	0.384*** (0.051)
Observations	76220	76220	76220	75960	76220	76220	76220	76220	76220
R Squared	0.900	0.934	0.933	0.224	0.758	0.881	0.856	0.881	0.917
Branch $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Municipality $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Size $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
$\frac{\text{Deposits}}{\text{Emp.}}$ $\times$ Time $\times$ Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mkt Pow. Controls $\times$ Post M&A	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: The table reports coefficients obtained from the estimation of Equation 1. Dependent variables are the inverse hyperbolic sine transformation of the original variables. Branch size characteristics include the number of employees, total assets, and market share quartiles in 2006. Market power controls are an indicator variable if the local market contained both target and acquirer branches and the interaction between this dummy variable and the new consolidated bank's local market share in the credit market before the M&A. Standard errors are clustered at branch-cohort and bank-time-cohort levels.

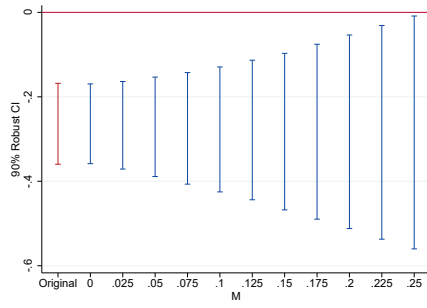
### A3.7 Robustness checks based on [Rambachan and Roth \(2023\)](#)

**Figure A5: Pre-trend Robustness - Employment Reallocation**

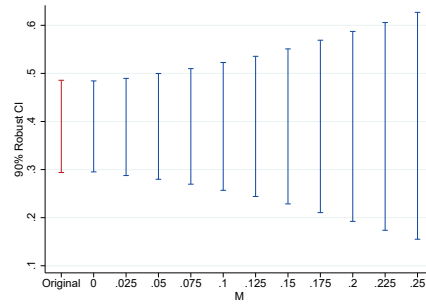


Notes: These figures report 90% confidence intervals for different deviations from linear trends, employing the methodology proposed by [\(Rambachan and Roth, 2023\)](#) and considering the results in Figure 2. Original refers to the average treatment effects assuming no violation of the parallel trends while the other coefficients allow for linear ( $M=0$ ) and non-linear ( $M>0$ ) violations of parallel trends assumptions.

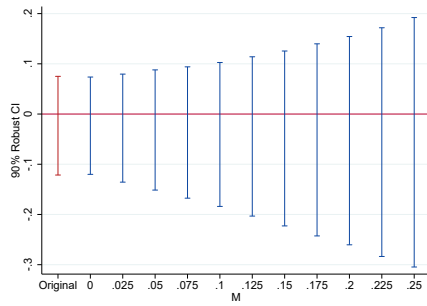
**Figure A6: M&A Effects on Lending Provision**



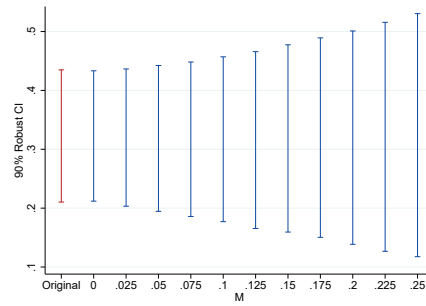
(a) Target Lending



(b) Acquirer Lending



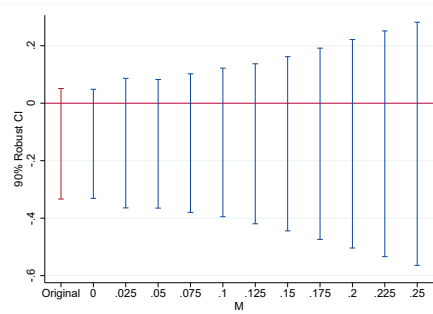
(c) Target Branch Lending Productivity



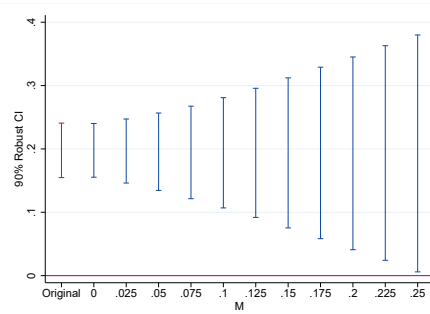
(d) Acquirer Branch Lending Productivity

Notes: These figures report 90% confidence intervals for different deviations from linear trends, employing the methodology proposed by (Rambachan and Roth, 2023) and considering the results in Figure 3. Original refers to the average treatment effects assuming no violation of the parallel trends while the other coefficients allow for linear ( $M=0$ ) and non-linear ( $M>0$ ) violations of parallel trends assumptions.

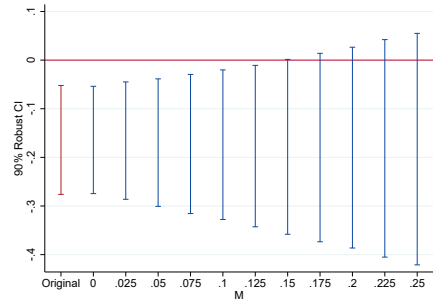
**Figure A7: Funding and Internal Capital Markets Reallocation Branches**



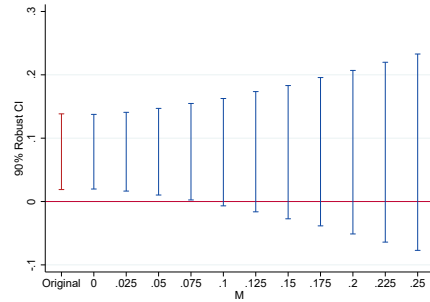
(a) Target Branch Deposits



(b) Acquirer Branch Deposits



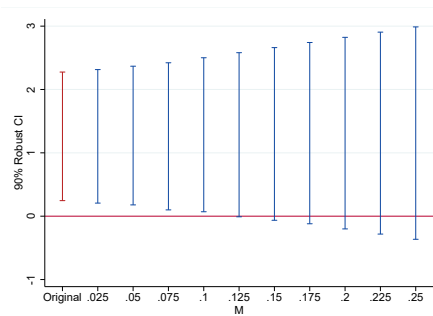
(c) Target Lending-to-Deposits Ratio



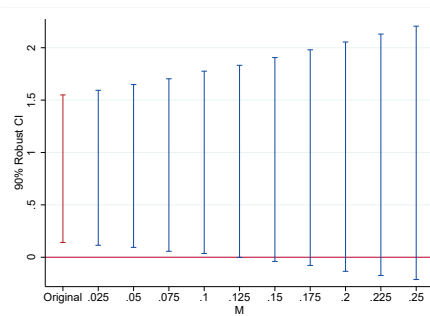
(d) Acquirer Lending-to-Deposits Ratio

Notes: These figures report 90% confidence intervals for different deviations from linear trends, employing the methodology proposed by (Rambachan and Roth, 2023) and considering the results in Figure 3. Original refers to the average treatment effects assuming no violation of the parallel trends while the other coefficients allow for linear ( $M=0$ ) and non-linear ( $M>0$ ) violations of parallel trends assumptions.

**Figure A8: Funding and Internal Capital Markets Reallocation Branches**



(a) Target Branch Profits per worker



(b) Acquirer Branch Profits per worker

Notes: These figures report 90% confidence intervals for different deviations from linear trends, employing the methodology proposed by (Rambachan and Roth, 2023) and considering the results in Figure 3. Original refers to the average treatment effects assuming no violation of the parallel trends while the other coefficients allow for linear ( $M=0$ ) and non-linear ( $M>0$ ) violations of parallel trends assumptions.