

Chapter 5

Financial access and inclusion through postal networks: evaluating the experience of Brazil's Banco Postal

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5.1 INTRODUCTION

Can banking systems become less skewed towards those already better off in developing countries? Although this question has become an important item on the overall development agenda, there is still no rigorous analysis of the policies aimed at expanding financial services into largely unbanked areas (with the exception of microfinance) and their actual impact on inclusion. Anecdotic evidence and economic theory often suggest that the development of a country's financial sector is beneficial to its overall economic growth and in reducing income inequalities. Individual consumption can be smoothed in response to a negative income shock, people can insure against risks which, in turn, can be better diversified, and broader investment opportunities become available. As a result, businesses would be created; employment would increase and individuals' incomes would rise. More broadly, poverty would be reduced in developing countries. While these are the expected effects of such policies, the empirical evidence appearing in the economic literature on financial inclusion policies should be strengthened, particularly for developing countries. Moreover, there has been little comparative evaluation of the different channels of financial inclusion. Until recently, there has generally been no consideration of the possible network effects or of the role that large non-banking networks can play in these policies.

In this chapter, we study a financial inclusion policy being applied in Brazil that relies on large non-banking networks like supermarkets, pharmacies, postal or lottery shops. The purpose of this system, called correspondent banking, is to democratize access to financial services for the low-income population and ensure that every municipality has at least one point of access to basic financial services. These policies are also considered to be an economically efficient means by

which financial intermediaries can give new customers such access through infrastructure and network sharing.

The aim of this chapter is to evaluate the three questions below, focusing on the Banco Postal, the correspondent bank operating in the network of Brazil's designated postal operator, in partnership with one of the country's most prominent private banks:

- i) What has been the role of the Brazilian postal network in promoting access to financial services in the most deprived areas?
- ii) Are there complementarities or substitution effects between the different institutions providing access to financial services, such as traditional banks, postal banks and other correspondents?
- iii) Does a deeper financial system have a causal effect on local development outcomes (entrepreneurship, labour market, attraction of other financial institutions and local economic growth)?

To answer these questions, we based our study on the financial and socio-economic data from all of Brazil's 5,561 municipalities during the period 2000–2006. From a methodological standpoint, two statistical-econometric techniques are used. Firstly, descriptive statistics of regions and categories of municipalities are presented, divided according to their wealth and population. This is done to show how the financial networks and the demand for Banco Postal's services and products are distributed across the country and over time. Secondly, we examine the causality between greater financial access and local economic variables, using a propensity score matching method in order to take advantage of the natural experiment conditions provided by the gradual opening of postal bank branches in Brazil since 2002.

Empirical studies carried out at firm level, industry level, country level and cross-border level provide evidence on the link between financial development and economic growth¹. However, existing theoretical and empirical work has put little emphasis on the link between financial services and growth at regional level or within a country. Moreover, the majority of past studies have concluded that financial development is a leading indicator of growth and economic development, although the causal relationship could not always be proved.

¹ See, for example, King and Levine, 1993; Rajan and Zingales, 1998; Levine, Loayza, Beck, 2000.

This study, as far as we know, offers original elements. Firstly, it gives a country-wide disaggregated analysis of financial inclusion and access. Secondly, the availability of financial data from the postal bank, aggregated by municipality, permits the evaluation of one of the largest financial inclusion programmes conducted in a developing country. Thirdly, by using a database exclusively constructed by the Brazilian Central Bank for this study, we were able to compare the Banco Postal data with the entire correspondent network².

As regards analytical and econometric results, there is strong evidence of the extremely small geographical outreach of traditional bank agencies in some areas of the country. As regards the medium-term impacts of the first wave of Banco Postal branch openings (in 2002) on local development in 2005, we found evidence that communities with Banco Postal agencies have evolved more favourably (creation of firms) in relation to comparable municipalities where a Banco Postal branch was not present in 2002. However, a significant and highly positive impact from Banco Postal openings appears only in municipalities that had one to five traditional bank agencies before introduction of the Banco Postal branches. In communities without any bank agencies prior to Banco Postal's introduction, the use of Banco Postal services is extensive, but without any positive impact on local economic development noted thus far. Interestingly, we also found that the opening of Banco Postal branches has promoted the appearance of traditional banks and other banking correspondents everywhere except in communities that had no bank branch in 2002. There, Banco Postal may sometimes be the sole viable financial service provider, thus giving these communities the status of a local financial monopoly.

The remainder of the document proceeds as follows. Section 5.2 outlines the Brazilian financial system. Section 5.3 briefly introduces the data used and describes the empirical methodology applied. Section 5.4 analyzes access to financial services through Banco Postal. Section 5.5 studies the actual use of financial services made possible by the postal network. Section 5.6 evaluates the economic impact of financial inclusion, taking advantage of the quasi-natural experimental conditions offered by the gradual introduction of the Banco Postal networks. Section 5.7 ends with concluding remarks.

² Department of Cadastral Information Management (DICAD)

5.2 BRAZIL'S FINANCIAL SYSTEM AT THE BEGINNING OF THE 21st CENTURY

Below is a brief description of the main characteristics of Brazil's financial system (size, geographical concentration and structure). A basic understanding of the country's financial system is necessary to appreciate the role played by the different financial service providers.

5.2.1 Size and spatial concentration

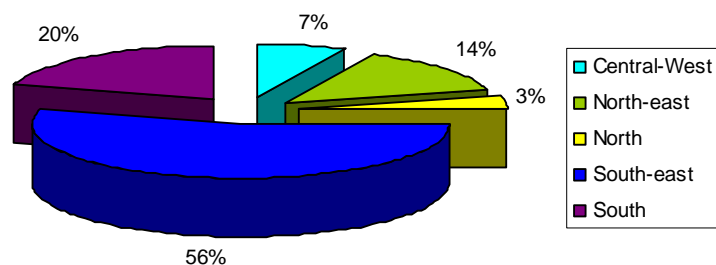
The number of bank agencies per inhabitant (or conversely, the population served by a bank agency) is an indicator of the financial sector's coverage or breadth. Although Brazil enjoyed a wider banking coverage in 2001, compared with other Latin American countries and developing countries in Asia, its bank density is well below the level of OED countries. Owing to the very low population density in some areas of Brazil, bank agencies on average serve a larger territory than in any other country in Table 5.1.

Table 5.1- Bank density: International comparison, 2000

Country	GDP per capita /1/	Population per bank agency	GDP per bank agency (millions USD)	Area per bank agency (sq km)
Brazil	3,152	9,331	29	470
Colombia	2,085	10,931	23	273
Mexico	4,696	11,924	59	236
Chile	4,505	10,727	48	535
India	448	14,888	7	44
Indonesia	683	12,547	9	110
US	33,087	3,568	118	117
Japan	34,344	1,959	67	6
Germany	25,724	1,479	38	6
France	24,434	2,331	57	22

Source: World Bank staff estimates. World Bank Working Paper number 50

Notes: /1/ Current USD

Figure 5.1- Share of bank agencies by region, 2002

From a regional perspective, the intra-country differences in banking access are the most striking feature of the Brazilian financial system. The most financially developed regions are the South and South-east, which together accounted for 76% of all bank agencies in 2002. On the other hand, 42% of all municipalities lacked access to a bank agency in 2001, affecting somewhat less than 10% of the population. These unbanked municipalities were mainly located in the North and Northeast regions.

Table 5.2- Bank density and provision of bank services across regions, 2002

Region	Number of municipalities	Number of bank agencies	GDP per bank agency /1/	Population per agency	Deposits per GDP (%) /2/	Credit per GDP (%) /2/
Central West	464	1163	19,310.70	9,749.49	23.93	104.36
Northeast	1,792	2369	16,804.03	19,238.86	13.98	33.54
North	449	576	19,369.64	19,498.52	13.05	20.79
Southeast	1,668	9161	15,974.40	8,216.60	23.50	63.45
South	1,188	3419	14,060.28	6,615.09	21.81	74.51

Source: IBGE, IPEA and Bacen

Notes:

/1/ Current USD, 2002

/2/ Public and private (include deposits and credits of correspondent banks)

In the South, Southeast and Central West regions, fewer than 10,000 people were served by a Banco Postal agency, while in the North and Northeast regions, there are more than 19,000 inhabitants for every branch. These differences are largely based on the unequal distribution of wealth.

The variations in regional GDP per capita are considerable. In 2002, the level in the South is approximately three times the level in the

Northeast. GDP per bank agency in the South is only 37% higher than in the North, while GDP per capita is nearly twice as high. Hence, the smaller number of banks in the North and Northeast reflects the lower level of income and the resulting lower potential business. A profit-maximizing financial institution will open in areas where the local economy is productive enough to require its services. In non-profitable areas, financial institutions might not be able to spread the fixed costs of its physical facilities, technological platform and other infrastructures. (Beck and de la Torre, 2006).

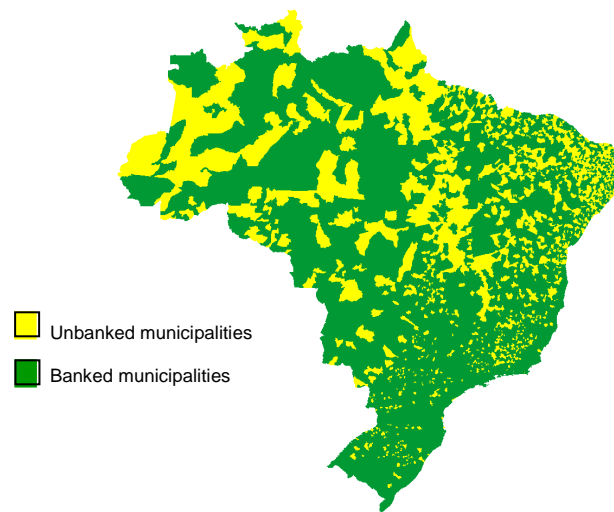
Finally, the volume of credit and deposits per GDP reflects the depth of the financial system adjusted to the income level. Again, we observe substantial regional differences, especially between the North and Northeast, compared with the South and Southeast. The differences in level of credit per GDP are much more striking than those between levels of deposits per GDP. Moreover, the relatively higher level of debt may reflect a more dynamic business environment.

5.2.2 Correspondent banking in Brazil – some general facts

The Brazilian financial system has been largely dominated by banking intermediaries. It was not until the 1990s that the development of other forms of financial institutions, especially microfinance institutions and credit cooperatives, started to take off. At that time, the Brazilian government strengthened an innovative approach for supplying financial services and incrementing access through correspondent banks, which are a form of microfinance institution³.

The regulatory reforms introduced competition and created incentives (corporate strategies, technological change and capacity building), rather than public financing. Correspondent banks do not rely on brick-and-mortar branches, but rather on what the World Bank has usually referred to as "branchless banking". The rationale behind this form of banking is to use the large capillarity of networks (typically lottery kiosks, post offices, pharmacies, supermarkets and other retailers) to achieve the universal provision of financial services. The number of correspondents has increased dramatically since 2002. One of the main factors for this growth is the interest of financial institutions in operating in large networks so that they can share fixed costs, benefit from economies of scale and reach more customers.

³ Correspondent banking in Brazil was introduced in 1973, but legally reinforced in 1999, when the National Monetary Council's Resolution 2.640 made it possible to contract non-financial firms as correspondents.

Figure 5.2- Distribution of bank agencies across the territory, 2005

5.2.3 Banco Postal as a correspondent bank

Banco Postal is a special postal financial service provided by the Brazilian Post (Empresa de Correios e Telégrafos - ECT), which acts as a correspondent for a private bank. The general principles of Banco Postal were established by the Brazilian Ministry of Communication and reflect the institution's social inclusion objectives.⁴

It stipulates that the services offered by Banco Postal should be implemented, with priority given to unbanked municipalities. Indeed, the establishment of Banco Postal agencies was designed to achieve a specific timetable objective: to serve at least 1,000 municipalities by the end of 2002 and reach all of Brazil's financially unattended municipalities by the end of 2003.

Banco Postal was founded in 2001 as a result of a governmental auction won by Bradesco, a large Brazilian private bank, which bid 200 million BRL to operate until 2009 in the ECT agencies.

⁴ Portaria No. 588, 4 October 2000, Brazilian Ministry of Communications.

Each Banco Postal agency is able to provide a range of payment, savings and lending services, including⁵:

- i) Receipt and forwarding to Bradesco of proposals for the opening of a bank account;
- ii) Execution of payment and inpayment orders;
- iii) Payments and withdrawals from bank accounts;
- iv) Remittances and transfers of funds;
- v) Receipt and forwarding of proposals for financing (loans and micro-credits).

Banco Postal offers simplified bank accounts. As long as the money deposited remains in the account for more than thirty days, it earns interest. Its monthly fee is lower than Bradesco's and a minimum amount of 5 BRL is required.⁶ Loans and micro-credits, ranging from 50 to 100 BRL were first granted in 2002 and 2003 respectively, and credit risks are completely assumed by Bradesco.⁷

5.3 DATA PRESENTATION AND EMPIRICAL APPROACH

Our data cover the period 2000–2006 and contain information on Brazil's municipalities. A municipality is defined as the smallest political administrative unit after a state and, although the number of municipalities changed only slightly during the period, a total 5,561 municipalities that existed throughout the period is used.

We use data from four different sources. The socio-economic data come from the Brazilian Institute for Geography and Statistics (Instituto Brasileiro de Geografia e Estatística - IBGE) and from the Institute of Applied Economic Research (Instituto de Pesquisa Econômica Aplicada - IPEA).

We also use data from the Central Bank of Brazil (Bacen), which has provided information on the stock of credits and deposits per municipality and on the number of bank agencies and correspondents by municipality. The latter reveals the name and the number of correspondents by municipality and the financial institution to which they are linked. It is an exclusive dataset, constructed specially for this

⁵ http://www.bcb.gov.br/pre/bc_atende/port/correspondentes.asp?idpai=faqcidadeao1

⁶ http://www.febraban-star.org.br/documentos/pdfs/Banco_Postal.pdf

⁷ Kumar et al.: "Expanding Bank Outreach through Retail Partnerships. World Bank Working Paper No. 85", 2006

research. The availability of financial data other than those provided by the ECT enables us to compare the relative importance and role of the different institutions providing access to financial services.

We first use administrative units (regions) to describe the Banco Postal openings over time and across the territory and to explain Banco Postal's use. Next, we divide municipalities by semi-deciles of their GDP per capita and population.⁸ This gives us a more concise picture of Banco Postal's location and use since it is not based on administrative divisions, but rather on categories of income and population, and thus better reflects the heterogeneity of the regions and enables us to compare the Banco Postal network with that of bank agencies and correspondents.

Lastly, in order to examine whether financial intermediation through Banco Postal exerts a causal impact on local development, we consider the opening of a Banco Postal agency in a municipality in 2002 as a "treatment" for the municipality, and use propensity score matching methods to estimate the impact of this opening on the post-intervention economic state of the municipality.⁹

5.4 EVALUATING ACCESS

The first Banco Postal branch was opened in March 2002 and, by the end of 2006, there were a total of 5,567 Banco Postal agencies in operation. At the time of completion of this study, the number of Banco Postal agencies had reached 5,863. It is planned to open agencies in a total of 5,895 postal outlets.¹⁰ The institution experienced a rapid expansion until the first half of 2004 and after that, the expansion slowed down.

Table 5.3 underscores the important role of Banco Postal as a provider of financial access to unbanked municipalities. By the end of 2006, 2,106 municipalities (37.8% of all municipalities) did not have a single bank branch, which affected 8% of the total population.

⁸ A semi-decile is any of the 19 values that divide data into 20 equal parts, so that each part represents 1/20th of the sample.

⁹ Propensity scores are an index that uses all the information of the municipal pre-treatment variables in order to compute the probability of assignment into treatment. On the basis of this index, we use the nearest neighbour matching technique to compare the effects on the outcome variables of a treated municipality with a determined propensity score with another municipality with a similar propensity score, but which did not have a Banco Postal (i.e. "not treated").

¹⁰ The total number of permanent offices staffed by the administration officials.

In 2006, Banco Postal was present in 4,860 of 5,561 municipalities (87%), 1,525 of which did not previously have a bank agency. This has improved the financial access of 12.4 million people (total population of those municipalities). Moreover, in that same year, Banco Postal was present in 856 municipalities that were completely unattended (no bank branches or other correspondents), thereby providing access to 5.98 million people.

The remaining municipalities either had a bank agency or Banco Postal branch (10.4%). In 2006, 2.3% of the municipalities were completely unattended by any kind of financial network, affecting 1.7 million people.

Table 5.3- Creation of Banco Postal agencies over time

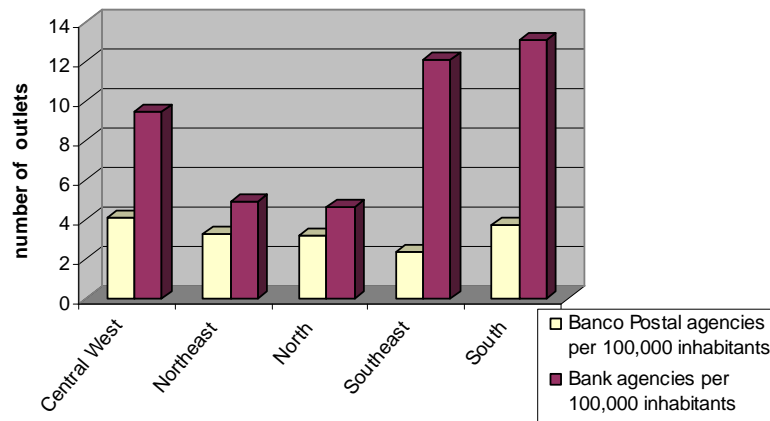
Start year	Banco Postal agencies	% of municipalites with BP	% of municipalites without BA	Number of BP in municipalites without BA	Number of BP in municipalites without BA nor BC	% of municipalites with BP but without BA nor BC
2002	2 450	39	42	827	822	15
2003	3 813	60	42	1 130	1 108	20
2004	5 362	85	38	1 434	1 299	23
2005	5 444	86	38	1 471	1 154	21
2006	5 567	87	38	1 525	856	15

Note:

BA =bank agency; BC=banking correspondent agencies (without BP)

Figure 5.3- Expansion of Banco Postal throughout the territory



Figure 5.4- Financial access by region, 2006

In Figure 5.4 we can see the North-South pattern in the relative importance of Banco Postal in providing access compared with bank agencies. On the one hand, in the South and Southeast, Banco Postal has from 80% to 90% less outreach (measured as outlets per 100,000 inhabitants) than traditional bank agencies. On the other, in the relatively poorer Northern regions, the gap between Banco Postal and traditional bank agencies is relatively smaller.

An alternative way to analyze the distribution of financial intermediaries is to group municipalities according to their population or their wealth, rather than by administrative division.¹¹ We can infer from Tables A.1.1 to A.2.2 that Banco Postal agencies, other correspondents and the traditional bank agencies all present different network topographies. Municipalities with higher overall GDP per capita and population tend to have a denser network of financial intermediaries. However, a comparison of these networks at different levels of income and population reveals that they complement each other in some cases and overlap in others, possibly creating some competitive pressure.

Bank agencies tend to cluster in more populated, wealthier areas as a result of their rational and profit-maximizing behaviour. Such a clear concentration does not appear in the case of Banco Postal agencies because their introduction is proportional to the relatively more evenly distributed postal network. Consequently, the distribution of Banco Postal agencies is quite constant across different levels of wealth and population. Other correspondents seem to behave simi-

¹¹ See Appendix for the interpretation of semi-deciles.

larly to bank agencies and are concentrated where wealth and population are concentrated, and probably where the density of other networks, such as supermarkets or pharmacies, is also higher.

From Table A.1.1, we can deduce that, in 2002, the 20% of municipalities with the lowest number of inhabitants, representing less than 2% of Brazil's total population, correspond to very different percentages of each network's outlets: 8.55% of all Banco Postal agencies, 1.78% of all bank agencies and 0.5% of all correspondents. In 2006 (Table A.1.2), we find in the same group of municipalities 13.41% of all Banco Postal, but only 1.53% of all bank branches and about 1% of all correspondents. In 2006, in only 60% of the largest municipalities is the average number of correspondents greater than that of Banco Postal agencies. For bank agencies, it is only from the median municipality that their average number becomes larger than that of Banco Postal agencies.

A similar, though less striking, phenomenon can be seen with the same analysis of municipalities' income level (Tables A.2.1 and A.2.2). The average number of Banco Postal agencies increases with wealth, but not as dramatically for traditional bank agencies. The biggest difference in Banco Postal distribution occurs between the lowest and the highest semi-decile; the poorest 5% of municipalities have, on average, about 2.8 times fewer agencies than the richest 5%. On the other hand, the distribution in the bank agency network according to level of income is even more skewed: the difference in the average number of agencies between the richest and poorest municipalities is by a factor of about 60. About 32% of their network is concentrated in the 278 richest municipalities; alternatively, 58% of their network is concentrated in the 278 most populated municipalities.

To sum up, in 2002, there was less than one bank agency in the 35% poorest municipalities and in the 55% least populated municipalities. This result improves four years later, when "only" the 30% poorest and 33% least populated municipalities have less than one bank branch on average. Our analysis leads to the conclusion that Banco Postal, other correspondents and bank agencies are mostly complementary networks, with the first two providing access where the latter is not as present.

Figure 5.5.1- Distribution of the different networks and population according to GDP per capita semi-deciles, 2005

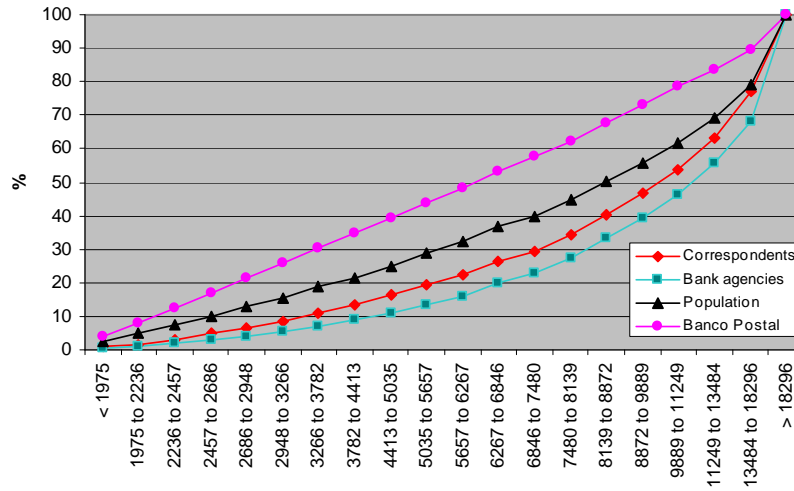
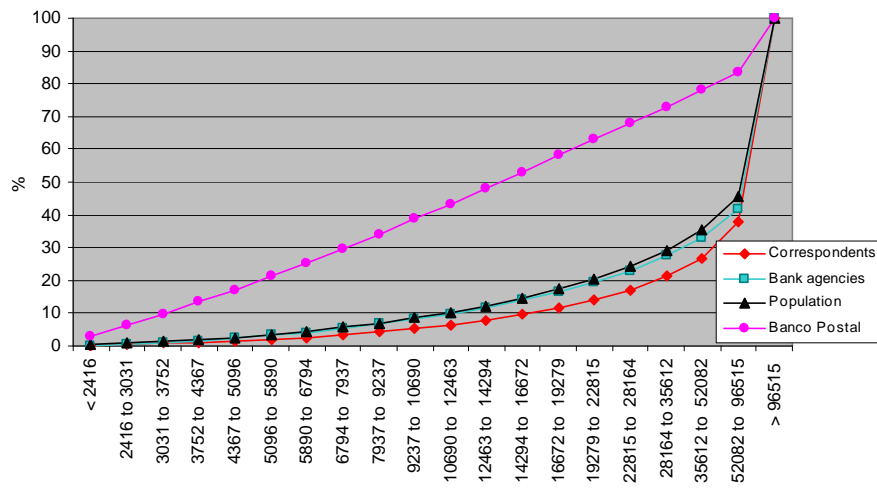


Figure 5.5.2- Distribution of the different networks and population according to population semi-deciles, 2006



Notes:

x-axis: municipalities divided into semi-deciles (according to GDP or population)

y-axis: cumulative distribution (in %) of number of financial outlets and population

Figures 5.5.1 and 5.5.2 may help to understand graphically the different distributions of the networks and population among municipalities according to their wealth and population.

Population mainly clusters in the richer areas; half of the population is concentrated in the upper third of wealthiest municipalities (in terms of GDP per capita). Banco Postal is the more evenly distributed network among semi-deciles, while most traditional bank agencies and banking correspondents are located in richer and more populated areas; less than one quarter of their outlets are located in the lower half of municipalities (by GDP per capita).

The fact that Banco Postal agencies are homogeneously distributed throughout the territory, regardless of the municipalities' level of economic development and population, reflects the institution's desire for social and financial inclusion.

5.5 EVALUATING INCLUSION. USE OF BANCO POSTAL SERVICES AND PRODUCTS

The three main components of financial services provided by Banco Postal are savings, credit and payment services. Bank accounts are important because they help to buffer the emergencies to which poorer population segments are more vulnerable.¹² Access to payment services such as money transfers, social security payments or international remittances, is also important to the less well-off rural inhabitants, who often rely on these payments. Lastly, access to credit for segments of the population with more modest incomes is often viewed as a way to enhance small business development.

For each region and each group of municipalities (divided into semi-deciles of population and GDP per capita), we studied how these services were used, revealing the population's relative participation in Banco Postal services.

5.5.1 Mobilization of savings

By the end of 2006, Banco Postal had opened a total of 5.68 million accounts. Banco Postal agencies in the North, Northeast and Central West regions have opened more accounts on average.

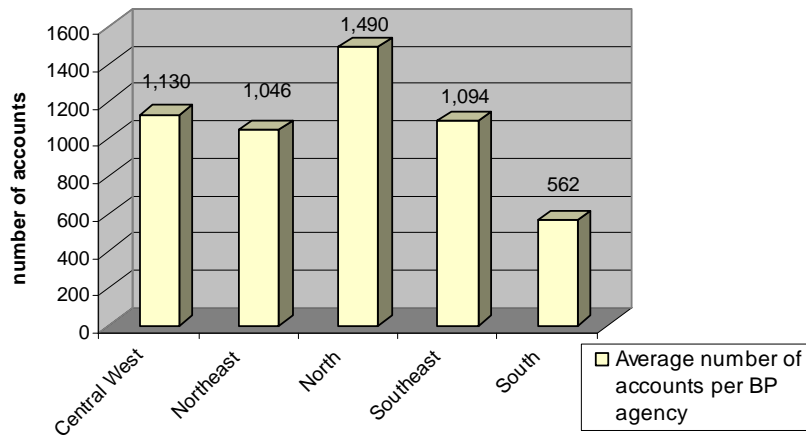
¹² World Savings Banks Institute and European Savings Bank Group, *Perspectives No. 47* (October 2004).

While a typical Banco Postal branch in the North had 1,490 accounts in 2006, its equivalent in the South had less than one third this number.

The number of saving deposits (deposits that remain in accounts more than thirty days, thereby earning interest) is less than the number of current deposits (Figure 5.7.1). We see that in 2006, North and Central-West have more than two times more deposits per agency than South.

The average amount in a Banco Postal deposit is used as an indicator in profiling Banco Postal customers. We find customer profiles to be quite homogeneous from one region to the next. The average amounts in savings and current deposits are about 200 BRL and 400 BRL respectively.¹³ This shows that Banco Postal attracts relatively low-income customers.

Figure 5.6- Average number of accounts per Banco Postal agency, 2006



¹³ Close to the minimum monthly salary of 415 BRL in 2008.

Figure 5.7.1- Average number of deposits per Banco Postal agency, 2006

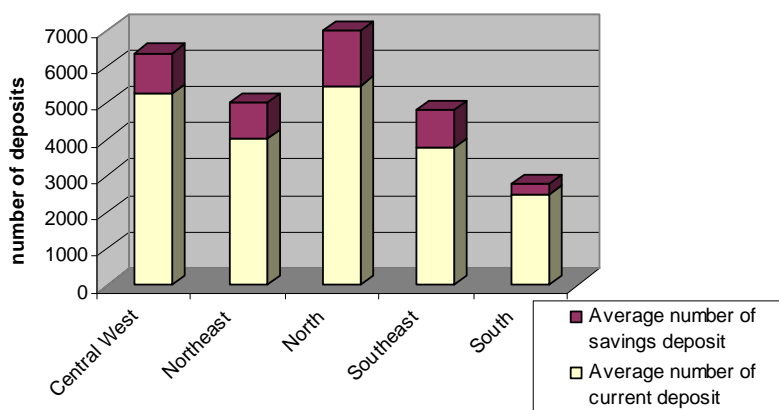
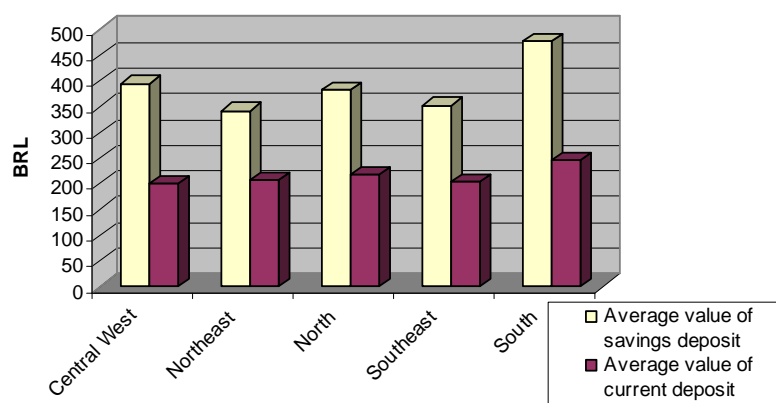


Figure 5.7.2- Average value of deposits per Banco Postal agency, 2002-2006



Tables A.3.1 and A.3.2 present the distribution of different Banco Postal services and products across semi-deciles. In Table A.3.1, the number of current deposits and savings deposits and the number of withdrawals are presented¹⁴. At first glance, we can see that wealth and the per capita demand for Banco Postal services and products are not proportionally related. In fact, those living in the poorest 50% municipalities, which represent less than one third of the population

¹⁴ Withdrawals refer to shelter withdrawals in Banco Postal. However, Banco Postal customers can access their savings by other means, mainly through Bradesco's facilities, at ATMs, via Internet and by telephone.

(29%) account for some 50% of all Banco Postal deposits. This is a very positive result as regards financial inclusion, as it indicates that there are more Banco Postal deposits in poorer municipalities.

5.5.2 Lending services

Access to financial services, particularly credit, is one of the most quoted constraints to business development by the self-employed and "micro entrepreneurs". Micro enterprises account for the vast majority of all Brazilian firms and contribute substantially to employment and GDP. Brazil's 4.5 million micro and small enterprises account for 44% of all employment and more than 60% of urban jobs (Kumar et al., 2001).

From its creation up to the end of 2006, Banco Postal has granted 1.93 million loans. This includes micro-credits, loans and e-loans. On average, in 2006, a Banco Postal agency granted some 200 loans in the North and Central West, while in the Northeast and Southeast; the average number of loans per Banco Postal agency was half that amount. The difference is more striking in the South, where a typical Banco Postal agency granted four times fewer loans on average than in the North or Central West.

In Table A.3.2, credit services are analyzed, including micro-credits, loans and e-loans.¹⁵The Banco Postal micro-credits, loans and e-loans granted were disproportional. In 2005, 10% of the total Brazilian population, concentrated in the 20% poorest municipalities, received some 20% of all micro-credits, while the richest semi-decile, containing some 20% of the population, received less than 10% of all micro-credits granted. The effect is even more apparent with regular loans. Nearly one quarter of all loans were granted to the poorest two deciles, while only some 4% of loans were granted to the richest 5% of all municipalities, which include 10% and 20% of the total Brazilian population respectively. These figures confirm the evidence of a North-South pattern in Banco Postal lending services.

¹⁵ E-loans are loans for which a Banco Postal customer can apply via the Internet.

Figure 5.8.1- Average number of loans (micro-credits and loans) per Banco Postal agency

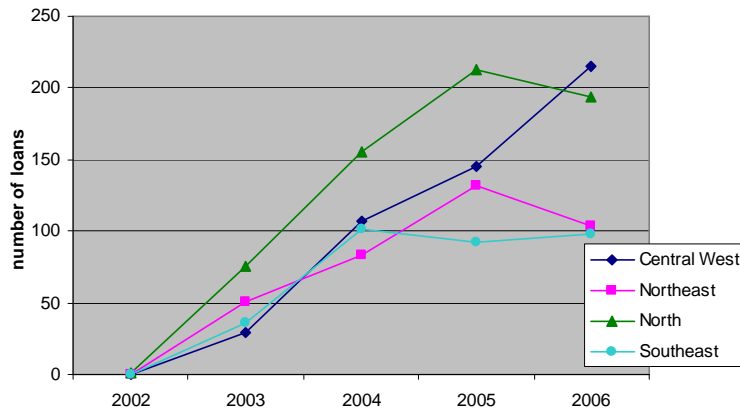
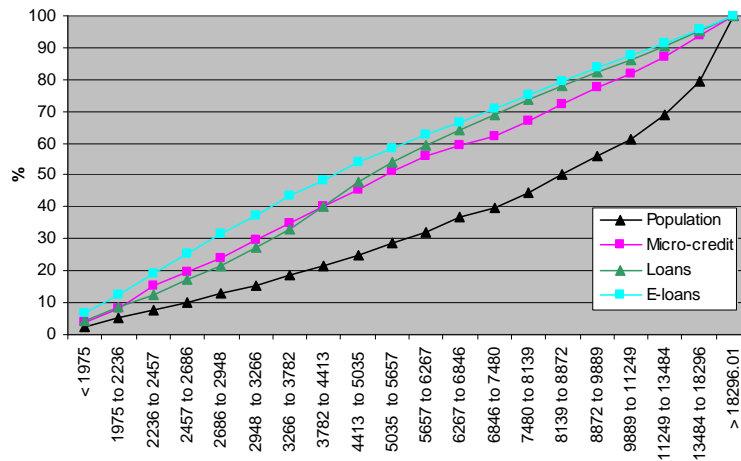


Figure 5.8.2- Distribution of loans and population according to GDP per capita semi-deciles, 2005

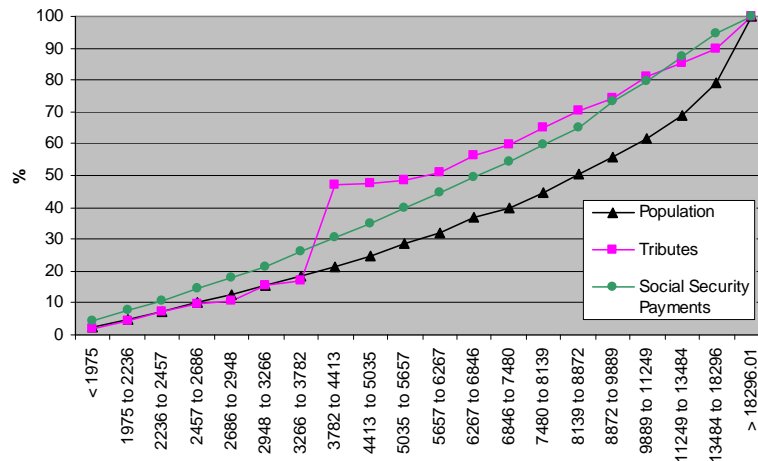


5.5.3 Payment services

For Banco Postal, moving away from cash operations to electronic forms of payment is desirable, because they can provide faster and better service while reducing processing costs and automating operations. Postal savings banks can now offer these services, after previously offering only the possibility of sending money in the form of paper postal money orders.

In Table A.3.2, payment services are analyzed, including tributes, social security, domestic and non-domestic remittances. The population living in the poorest 50% of municipalities accounts for 48% of all tributes paid through Banco Postal, 39% of all social security pensions and 37% of their total value.

Figure 5.8.3- Distribution of tributes, social security payments and population according to GDP per capita semi-deciles, 2005



5.6 EFFECTS OF BANCO POSTAL ON LOCAL ECONOMIC DEVELOPMENT

We have analyzed the treatment effect of a Banco Postal branch opening in 2002 on seven variables (number of new firms, variation in the level of employment, growth in the average number of employees per firm, growth in proportion of salaried employees, number of new bank agencies, number of new correspondents and growth in real GDP). All the outcome variables are presented as the difference in their values between 2001 (or 2000, if no 2001 data) and 2005. The results are presented in Tables A.4 to A.5.3.

The number of firms is used to study local entrepreneurship. The level of employment is used to assess job creation. To determine the size of the firms, we use the average number of employees per firm. Furthermore, in order to understand the level of formalization of the labour market, we use the proportion of salaried people compared with all employees. To determine whether the launch of Banco Postal

generates a positive externality on other financial intermediaries (i.e., whether it has attracted bank agencies and other correspondents), we look at the change in the number of other correspondent agencies and bank branches. Lastly, we look for any Banco Postal impact on local economic growth.

The average outcome for the treated groups and for the control (non-treated) groups is summarized in columns i and ii of each table respectively; column iii gives the difference between columns i and ii. This can be interpreted as the average treatment effect on the treated (ATT). A positive (negative) difference means that the average effect on the treated group is greater (smaller) than on the non-treated group.

The estimates given in Table A.4 reveal that the launch of a Banco Postal agency in a municipality in 2002 has had significant average causal effects on most of the variables concerned. In a four-year period (2002–2005), the municipalities that had received the treatment experienced a formalization of their labour market and attracted more bank agencies and correspondents. In concrete terms, the increase in the number of bank agencies (other correspondents) was 56% (12%) higher in municipalities with a Banco Postal agency in 2002 compared to their peers without Banco Postal. Another positive impact brought about by Banco Postal was the average of 37 additional new firms per municipality with Banco Postal compared to their peers without Banco Postal in four years.

The results in Table A.4 make no allowance for other sources of variation in outcome, such as differences attributed to regions per se. For example, some regions may have a more formalized labour market or an industrial structure that is highly dependent on external financing, which would bias our results. To deal with the intrinsic regional effects or structural regional differences, we included regional dummies in Table A.5.¹⁶ This might reduce the region-specific bias (which, despite the inclusion of all relevant control variables, is a difficult, if not impossible, task). The addition of the regional dummies attenuates the coefficients and raises its standard error, seemingly weakening the strong statistical evidence presented above. However, the statistical impact of these regional dummy variables are more likely to be simply due to the fact that most Banco Postal branches were first opened in the North and North East regions – the municipalities of which were mostly unbanked – thus making the

¹⁶ Dummies are variables that take the value 1 if the observation corresponds to a specific region, and the value 0 if not.

statistical comparison between Banco Postal-endowed municipios and their peers without Banco Postal almost unfeasible in these two regions. What we can infer from Table A.5 though is that the average treatment effect of a Banco Postal agency launch in 2002 was the creation of an estimated average of 29 additional new firms per municipality with Banco Postal compared to their peers without Banco Postal in four years.

We could use the underlying heterogeneity better by conditioning the municipalities on their level of banking penetration prior to treatment (also correlated with their average income level). Tables A.4.1 to A.4.3 estimate the baseline model using three conditioning information sets. The first includes only municipalities which had no bank in 2001, the second, municipalities with at least one, but fewer than six, bank branches and the third, only those municipalities with more than five bank agencies. These groups represent 42.4%, 51.9% and 5.7% of all municipalities respectively. We conditioned the ATT to determine where the causal effect was more pronounced. In other words, we condition our treatment to use the level of access. Furthermore, in Tables A.5.1 to A.5.3, we condition on the level of banking penetration and add regional dummies.

From Table A.5.2, we can conclude that, taking into account regional differences and specific levels of financial access, the opening of a Banco Postal agency in 2001 had a causal impact on the creation of 20 firms in municipalities with some level of financial competition (from one to five bank agencies) in 2001.

We can also conclude that treated municipalities with some level of financial competition in 2001 experienced a 17% higher growth in the number of firms than non-treated municipalities.

Although Banco Postal has led to the creation of enterprises, the average size of the firms remains nearly unchanged. This is probably explained by the fact that most newly created firms had a small number of employees on average. As regards the effects on the labour market, we find that, once regional differences are taken into account, jobs were created in municipalities already with some financial intermediation in 2001 (Table A.5.2). Interestingly, positive effects on the formalization of the labour market are found. On average, municipalities initially unbanked experienced relatively more growth in the proportion of salaried workers than the municipalities that did not benefit from a Banco Postal launch in 2002.

Furthermore, we find that the first wave of Banco Postal branch openings did not have any medium-term effect on local GDP per capita growth in 2005. The fact that there was no positive impact on the

value of local GDP per capita noted so far may be explained by other factors (which we cannot take into account) explaining changes in a country's economic development. Moreover, an explanation of the lack of Banco Postal impact on medium-term economic growth in terms of GDP value could be the fact that Banco Postal represents only a small part of the entire financial system. A plausible explanation is that financial inclusion is above all a matter of numbers rather than value. While many individuals and small firms were financially included through Banco Postal, it is intuitive to understand that the monetary added value of all transactions was not large enough so as to have an impact on a macroeconomic aggregate – such as GDP – which is measured in value terms. This is the same when comparing these transactions to the overall financial system. Yet this constitutes another tangible proof of the inclusion power of Banco Postal, because if many new firms have been created locally thanks to Banco Postal (as tested econometrically) while the value aggregate (GDP) remains largely unaffected, this in turn means that the new economic activities created have been mostly involving the less well-off segments of the population – low-income households and micro-enterprises. The positive macroeconomic local impact of Banco Postal is to be found at the extensive (number of) rather than the intensive (value of) margin. It thus confirms that BP was an important factor of integration for those segments of the population – mostly rural or in small cities – in a time of stronger concentration of economic activities in large centers due to development. As highlighted by the World Bank (WDR 2008), more concentration also calls for more integration in order to prevent the periphery from becoming a de-stabilizing factor and jeopardize the sustainability of economic development. Lastly, the literature suggests that an effect on economic growth in terms of GDP value might require a longer term to be detected.¹⁷

Interestingly, we find that the treatment attracted other bank agencies, but only in municipalities already with bank agencies in 2001. For municipalities without bank agencies in 2001, the opening of a Banco Postal in the same year seemed to discourage competition (the average increase in the number of bank agencies for the entire period is slightly negative). There, Banco Postal may sometimes be the sole viable financial services provider, thus giving these municipalities the status of a natural local financial monopoly. In fact, the average increase in the number of bank agencies for treated, but initially un-

¹⁷ King and Levine (1993) show that financial development is a good predictor of growth over the next 10 to 30 years.

banked, municipalities was half that of the untreated municipalities. On the other hand, treated municipalities, with at least one bank agency in 2001, had more than three times as many bank agencies as non-treated municipalities with the same level of financial access through bank agencies.

5.7 CONCLUDING REMARKS

This chapter has confirmed that the postal network in Brazil has been used effectively to promote access to financial services in the country's most deprived areas. Banco Postal is present in 4,860 of a total of 5,561 municipalities.

A total of 12.4 million people living in 1,525 municipalities in which a Banco Postal agency was opened did not have any bank agency present at the time. Moreover, in 2006, Banco Postal was present in 865 municipalities that had no bank branches or other correspondent institutions, thus acting as the sole financial intermediary for 5.98 million people.

Banco Postal agencies are evenly distributed across the country, while other financial intermediaries are mainly concentrated in the relatively wealthy and populated areas. Banco Postal, other correspondent banks and bank agencies are therefore mostly complementary networks (the first two provide access where the third is not as present). Although access to financial services and products is a necessary condition for development, it is by evaluating the use of those services and products that we can assess actual financial inclusion. Banco Postal seems to attract relatively low-income customers, with a very similar profile across the regions. Interestingly, in 2005, about one quarter of all loans and micro-credits were granted to the 20% poorest municipalities, which account for 10% of Brazil's population. The 50% poorest municipalities, equal to 29% of the entire population, account for 50% of all Banco Postal deposits.

Our analysis suggests that the extended financial access achieved by Banco Postal's presence has had a medium-term positive impact on entrepreneurship and employment in municipalities with a certain degree of financial culture and competition in 2001. Moreover, Banco Postal has led to a formalization of the economy in municipalities that did not have any bank presence in 2001.

In some areas, we see a crowding-out effect on financial intermediaries after Banco Postal's introduction in 2002 while in others, we see an attraction effect. This means that, on average, the unbanked mu-

municipalities in 2001 that opened a Banco Postal branch in 2002 pushed out other competitors from the market. Conversely, in municipalities with a certain level of financial culture, Banco Postal's launch in 2002 attracted other bank agencies.

Although we see the effects of Banco Postal on key factors explaining economic growth, we could find no direct effects on GDP per capita growth in terms of value. To do so may require a longer period of study or simply means that the impact of growth is at the extensive margin ("number of") rather than at the intensive margin ("value of") – a consistent outcome with the economic and financial inclusion of low-income households and micro- and small enterprises.

Future lines of study could eventually include an evaluation of Banco Postal and the economic profitability for the Brazilian Post.

This study is valuable for the ongoing debate on how to expand financial services by means of the postal network in order to effectively reach the involuntarily excluded population. It also highlights the importance of innovation and governmental support for promoting competition.

5.8. BIBLIOGRAPHY

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5.9. APPENDIXES

Statistical tables

Interpretation

The content of Tables A.1.1 to A.2.2 can be interpreted as follows: the 5561 Brazilian municipalities are divided in 20 categories (semi-deciles), each one containing 278 municipalities (5% of the total). The categories refer to the population in 2002 (Table A.1.1) and in 2006 (Table A.1.2), and to the GDP per capita in 2002 (Table A.2.1) and in 2005 (Table A.2.2).

As an example, the first semi-decile of population (first row of Table A.1.1) contains the 5% least populated municipalities in 2002, all having fewer than 2442 inhabitants. The last semi-decile of the same table contains the 5% of the municipalities with the highest number of inhabitants in year 2002, all having more than 88,477 inhabitants. Row 10 (10th semi-decile) is the median. 50% of the municipalities had fewer than 10417 inhabitants in 2002. The columns show the distribution of the different networks across semi-deciles: Banco Postal agencies, bank agencies and correspondents (without Banco Postal

Tables A.3.1 and A.3.2 show the different services and products offered by Banco Postal according to the semi-deciles of GDP per capita of a municipality in year 2005. Again, the 5561 municipalities are divided into 20 categories (semi-deciles), each containing 5% of the 5,561 municipalities. The categories refer to GDP per capita in 2005. As an example, the first semi-decile of GDP per capita (first row of Table A.3.1) contains the 5% poorest municipalities in 2005, all with a GDP per capita lower than 1,975.72 BRL. The last semi-decile of the same table contains the 5% wealthiest municipalities, all with a GDP per capita of more than 1,8296 BRL, approximately nine times as much as the lowest.

Table A.1.1- Networks by semi-deciles of population, 2002

semi-decile	Banco Postal Agencies			Bank agencies			Correspondents			Population			
	%	cumul.	average	%	cumul.	average	%	cumul.	average	%	cumul.	average	
< 2442	1.92	1.92	0.17	0.25	0.25	0.15	0.07	0.07	0.00	0.00	0.07	1971.66	0.31
2442 to 3072	2.12	4.04	0.19	0.38	0.62	0.23	0.15	0.22	0.01	0.01	0.22	2747.43	0.43
3072 to 3725	2.12	6.16	0.19	0.53	1.16	0.32	0.22	0.44	0.01	0.01	0.44	3407.03	0.53
3725 to 4363	2.29	8.45	0.20	0.62	1.77	0.37	0.00	0.44	0.00	0.00	0.44	4038.57	0.64
4363 to 5062	3.06	11.51	0.27	0.65	2.43	0.39	0.15	0.59	0.01	0.01	0.59	4702.73	0.74
5062 to 5842	3.10	14.61	0.27	0.81	3.24	0.49	0.00	0.59	0.00	0.00	0.59	5449.94	0.86
5842 to 6765	2.90	17.51	0.26	0.92	4.16	0.55	0.15	0.74	0.01	0.01	0.74	6309.19	0.99
6765 to 7798	4.24	21.76	0.37	1.08	5.24	0.65	0.15	0.88	0.01	0.01	0.88	7236.33	1.14
7798 to 9056	3.14	24.90	0.28	1.20	6.44	0.72	0.15	1.03	0.01	0.01	1.03	8399.84	1.32
9056 to 10417	4.12	29.02	0.36	1.50	7.95	0.90	0.29	1.32	0.01	0.01	1.32	9751.03	1.54
10417 to 12059	4.78	33.80	0.42	1.52	9.46	0.91	0.15	1.47	0.01	0.01	1.47	11229.23	1.77
12059 to 13815	5.35	39.14	0.47	1.84	11.30	1.10	0.51	1.99	0.03	0.03	1.99	12939.59	2.05
13815 to 15989	4.45	43.59	0.39	2.18	13.48	1.31	0.51	2.50	0.03	0.03	2.50	14891.41	2.34
15989 to 18602	5.35	48.94	0.47	2.46	15.94	1.48	0.44	2.94	0.02	0.02	2.94	17296.74	2.72
18602 to 21684	5.51	54.45	0.49	2.99	18.93	1.79	1.40	4.34	0.07	0.07	4.34	20075.62	3.16
21684 to 26769	5.92	60.37	0.52	3.66	22.59	2.19	1.47	5.81	0.07	0.07	5.81	24212.31	3.81
26769 to 33644	6.04	66.41	0.53	4.29	26.88	2.58	1.91	7.72	0.09	0.09	7.72	29879.24	4.71
33644 to 48959	6.61	73.02	0.58	5.96	32.83	3.58	4.85	12.57	0.24	0.24	12.57	40110.79	6.35
48959 to 88477	7.67	80.69	0.68	8.87	41.71	5.33	10.88	23.46	0.53	0.53	23.46	65904.87	10.37
> 88477	19.31	100.00	1.70	58.29	100.00	34.99	76.54	100.00	3.74	3.74	100.00	344101.50	54.22

Table A.1.2- Networks by semi-decile of population, 2006

semi-decile Population	Banco Postal Agencies		Bank agencies		Correspondents		Population				
	%	cumul. average	%	cumul. average	%	cumul. average	%	cumul. average			
< 2416	2.91	2.91	0.23	0.23	0.15	0.15	0.19	0.19	0.27	0.29	1942.93
2416 to 3031	3.16	6.07	0.35	0.58	0.22	0.23	0.42	0.41	0.33	0.41	2735.92
3031 to 3752	3.66	9.74	0.47	1.05	0.30	0.33	0.75	0.51	0.46	0.51	3403.01
3752 to 4367	3.68	13.42	0.58	1.63	0.37	0.28	1.03	0.60	0.40	0.60	4061.14
4367 to 5096	3.65	17.06	0.73	2.22	0.37	0.37	1.40	0.70	0.52	0.70	4702.17
5096 to 5890	4.22	21.29	0.85	3.19	0.62	0.55	1.95	0.81	0.78	0.81	5471.71
5890 to 6794	4.08	25.36	0.82	4.08	0.56	0.62	2.57	0.95	0.87	0.95	6369.80
6794 to 7937	4.24	29.60	0.85	4.93	0.76	0.63	3.19	1.09	0.89	1.09	7322.66
7937 to 9237	4.44	34.04	0.89	5.82	0.76	0.63	3.19	1.27	0.89	1.27	8561.76
9237 to 10690	4.60	38.64	0.92	6.74	0.98	1.03	5.17	1.48	1.45	1.48	9936.30
10690 to 12463	4.80	43.43	0.96	7.66	1.00	1.18	6.35	1.72	1.68	1.72	11519.18
12463 to 14294	4.81	48.25	0.96	8.57	1.17	1.45	7.80	2.05	1.99	2.05	13380.74
14294 to 16672	4.87	53.12	0.97	9.54	1.47	1.69	9.48	2.39	2.39	2.39	15422.97
16672 to 19279	4.90	58.02	0.98	10.44	1.54	1.96	11.45	2.78	2.68	2.68	17991.08
19279 to 22815	4.96	62.98	0.99	11.40	1.97	2.58	14.03	3.12	3.66	3.12	20940.03
22815 to 28164	4.96	67.94	0.99	12.36	2.28	3.04	17.07	4.31	4.31	4.31	25349.42
28164 to 35612	5.05	72.98	1.01	13.37	2.85	4.19	21.27	5.95	5.95	5.95	31562.55
35612 to 52082	4.96	77.94	0.99	14.36	3.60	5.67	26.93	8.03	8.03	8.03	42639.92
52082 to 96515	5.42	83.37	1.09	15.45	5.48	11.13	38.07	15.78	15.78	15.78	70452.88
> 96515	16.63	100.00	3.33	58.23	37.04	61.93	100.00	87.79	87.79	100.00	367978.00

Table A.2.1- Networks by semi-deciles of GDP per capita (current values, BRL), year 2002

semi-decile GDP p.c	Banco Postal agencies		Bank agencies		Correspondents		Population	
	%	cumul average	%	cumul average	%	cumul average	%	cumul average
< 1405.38	4,21	4,21	0,42	0,42	0,00	0,00	0,00	2,28
1405.38 to 1603.11	3,84	8,04	0,59	1,01	0,00	0,00	0,00	4,85
1603.11 to 1764.94	4,21	12,25	0,81	1,82	0,00	0,00	0,00	7,44
1764.94 to 1950.89	4,53	16,78	0,40	2,77	0,37	0,37	0,02	10,24
1950.89 to 2147.21	5,72	22,50	1,15	3,92	0,51	0,88	0,03	13,04
2147.21 to 2362.36	4,49	26,99	0,40	5,11	0,72	1,76	0,04	15,69
2362.36 to 2681.4	4,08	31,07	1,19	6,62	0,88	2,79	0,05	18,51
2681.4 to 3096.2	4,98	36,06	1,95	8,58	1,17	5,66	0,14	22,13
3096.2 to 3560.51	4,00	40,06	1,79	10,36	1,08	7,50	0,09	24,95
3560.51 to 4024.535	4,29	44,34	2,18	12,54	1,31	10,51	0,15	28,24
4024.535 to 4479.83	4,25	48,59	2,63	15,17	1,58	12,72	0,11	32,56
4479.83 to 4940.06	4,33	52,92	3,18	18,35	1,91	16,91	0,21	35,71
4940.06 to 5426.75	4,70	57,62	3,27	21,62	1,95	19,93	0,15	39,35
5426.75 to 5951.28	4,65	62,27	4,41	26,11	2,70	24,78	0,24	44,44
5951.28 to 6519.49	5,80	68,07	7,15	33,27	4,31	32,57	0,38	51,87
6519.49 to 7254.7	4,25	72,32	5,08	38,35	3,05	36,47	0,19	56,17
7254.7 to 8285.03	4,45	76,77	5,60	43,95	3,36	41,18	0,23	60,76
8285.03 to 9741.27	6,61	83,38	11,36	55,31	6,79	57,13	0,78	69,10
9741.27 to 13244	6,49	89,87	13,56	68,87	8,14	73,09	0,78	80,21
> 13244	10,13	100,00	31,13	100,00	18,75	100,00	1,32	100,00

Table A.2.2- Networks by semi -deciles of GDP per capita (current values, BRL), year 2005

semi-decile GDP p.c	Banco Postal Agencies		Bank agencies		Correspondents		Population	
	%	cumul.	%	average	%	average	%	average
< 1975	3,91	3,91	0,48	0,77	0,30	0,75	0,43	2,49
1975 to 2236	4,10	8,01	0,67	0,80	0,42	0,87	0,50	5,05
2236 to 2457	4,37	12,38	0,82	0,86	0,51	1,48	0,84	7,51
2457 to 2686	4,34	16,72	1,00	0,85	0,62	1,84	1,05	16,345,16
2686 to 2948	4,56	21,28	1,17	0,89	0,72	1,71	0,97	10,14
2948 to 3266	4,39	25,67	1,38	0,86	0,86	2,01	1,15	12,70
3266 to 3782	4,56	30,22	1,67	0,89	1,03	2,43	1,38	15,43
3782 to 4413	4,41	34,63	1,79	0,87	1,11	3,39	1,31	18,67
4413 to 5035	4,63	39,26	2,05	0,91	1,27	4,66	1,60	21,60
5035 to 5657	4,28	43,54	2,26	0,84	1,40	6,21	1,72	24,89
5657 to 6267	4,54	48,08	2,83	0,89	1,75	8,22	2,03	28,66
6267 to 6846	4,94	53,02	3,62	0,96	2,24	10,46	2,43	32,27
6846 to 7480	4,48	57,51	3,22	0,88	2,00	12,70	2,68	36,72
7480 to 8139	4,76	62,26	4,60	0,93	2,85	15,55	2,94	39,90
8139 to 8872	5,44	67,70	5,73	1,06	3,55	18,10	3,27	44,63
8872 to 9889	5,35	73,05	5,86	1,05	3,63	21,73	3,93	50,39
9889 to 11249	5,47	78,52	7,25	1,08	4,51	25,24	3,94	55,88
11249 to 13484	5,27	83,80	9,49	1,03	5,86	31,10	5,29	61,47
13484 to 18296	5,92	89,71	12,18	1,16	6,07	37,17	7,82	68,97
> 18296	10,29	100,00	31,93	2,02	19,87	68,04	13,19	79,35
						100,00	23,07	100,00
								137261,60

Table A.3.1.- Banco Postal services and products by semi-deciles of GDP per capita (current values, BRL), 2005

semi-decile GDP p.c	Population			Current deposits (#)			Savings deposits (#)			Accounts (#)		
	%	% cumul	average	%	% cumul	average	%	% cumul	average	%	% cumul	average
< 1975.72	2,49	2,49	3,86	3,86	3,86	2860,16	4,42	4,42	717,81	4,53	4,53	9,;
1975.72 to 2236.23	2,55	5,05	3,92	7,78	2899,11	4,36	8,78	708,88	4,29	8,82	8,;	
2236.23 to 2457.8	2,46	7,51	4,58	12,36	3399,01	4,67	13,45	761,77	4,50	13,33	9	
2457.8 to 2686.05	2,63	10,14	4,19	16,55	3103,75	4,82	18,27	782,28	4,26	17,59	8;	
2686.05 to 2948.25	2,56	12,70	4,49	21,04	3315,10	5,04	23,31	816,01	4,03	21,62	8;	
2948.25 to 3266.09	2,74	15,43	4,58	25,62	3400,66	5,58	28,88	909,06	4,13	25,75	8;	
3266.09 to 3782.46	3,23	18,67	5,55	31,17	4091,52	5,55	34,44	898,60	4,80	30,55	9;	
3782.46 to 4413.16	2,93	21,60	4,90	36,07	3640,27	5,20	39,63	847,15	4,08	34,63	8;	
4413.16 to 5035.39	3,29	24,89	5,07	41,14	3753,36	5,70	45,33	926,22	4,29	38,91	8;	
5035.39 to 5657.74	3,76	28,66	4,78	45,92	3539,01	4,58	49,91	743,81	3,89	42,80	7;	
5657.74 to 6267.37	3,61	32,27	4,47	50,39	3308,72	3,66	53,57	594,17	3,45	46,25	7;	
6267.37 to 6846.34	4,45	36,72	4,78	55,17	3526,43	4,17	57,74	675,80	3,48	49,73	7;	
6846.34 to 7480.5	3,18	39,90	4,22	59,39	3124,63	3,68	61,42	597,68	3,50	53,24	;	
7480.5 to 8139.71	4,73	44,63	4,55	63,94	3368,68	3,77	65,19	612,41	4,30	57,54	8;	
8139.71 to 8872.64	5,76	50,39	5,22	69,16	3865,38	4,92	70,11	799,08	4,79	62,32	9;	
8872.64 to 9889.17	5,49	55,88	5,65	74,81	4179,59	4,83	74,94	785,21	5,84	68,16	1;	
9889.17 to 11249.74	5,60	61,47	4,59	79,40	3409,12	3,95	78,90	644,87	5,03	73,19	1;	
11249.74 to 13484.76	7,50	68,97	5,14	84,54	3794,47	4,23	83,12	684,34	5,79	78,98	1;	
13484.76 to 18296.01	10,38	79,35	5,53	90,07	4095,35	5,26	88,38	854,49	8,33	87,31	1;	
> 18296.01	20,65	100,00	9,93	100,00	7374,00	11,62	100,00	1884,05	12,69	100,00	21	

Table A.3.2- Banco Postal services and products by semi-deciles of GDP per capita (current values, BRL), year 2005

semi-decile GDP p.c.	Population			Social Security Payments			Social Security Payments (BRL)			Domestic remittances (#)			Nondomestic remittances (#)			Microcredits (#)			E-loans (#)			Loans (#)		
	%	% cumul	average	%	% cumul	average	%	% cumul	average	%	% cumul	average	%	% cumul	average	%	% cumul	average	%	% cumul	average	%	% cumul	average
< 1975.72	2.49	2.49	4.46	4.46	691.946	4.07	4.07	201988	0.82	0.82	11.60	0.00	0.00	0.00	3.94	3.94	15.73	4.34	4.34	17.51	6.93	6.93	153.55	
1975.72 to 2236.23	2.55	5.05	3.11	7.57	482.626	2.83	6.90	140214	1.26	2.07	17.87	0.00	0.00	0.00	7.94	16.01	16.01	4.14	8.48	16.71	5.72	12.65	126.65	
2236.23 to 2457.8	2.46	7.51	3.31	10.88	515.569	3.07	9.97	152841	1.34	3.41	19.06	0.00	0.00	0.00	7.38	29.60	29.60	3.98	12.46	16.12	6.02	19.27	147.05	
2457.8 to 2686.05	2.63	10.14	3.62	14.50	561.032	3.37	13.34	167231	1.62	5.03	23.07	0.02	0.02	0.00	4.30	19.62	17.17	4.81	17.26	19.40	6.15	25.42	136.12	
2686.05 to 2948.25	2.56	12.70	3.56	18.05	549.756	3.27	16.61	161586	2.18	7.21	30.85	0.10	0.12	0.01	4.14	23.76	16.47	4.28	21.54	17.20	6.19	31.61	136.53	
2948.25 to 3266.09	2.74	15.43	3.41	21.46	530.783	3.18	19.78	156021	3.76	10.97	53.68	0.02	0.15	0.00	6.09	29.84	24.40	5.63	27.17	22.82	5.89	37.50	130.90	
3266.09 to 3782.46	3.23	18.67	4.78	26.24	738.821	4.47	24.25	220762	6.05	17.02	85.76	0.00	0.15	0.00	5.28	35.12	21.01	5.96	33.13	23.96	5.91	43.41	130.41	
3782.46 to 4413.16	2.93	21.60	4.17	30.41	648.821	3.95	28.20	196798	2.80	19.82	39.90	0.27	0.41	0.04	5.05	40.17	20.25	7.17	40.30	29.05	4.77	48.17	105.92	
4413.16 to 5035.39	3.29	24.89	4.65	35.06	721.975	4.51	32.71	228666	2.51	22.33	35.69	0.24	0.66	0.04	5.09	45.26	20.33	7.49	47.78	30.22	5.87	54.04	130.01	
5035.39 to 5657.74	3.76	28.66	4.84	39.90	750.115	4.77	37.48	236901	2.65	24.98	37.66	1.19	1.84	0.18	5.71	50.97	22.82	6.24	54.03	25.21	4.53	58.57	100.27	
5657.74 to 6267.37	3.61	32.27	4.66	44.56	723.46	4.58	42.06	227227	3.27	28.24	46.48	1.46	3.30	0.22	4.79	55.76	19.13	5.16	59.18	20.81	4.05	62.62	89.73	
6267.37 to 6846.34	4.45	36.72	5.02	49.59	776.599	5.09	47.15	231472	3.63	32.07	54.23	1.99	5.29	0.29	3.73	59.46	14.84	4.82	64.10	19.77	3.84	66.57	87.00	
6846.34 to 7480.5	3.18	39.90	4.76	54.34	735.061	4.80	51.95	238252	3.80	35.87	54.08	1.38	6.67	0.21	2.80	62.29	11.20	4.96	69.06	20.03	4.16	70.72	92.08	
7480.5 to 8138.71	4.73	44.63	5.44	59.78	843.842	5.52	57.46	279802	3.82	39.80	55.77	4.42	11.09	0.65	4.46	66.75	17.83	4.77	73.83	19.25	4.30	75.03	95.30	
8138.71 to 8872.64	5.76	50.39	5.20	64.98	806.482	5.22	62.68	258823	5.85	45.65	83.22	6.21	17.31	0.92	5.58	72.33	22.29	4.14	77.97	16.73	4.29	79.31	94.90	
8872.64 to 9889.17	5.49	55.88	8.51	73.49	1320.4	8.55	71.24	423541	5.13	50.77	72.92	3.18	20.49	0.47	4.97	77.30	19.86	4.48	82.46	18.10	4.66	83.97	103.10	
9889.17 to 11249.74	5.60	61.47	6.24	79.73	971.329	6.63	77.86	330131	4.63	55.40	66.06	8.96	29.44	1.33	4.59	81.88	18.39	3.82	86.28	15.48	3.80	87.77	84.44	
11249.74 to 13484.76	7.50	68.97	7.78	87.51	1202.61	8.34	86.20	411420	5.91	61.32	83.81	8.40	37.84	1.24	5.35	87.24	21.32	4.36	90.64	17.54	3.45	91.22	76.16	
13484.76 to 18296.01	10.38	79.35	6.98	94.49	1082.15	7.76	93.95	384254	7.15	68.47	101.73	12.14	49.98	1.80	6.64	93.87	26.51	4.44	95.08	17.93	4.49	95.71	99.42	
> 18296.01	20.65	100.00	5.51	100.00	858.664	6.05	100.00	307153	31.53	100.00	449.95	50.02	100.00	7.44	6.13	100.00	24.57	4.92	100.00	19.94	4.29	100.00	95.33	

Tables A.4 to A.4.3- Causal effects of Banco Postal on local development outcome

Table A.4 ATT for the whole sample						
Outcome/Variable	Treated	Controls	Diff.	S.E.	T-stat	
	(i)	(ii)	(iii)			
Nb of new firms	201,041	163,357	37,683	17,467	(2.16)**	
Growth of average firms' employees	0.665	0.480	0.319	0.319	(1.5)*	
New employees	1381.21	1209.49	171.72	133.04	(1.29)*	
Growth in share salaried	0.026	0.015	0.011	0.005	(2.06)**	
Nb of new bank agencies	0.138	0.088	0.050	0.029	(1.73)**	
Nb of new correspondents	2.919	2.608	0.311	0.260	1.190	
Growth of real GDP (2005)	0.034	0.038	-0.004	0.005	-0.780	

Table A.4.1 ATT for only the those municip. unbanked in year 2001						
Outcome/Variable	Treated	Controls	Diff.	S.E.	T-stat	
	(i)	(ii)	(iii)			
Nb of new firms	26.830	27.338	-0.509	1.913	-0.270	
Growth of average firms' employees	1.213	0.490	0.723	0.809	0.890	
New employees	263.75	186.27	77.48	86.17	0.90	
Growth in share salaried	0.038	0.019	0.019	0.011	(1.76)**	
Nb of new bank agencies	0.135	0.270	-0.135	0.026	(-5.19)***	
Nb of new correspondents	0.370	0.438	-0.068	0.049	(-1.39)*	
Growth of real GDP (2005)	0.045	0.045	-0.001	0.008	-0.070	

Table A.4.2 ATT for municip. with 1 to 5 banks in 2001						
Outcome/Variable	Treated	Controls	Diff.	S.E.	T-stat	
	(i)	(ii)	(iii)			
Nb of new firms	136.477	127.420	9.057	8.452	1.070	
Growth of average firms' employees	0.347	0.345	0.001	0.132	0.010	
New employees	860.73	796.08	64.65	61.74	1.05	
Growth in share salaried	0.020	0.018	0.002	0.005	0.410	
Nb of new bank agencies	0.051	0.011	0.040	0.025	(1.63)*	
Nb of new correspondents	1.881	1.868	0.013	0.148	0.090	
Growth of real GDP (2005)	0.023	0.026	-0.003	0.007	-0.390	

Table A.4.3 ATT for municip. with more than 5 banks in 2001						
Outcome/Variable	Treated	Controls	Diff.	S.E.	T-stat	
	(i)	(ii)	(iii)			
Nb of new firms	1081.218	870.135	121.083	155.615	0.780	
Growth of average firms' employees	0.287	0.209	0.059	0.137	0.430	
New employees	8014.35	7127.62	886.74	1227.55	0.72	
Growth in share salaried	0.012	0.006	0.005	0.006	0.950	
Nb of new bank agencies	0.553	0.142	0.411	0.297	(1.39)*	
Nb of new correspondents	14.963	17.220	-2.257	2.439	-0.930	
Growth of real GDP (2005)	0.047	0.034	0.013	0.013	0.950	

Notes

1. Diff = Treated - Controls

2. Significance Levels : *significant at 10%; **significant at 5%; *** significant at 1%

Tables A.5 to A.5.3- Causal effects of Banco Postal on local development outcome. Regional Specification

Table A.5 ATT for the whole sample						
Outcome/Variable	Treated (i)	Controls (ii)	Diff. (iii)	S.E.	T-stat	
Nb of new firms	199,758	170,527	29,231	19,158	(1.53)*	
Growth in average firms' employees	0.664	0.358	0.306	0.324	0.940	
New employees	1341.31	1296.51	44.80	128.72	0.35	
Growth in share salaried	0.664	0.358	0.306	0.324	0.940	
Nb of new bank agencies	0.026	0.024	0.001	0.005	0.250	
Nb of new correspondents	2.684	2.464	0.190	0.235	0.810	
Growth of real GDP (2005)	0.034	0.031	0.003	0.005	0.640	

Table A.5.1 ATT for only those municip. unbanked in year 2001						
Outcome/Variable	Treated (i)	Controls (ii)	Diff. (iii)	S.E.	T-stat	
Nb of new firms	26,886	29,345	-2,459	2,138	-1,150	
Growth in average firms' employees	1.204	0.464	0.720	0.796	0.900	
New employees	263.69	209.40	54.29	86.23	0.63	
Growth in share salaried	0.038	0.035	0.002	0.011	0.220	
Nb of new bank agencies	0.136	0.248	-0.112	0.026	(-4.28)***	
Nb of new correspondents	0.371	0.337	0.034	0.046	0.730	
Growth of real GDP (2005)	0.045	0.036	0.009	0.008	1.170	

Table A.5.2 ATT for municip. with 1 to 5 banks in 2001						
Outcome/Variable	Treated (i)	Controls (ii)	Diff. (iii)	S.E.	T-stat	
Nb of new firms	136,477	116,386	20,091	7,979	(2.52)***	
Growth in average firms' employees	0.347	0.276	0.071	0.133	0.53	
New employees	860.73	720.84	139.89	66.77	(2.1)**	
Growth in share salaried	0.020	0.014	0.005	0.005	1.12	
Nb of new bank agencies	0.050	0.025	0.025	0.023	1.11	
Nb of new correspondents	1.881	2.100	-0.219	0.151	-1.45	
Growth of real GDP (2005)	0.023	0.030	-0.007	0.007	-1.04	

Table A.5.3 ATT for municip. with more than 5 banks in 2001						
Outcome/Variable	Treated (i)	Controls (ii)	Diff. (iii)	S.E.	T-stat	
Nb of new firms	1072,453	1327,475	-255,022	205,140	-1,240	
Growth in average firms' employees	0.243	0.055	0.188	0.133	(1.42)*	
New employees	8041.67	9228.28	-1184.61	1599.91	-0.74	
Growth in share salaried	0.010	0.011	-0.001	0.005	-0.310	
Nb of new bank agencies	0.453	0.569	-0.116	0.337	-0.340	
Nb of new correspondents	16,373	17,254	-881	2,714	-0.320	
Growth of real GDP (2005)	0.053	0.036	0.016	0.014	1,180	

Table A.6- Summary statistics on different finance providers

year	Unbanked Municipalities		BP agencies /1/			Bank agencies			Correspondent outlets /3/		
	Total	Population (millions)	Total	Mean	SD /2/	Total	Mean	SD	Total	Mean	SD
2001	2,331	18.7				16,474	2.96	30.31	984	0.18	2.08
2002	2,320	18.5	2,450	0.44	1.15	16,688	3.00	30.91	1,360	0.24	2.44
2003	2,328	18.6	3,813	0.69	1.70	16,486	2.96	30.87	2,414	0.43	4.81
2004	2,118	14.9	5,362	0.96	1.96	16,910	3.04	30.97	8,442	1.52	13.81
2005	2,113	15.0	5,444	0.98	2.00	17,237	3.10	31.61	15,838	2.85	20.42
2006	2,106	15.1	5,567	1.00	2.04	17,684	3.18	32.96	39,406	7.09	46.74

Source: Bacen, IBGE, IPEA

Notes:

/1/ BP = Banco Postal

/2/ SD= Standard deviation

/3/ BP agencies not comprehended