

Between Financial Inclusion and Postal Banking: Is the Survival of Posts Also There?

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1. INTRODUCTION

Out of 1.5 billion users of postal financial services in the world, only 400 millions are holders of a postal (bank) account, 300 millions of which located in developing or emerging countries. As of today, more than 2 billion adults remain un-banked, mostly in developing and emerging countries, although under-banked citizens are also a concern in more advanced economies. Have Posts started to bridge this financial access divide that often exists between better and less well-off populations? Our paper suggests this has become the case in an increasing number of developing and emerging countries. They are following a path historically initiated and recently highlighted in the activities of some postal operators in today's high income economies.

The incentives to do so are powerful for the Posts in an environment where structural declines in mail volumes have weakened the economic viability of traditional postal business models around the world during the last decade. The recent global economic and financial crisis (2007-9) has further deteriorated the conditions in mail markets, with postal operators losing up to 20% of their mail traffic during this two-year economic downturn, and forecasting losses of 30% over the next decade that could leave the industry with large excess capacities.

In these circumstances, diversification strategies are highlighted by postal executives in order to survive and develop their business in an era of electronic communications driven by the massive access of consumers to new information and communication technologies. Posts often mention two levers to achieve a greater economic diversification of their activities besides targeting higher efficiency and value in mail delivery. On the one hand, they claim to be well-positioned to take advantage of the growth of logistics – trough globalization or e-commerce – and further develop the packets, parcels and express segments of their business. On the other hand, they value the proximity to their customers – through the largest physical communication network in the world – and the trust shown by the latter to develop and offer an increasing range of financial services through their network, provided national regulations allow for such a development. The paper evaluates whether or not these speeches and strategies have turned into reality during the last decade (2001-2008), with a focus on the

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financial channel only. It also examines the extent to which this was achieved (or not) thanks to a close link to financial inclusion of populations otherwise un-served or under-served by banks.

The postal economic literature provides little guidance on the survival conditions for Posts in rapidly declining or stagnating mail markets. In spite of numerous researches studying the liberalization of postal markets, no clear economic answer is provided on the ways of mitigating the impacts of the structural losses of mail volumes, or what operators are currently trying to do to overcome these difficulties. It paid little attention to other segments historically developed by some postal operators, such as postal financial services. An exception is the work of Anderloni and Pilley (1999) on European post offices in financial services, or the World Bank GICT (2006) on the use of postal networks to improve access to finance during the late and early 2000. More generally, postal economists have rather focused on universal service obligations and their impact on mails markets increasingly open to competition.

In this respect, our paper tries to add relevance to the debate on the economic future of Posts, beyond simple market structure and technological issues. It assesses diversification channelled through the provision of financial services – both qualitatively (how?) and quantitatively (how many?). It compares different models of provision of financial services, such as agent banking where the Post acts as an agent for one or several banks, or fully-fledged postal bank models, among a few typical others. It estimates their merits and flaws in terms of market participation. It provides an empirical demonstration of the power of postal networks in order to reach financial inclusion goals and leverage these achievements in terms of local economic development of relatively deprived communities.

Our empirical analysis highlights the emergence and acceleration of a very recent movement of diversification towards postal finance in the last decade (2001-2008), with increasing market shares of a significant number of postal operators in some segments of the retail banking business. This movement was already taking place before the global economic and financial crisis hit, and is probably accelerating further since then, a number of Posts being more trusted than banks after the crisis. This tremendous acceleration is not underpinned by any common model though. The recent trend towards a greater development of postal financial services features an important heterogeneity in the nearly two dozens of emerging and developing economies that are benefiting from this growth in postal finance, as well as in a few industrialized countries.

Nevertheless, a common driver is usually found in all cases: a pro-active public policy of financial inclusion adapted to the level of economic development. Bank branches remain mostly concentrated in the most prosperous areas in developing and emerging countries (mainly the largest cities), while post offices are distributed rather evenly within a country. Banks have been very reluctant to expand financial services towards poorer segments of the population and may find higher returns (and sometimes bail outs) in wholesale business than in retail banking. In industrialized countries, full financial inclusion has not always been ensured by pure commercial banks, and FDIC has estimated to 60 millions the number of under-banked U.S. citizens as of today.

Eventually, in terms of competition with other innovative models of provision of financial services, such as mobile banking, Posts can provide interesting physical network complementarities with these services while competing with them in other respects. How these different models interact with each other and evolve over time will certainly not only

shape the future success (or failure) of Posts diversifying through finance in terms of business, but also in terms of broad policy objectives of economic, financial and social inclusion.

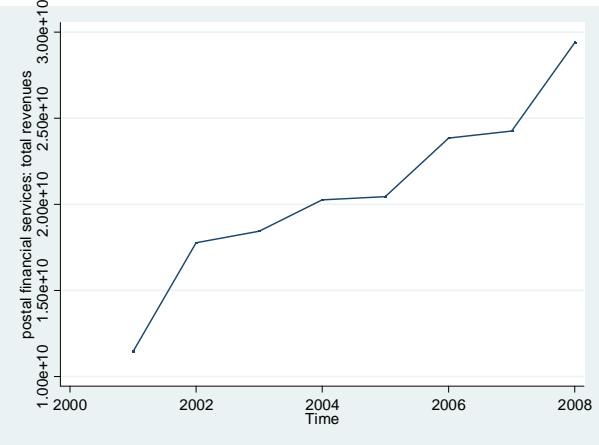
The paper is organized as follows. Section 2 provides a quantitative overview of the evolution of the market share of Posts in the retail banking industry over the last decade (2001-2008), which is consistent with a greater diversification of postal income towards finance. Section 3 compares different dynamics in postal finance that were identified and stylized through BRIC countries cases (Brazil, Russia, India and China). It compares it with the NIFS case – or developed countries case (New Zealand, Italy, France and Switzerland). The links with financial inclusion policies are developed. Section 4 provides a number of econometric analyses referring to sections 2 and 3, providing estimation of impacts in terms of financial inclusion and of success of the different models of postal finance. Section 5 offers some theoretical considerations relating financial inclusion and Posts, which are relevant for starting understanding the success stories outlined in sections 2 and 3 and the results of section 4. Section 6 concludes.

2. GETTING A LARGER SLICE OF THE RETAIL BANKING CAKE: RECENT SUCCESSES OF POSTS

Are Posts getting a larger slice of the retail banking business in recent years? In order to start answering this question, the evolutions of a few indicators are examined over the period 2001 to 2008.

The total nominal revenues generated by postal financial services in the world (without Japan) moved from SDR 14.1 billions in 2001 up to SDR 29.4 billions in 2008, which is equivalent to an 11% compounded annual nominal growth rate (or about 6 % in real terms once world inflation is taken into account).

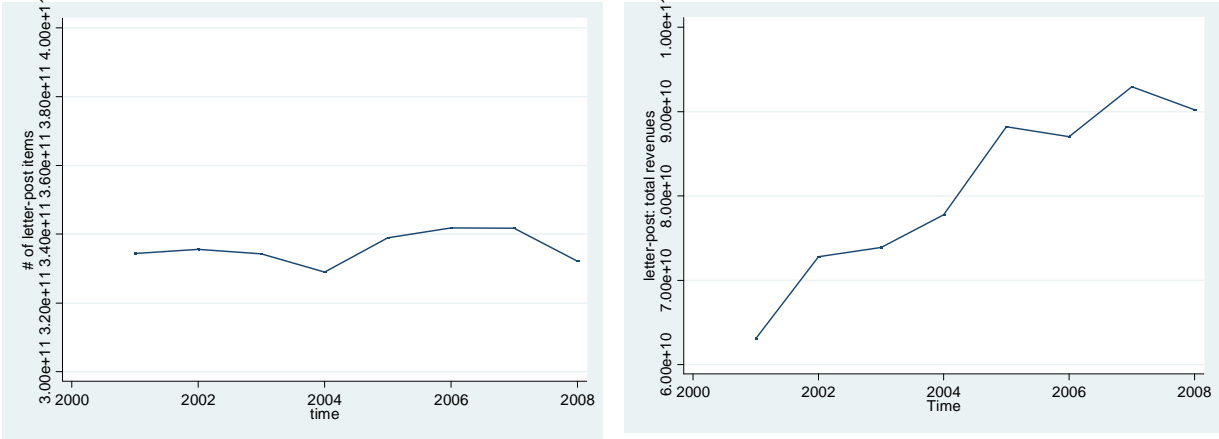
Figure 1: evolution of the total revenue for financial services operations conducted through postal networks in the world (billions of transactions and SDR, without Japan)



This figure is certainly stunning compared to the evolution of mail traffic and revenues in the world during the same period of time (2001-08), as shown in figure 2. As it can be seen from our sample representing at least 80% of worldwide mail exchanges, domestic letter-post traffics have been stagnating around 330 to 340 billions items at best, before the full impact of the global financial and economic crisis started to be felt and accelerated annual declines up to

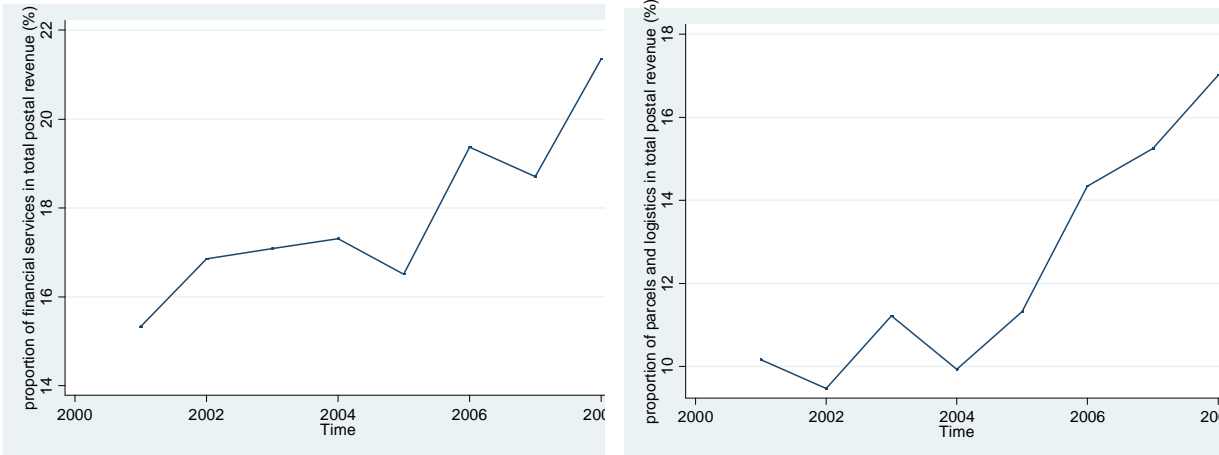
10 to 15% in some cases. In terms of nominal revenue, the domestic letter-post grew from aggregated world revenues of SDR 63 to 90.2 billions, which reflects a compounded annual nominal growth rate of 5.3%. This figure in turns shows little increase in real postal revenues after discounting for world inflation (4.3 % between 2001 and 2008).

Figure 2: evolution of the total number of domestic letter-post items and related revenue for operations conducted through postal networks in the world (billions of transactions and SDR)



When analyzing these evolutions in terms of simple annual averages of the share of the various business segments in the total postal income (instead of aggregated figures as in figures 1 and 2), one can notice an increasing proportion of postal financial services and postal parcels and logistics in the operators’ total postal revenue (figure 3). In average, postal financial services increased their contribution to postal revenues from 15% in 2001 to almost 22% in 2008, while parcels and logistics grew from 10 to 17% of total postal incomes. Taking into account the proportion of other services (not accounted for in finance or logistics), this means that the letter-post has been evolving from a situation where it represented almost 60% of total postal revenues in 2001 to another where it weighs slightly more than 40% as of today (in terms of average country and after projecting the 2001-8 trend on 2009-10).

Figure 3: proportion of postal financial services and parcels and logistics in total postal income (simple averages by year)



From a low of 112 postal operators offering postal financial services in 2001, 133 postal operators have been operating some sort of postal financial services since then, i.e. an increase

of 19%. While there were 32 postal operators with a share of postal financial services higher than 20% in their postal revenue in 2001, 44 postal operators reached at least this 20%-threshold in 2008. And instead of 4 Posts with more than half of their postal income generated by financial services in 2001, 15 achieved at least this outcome in 2008.

An econometric estimation was conducted to estimate the trend for the increase in the proportion of financial services in the total postal income for operators offering this kind of services. It was estimated that operators offering these services are increasing the income arising from financial services at about an additional half percentage point every year (see econometric estimation details in table 1 in the appendix). As another set of econometric estimates shows, the revenues stemming from postal financial services contribute to replace almost a third of each percentage point of total postal revenue substituting letter-post by non-letter-post income, i.e. for three percentage points of revenue lost by mail services one percentage point is gained by postal financial services. Eventually, it was also estimated – through a dynamic panel econometric model – that the year-to-year variation of the total postal revenue was positively impacted by the variation of the number of postal (bank) accounts held by the postal financial institution, while it was negatively influenced by the variation of the number of domestic letter-post items, i.e. the higher the change in the number of postal (bank) accounts the higher the variation of total postal income while the higher the change in mail traffic the lower the variation in total postal income.

Given the evolutions described above, it is important to assess the level of market participation of postal operators in the retail banking business and its recent evolution. In order to do so, different sources had to be combined as reflected in the table 2a and 2b in the appendix, and complementary data collected. The earlier review of postal banking was produced by the World Bank (2006) using late nineties and early Millennium data, before things started moving sharply.

Overall, the retail banking business market size – in terms of bank accounts – can be estimated to 5.185 billion accounts worldwide, out of which almost a billion is held in postal financial institutions, i.e. a 19.2 % market share of the global retail banking business. This underlines the significant weight of postal banks and other postal financial institutions in deposits and savings holdings for individuals in the world. Even more interestingly, these market shares seem to have substantially increased for a number of postal operators in emerging and developing countries in the very recent years (usually from 2004 to 2008) with three of the four BRIC leading this evolution – namely Brazil, India and China. In many of those countries, increases in the postal operators' market share of accounts have ranged from 5 to 20 percentage points. More than a dozen developing and emerging countries were identified with substantial market share increases. The compounded annual growth rate (CAGR) of the total number of accounts has reached 8.3% in average in this subgroup. When comparing these evolutions with those prevailing in more advanced economies, one cannot notice the same movement, except in the sub-group of NIFS (New Zealand, Italy, France and Switzerland) countries. In advanced economies, CAGR for postal operators providing accounts-based services was 2.6% only in average.³

³ Following the first wave of the global economic and financial crisis (2007-9), these institutions received important inflows of savings most of which were not included in our sample covering the period 2001-2008. Therefore, the growth of these postal financial institutions needs to be monitored closely during the next three years so as to evaluate whether their recent successes can be confirmed or not.

The table also shows that market shares are far less substantial in terms of the value of deposits (ranging from 6 to 11%), which either signals that postal financial institutions have attracted relatively more low-income depositors than banks (which is positive in terms of financial inclusion) or the existence of numerous dormant accounts (which shows some limitations of financial inclusion), or a mix of both. However, the recent acceleration of the number of accounts held by postal financial institutions and the increasing market shares associated to this trend make the latter hypothesis less likely in the subgroup of developing and emerging countries mentioned in table 2a. Furthermore, the increasing number of social payments and pension benefits delivered by emerging and developing countries' governments on these accounts decrease their likelihood to "be dormant". Anyhow, whether the very positive evolution of this subgroup of countries could be expanded to an increasingly larger number of nations in a near future remains an open question.

Indeed, these numbers – though positive – reveal that the financial inclusion goal that postal networks could help achieve has by far not been fully delivered yet, in spite of the impressive recent developments. According to Boon,⁴ there are 1.5 billion users of some kind of postal financial service in the world. Table 2a – largely representative of the most successful and important market players – identifies that 300 million accounts holders exist in developing and emerging countries (i.e. 20% of banked adults, or 8% of the total adult population while banks cover 32%), and 100 million accounts holders are located in advanced economies (accounting for 19% of banked adults, i.e. 17% of adult population while banks have 75%). There are thus only 400 million accounts holders out of 1.5 billion users, which leaves a potential for 1.1 billion new accounts holders (in turn representing at least 2.2 billion accounts if one assume two accounts per holder on average). If only half of the postal financial services users without any account will opened a postal (bank) account, this would mean that 1.1 billion new accounts could already be opened with existing postal financial services customers – most of them being most likely un-banked (without a bank account) or under-banked.

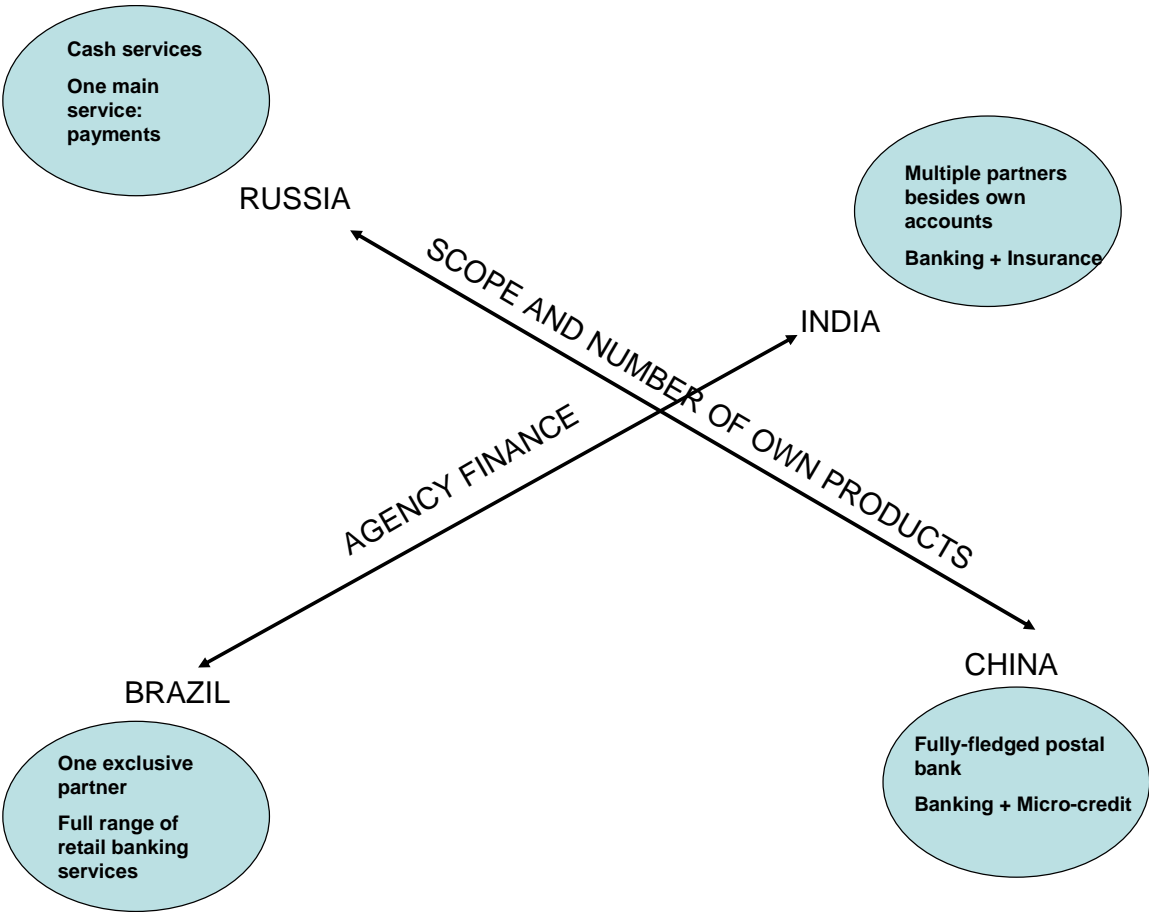
Next section tries to understand whether some stylized facts and commonalities could be identified regarding these success stories.

⁴ Presentation made during the 2009 UPU-AFI Workshop on Financial Inclusion and Postal Banking available on the Postal Financial Inclusion blog (<http://postfi.wordpress.com>): <http://postfi.files.wordpress.com/2009/11/11-hansboon.pdf>

3. RECENT SUCCESSFUL DYNAMICS IN POSTAL FINANCE: BRIC AND NIFS

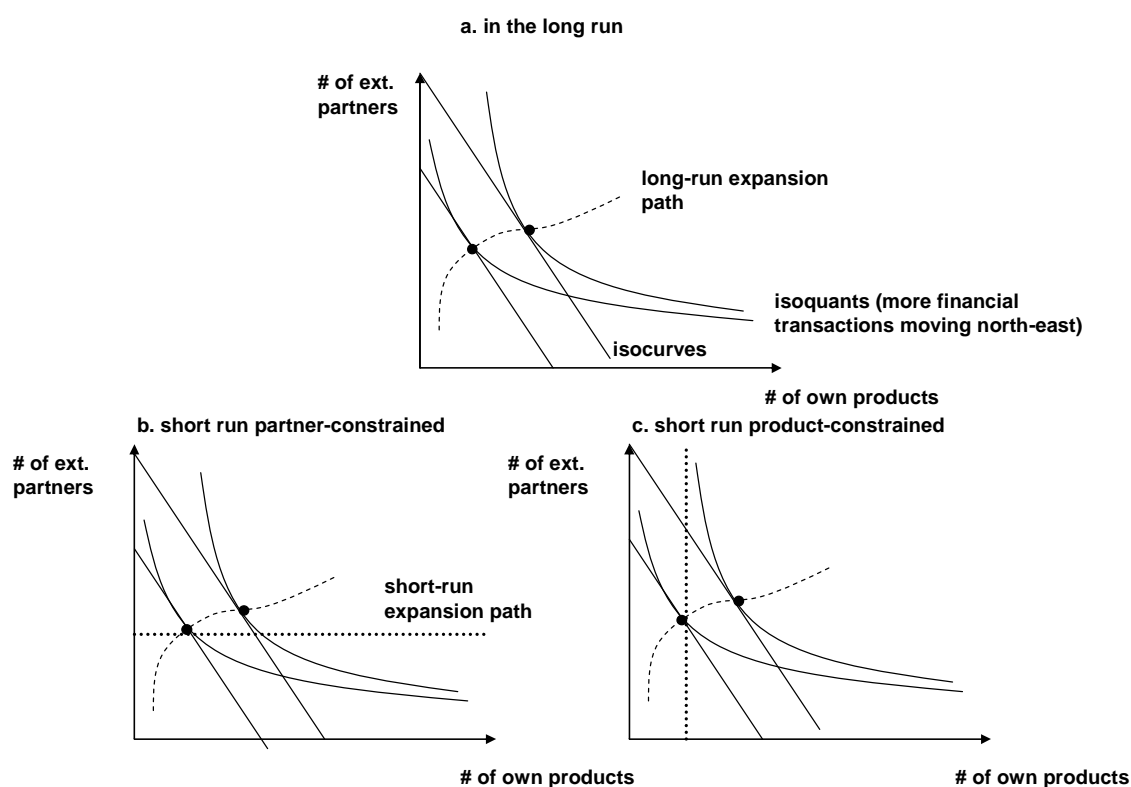
Once the cases of successful countries in the area of postal finance listed in tables 2a and 2b (see appendix) were more closely examined, no one-size-fits-all model could be identified. In order to have a better understanding of the models behind these successes, an analytical framework is provided show-casing four stylized cases referring to BRIC (Brazil, Russia, India and China).

Figure 4: postal finance and pure BRIC polar cases



As it can be seen in the above figure 4, two dimensions must be taken into account when trying to identify the successful (or less successful) economic models of provision of financial services through postal networks. On one dimension, Posts determine the number of partners with which they provide financial services through their network. On the other dimension, they also decide the number of services that they will supply themselves. The combination of these two dimensions (or “factors”) produces a determined number of financial transactions (as shown in the figure 5 below). There is thus a trade-off between partnerships and self-services to reach a given level of provision of financial services for postal operators. Reasons for these choices may be strategic (alliances), regulatory or the initial capacity of the Post itself. Regulatory or capacity-building constraints of the Post that limit the provision of in-house built financial services can lead it to sub-optimal short-run choices as shown in figure 5.c. The same is true when exclusivity agreements or regulatory issues limit the possible number of partners (see figure 5.b).

Figure 5: postal finance, production of services and key “factors”



If one focuses on the first dimension (partnerships), one can distinguish the Brazilian case - where the Post acts as an agent of a bank on an exclusive basis to deliver a complete range of financial services from payments to savings and credit – from the Indian case where multiple partners are contracted by region or area to bring a wide offer of financial services to customers. Both Brazilian and Indian customers access a wide array of financial services through their postal networks, yet one relies on an exclusive distribution agreement with a large Brazilian private bank while the other is open to different banks – public or private – in different regions, as well as other providers of financial services such as insurance scheme providers, mutual funds companies or money transfer operators. Besides, the Indian postal network also offers its own saving accounts while the Brazilian Post has not developed such a product on its own and provides access to savings only through its agency agreement with the bank and associated brand “Banco Postal”.

This polar case (Brazil-India, or BI) in terms of partnership largely reflects local conditions when the Posts initiated or expanded its offer of financial services. As far as Brazil is concerned, governmental authorities were opposed to the creation of another public bank through the postal network, and decided to encourage the inclusion of people otherwise excluded from access to basic financial services using a vast network of banking correspondents (or agents such as pharmacies, lotteries, grocery shops and post offices) in the late nineties. Correspondents forward requests of bank account opening or credit applications to the principal – a bank under license with the Brazilian Central Bank, and are allowed to process withdrawals, deposits and payments. Brazil pioneered the “branchless banking” model as it is referred today by the World Bank, CGAP and others. As such, Banco Postal – the brand name of the association between the Brazilian Correios and the bank Bradesco –

was a first of this kind in Brazil, and has heavily contributed to widespread geographical inclusion of the Brazilian population in the formal banking and financial system. Simultaneously, Bradesco was able to grow its customer base and realize important economies of scale, and share the cost of low-income customers with the Brazilian Post. In exchange, Bradesco compensates the Brazilian Post with a pre-determined fee for each transaction (although subject to regular renegotiation) and a renegotiable fixed amount. In the Indian case, public banks dominated the retail banking market for many years until the role of private banks started expanding more recently. It was natural for the Indian authorities to first allow the Post to deliver its own savings services, before providing the opportunities to other financial services providers to access the largest postal network in the world (about 150,000 offices). As many partnerships as possible were encouraged with India Post so as to provide a wider array of financial services to previously under-served populations – mostly in rural areas where poverty is still most concentrated in India. In this respect, the Indian postal network is seen as a strategic partner by the Reserve Bank of India – the Indian central bank – in its financial inclusion policies.

The other polar case – once we examined the own supply dimension – is constituted by Russia on the one hand, and China on the other hand (the RC case). In Russia, the current model of provision of financial services through the Post relies mainly on handling 80% of payment services in the country, although this share is in rapid decline following the introduction of electronic private kiosks enabling automated payments. Services are provided by the Russian Post itself. Most of these payments are cash transactions that must be handled at the counter or by the postman in order to deliver pension benefits, or pay utility and other recurrent bills. The Russian Post does not hold deposits or savings accounts (or checking accounts) thus not leveraging the access to numerous already existing customers in the area of payment services. The Russian central bank is the main shareholder of the largest Russian bank, potentially leading to possible conflict of interests that were not favourable to the entry of new market players and the reduction of financial exclusion in the country – more than half of the population is still un-banked in Russia. However, as early as of this year, the willingness of creating a postal bank competing with other banks in the country – including the one owned by the central bank itself – has been publicly expressed by Russian governmental authorities. At the other extreme, one can find China that has developed a fully-fledged postal bank (The Postal Savings Bank of China) that delivers most of its services on its own, from payments to savings and credit, with an enormous success in the access to micro-credit (almost two million micro-loans over more than a year).⁵ Again, local circumstances may explain this choice. The central bank of China has recently (2004) agreed that savings deposits stay in control and belong to the postal savings bank, while this was not previously the case (the postal savings accounts belonged to the Chinese central bank during many years). This clearly modified the incentives structure for the Postal Savings Bank of China in terms of business development. For Chinese authorities, the postal network however remains the decisive network for easing access to financial services for populations not served or under-served by traditional commercial banks in rural areas and small cities, and thereby help balance economic development between large coastal urban centres and less economically developed inland rural regions and smaller interior cities.

To summarize, while the BRIC illustrate a wide heterogeneity in terms of models of provision of financial services through the Post, a strong commitment of integrating the postal network in financial inclusion policies is shown either by the government, the central bank or the

⁵ Exactly 1.77 million micro-loans between 2007 and October 2009.

financial regulatory authorities. A clear and pro-active public policy of financial inclusion is at the heart of the successes (BIC), or future strategic developments (Russia). This is also related to a progressive development of social payments (unemployment, pension and other benefits) that BRIC's governments have promised to deliver to their populations. As also demonstrated for Brazil in the next section, Posts can become the first lever of formalization of economic and financial exchanges in relatively deprived communities. Formalizing the economy is paramount for the development of social security and safety nets.

Beyond BRIC, other developing countries (see Table 2a in appendix) have also benefited from postal finance successes. In order to highlight the heterogeneity of models once more, the countries listed in this table are attributed to the closest BRIC model. For instance, Kazakhstan is now closer to China than Russia in terms of its postal finance model, although this does not mean that this country applies the same model as in China. It could have been closer to the Indian model should it have developed a number of partnerships with more success besides the impressive development of their own savings and payment services. None of the postal operators from these countries are known for having developed their success without a strong commitment and vision of the government or financial authorities in terms of financial and social inclusion. Models of provision of basic finance through the postal network seem to be adapted to local circumstances while the goal of financial inclusion is commonly shared in most – if not all – cases. Most models are closer to the Chinese than to the Brazilian or Indian one, and none of these countries have remained solely focused on payments like Russia. The Indian model can find some parallels with some models of postal finance in the industrialized world once the case of NIFS (New Zealand, Italy, France and Switzerland) and associated countries are examined in more details (see Table 2b in appendix). Brazil's case is relatively unique in the sense that it remains a rare case of “in-house marketed” (i.e. the brand “Banco Postal”) agent banking model through a postal network – probably because the postal trust can be leveraged the most by so-doing.

Table 2b in appendix shows market estimates for postal financial institutions in relatively higher income economies. Two remarks are worth to be made. First, in spite of a few very successful cases such as New Zealand, Italy, France and Switzerland (NIFS), development in postal finance seems to be weaker and slower than in emerging and developing economies before the global financial and economic crisis hit. Second, once the models are more closely examined, heterogeneity is as striking as in BRIC. New Zealand “Kiwi Bank” is a public bank operating through the postal network and owned by New Zealand Post – making it closer to the Chinese model. BancoPosta in Italy is not a bank, but gathers a wide range of financial services including savings, insurance and prepaid payment cards through numerous partnerships – thus linking it somehow to the Indian model. Similarly, South Korea Post probably holds the record (more than 170) in terms of partnerships enabling it to distribute savings and insurance services. The French “Banque Postale” has recently obtained a banking licence yet without being authorized to provide corporate loans beyond its important role in mobilizing French savings through its own accounts (most notably the livret A) – a somewhat similar situation compared with the Chinese model of postal finance. The Swiss “PostFinance” encounters difficulties to obtain its banking license even though they process a very large share of payments in Switzerland and possess 70 billions Swiss francs in deposits. It partners with other banks to provide mortgages and mutual funds to its customers. It can be classified closer to the Indian model. Other cases, such as Deutsche PostBank or ING, respectively in Germany and the Netherlands, have been separated from the historical postal operator and sold to other banking or financial groups – some of which having become casualties of the global economic and financial crisis since then. In Slovenia and Greece, a

bank operates through the postal network and corresponds to an alliance model with an external partner where the Post is not the majority shareholder of the financial institution operating through its network. The latter cases do not correspond closely to any BRIC model. It is more an “out” model where the postal financial institution initially part of the Post was separated, sold and developed outside the scope of the Post – the open question being the extent to which it still utilizes the post offices network.

This section has illustrated a wide variety of postal finance business cases and policies in advanced, emerging and developing nations. Next section brings an empirical assessment of the impact of the different models in terms of market shares, as well as some econometric results evaluating the effects of access to basic finance by previously un-banked populations on local economic development.

Figure 6: summarizing features for pure BRIC polar cases

<p>BRAZIL</p> <ul style="list-style-type: none"> — “Branchless banking” through a correspondent system regulated by the Brazilian Central Bank — Exclusive partnership with a bank — “Banco Postal” postal bank brand owned by the Post — Full range of retail banking services, except consumer credit (currently under development) — Micro-credit developed — Not managing the credit risk (done by partner) — Simplified “Easy Account” for customers — Customers mostly low and middle-income — No wholesale banking or large loans for large firms or multinationals — Sometimes the only point of access to finance in some municipalities — Intense competition with other banking agent in the field of payments — Information on accounts but the latter belong to the partner bank — Business “philosophy”: distribution channel with broader postal goals of social and financial inclusion 	<p>INDIA</p> <ul style="list-style-type: none"> — Multiple partners – public or private banks, mutual funds, insurance schemes, money transfer operators — Own postal accounts — No specific brand but India Post — Wide coverage of rural areas through the largest postal network in the world (more than 150,000 post offices) — No bank status (no postal bank status neither) — Full range of retail banking services, except credit — No credit except current experiments in the area of micro-credit — Provision of insurance schemes with special program for public employees — Delivering part of Indian social programs benefits for unemployed people — Conversion to a postal bank under study — Strategic partner of the central bank for financial inclusion policies
<p>RUSSIA</p> <ul style="list-style-type: none"> — Processing cash transactions — Payment of utility bills — Delivery of pension benefits — Domestic and international remittances — No accounts — Few partners — Recent or renewed (end 2009, early 2010) ambition of creating a postal bank — Regulation of the central bank in the area of payments 	<p>CHINA</p> <ul style="list-style-type: none"> — Banking licence — Fully-fledged postal bank — Double bottom line institution (bank + goal of improving access to the un-served or under-served) — Function of access to finance in rural areas — Large micro-credit player — Managing their own credit risk — Own accounts — Deposits (beyond the depositor) “belong” to the Postal Savings Bank (formerly to the central bank) — Some specific partnerships — Regulated by the Chinese Banking Commission (financial regulatory authority in China) — Business “philosophy”: building long-term customer-relationship

4. ECONOMETRICS OF POSTAL FINANCE: FINANCIAL INCLUSION LEVERAGE AND LEVEL OF MARKET PARTICIPATION

This section provides an econometric evaluation of the impact of the use of a postal network to achieve financial inclusion goals on the one hand as provided in Ansón and Gual (2008), and an original assessment of the determinants that frame the Post’s market participation in the retail banking business on the other hand.

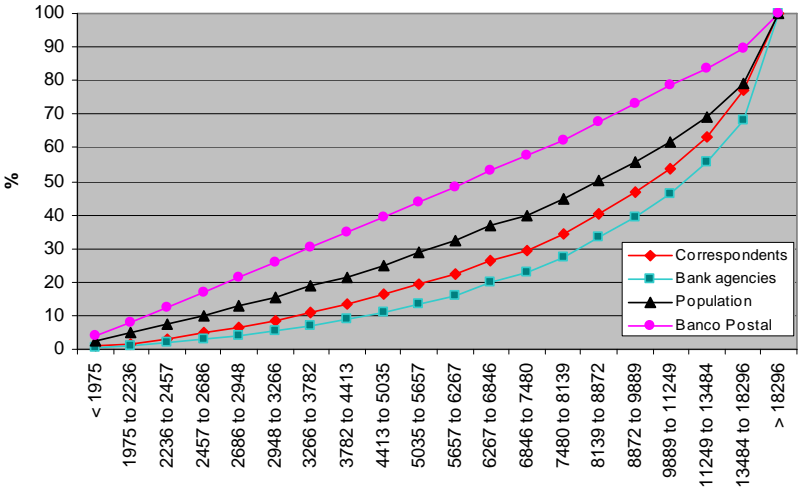
A. LEVERAGE ON INCLUSION AND LOCAL ECONOMIC DEVELOPMENT

The case of Brazil is used to evaluate the impact of a financial inclusion policy conducted through the postal network. The results were derived in Ansón and Bosch (2008) after combining several Brazilian databases built for this very purpose. Three issues were studied: the impact of geographical access to finance, the use of the postal bank (Banco Postal) services and the effects of this initiative on local economic development.⁶

Geographical access

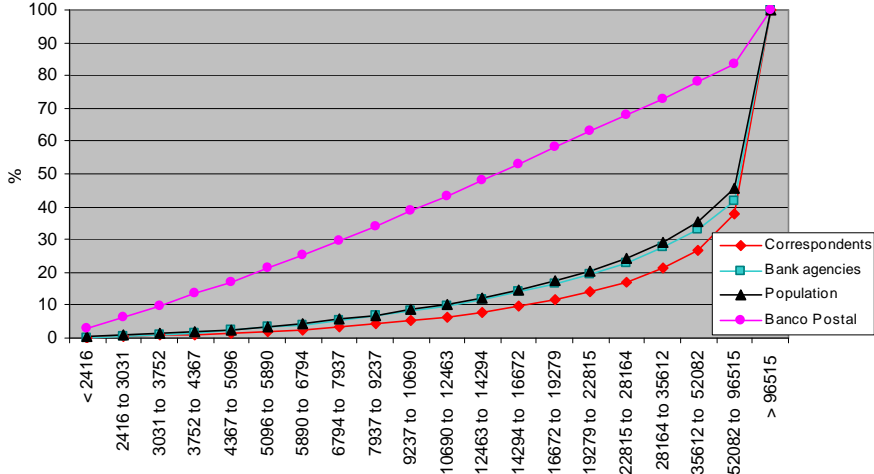
A way to analyze the geographic distribution of financial intermediaries is to group municipalities according to their population or their wealth by semi-decile (as applied in Boldron et. al (2006)). We can infer from this exercise that Banco Postal agencies, other correspondents and the traditional 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.

Figure 7: Distribution of the different networks and population according to GDP per capita semi-deciles, 2005



⁶ Also see Kumar (2006).

Figure 8: 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 7 and 8 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).

Use of financial services provided through the postal network

Tables 3a and 3b in the appendix present the distribution of the use of different Banco Postal services and products across semi-deciles. In table 3a, the number of current deposits and savings deposits and the number of withdrawals are presented⁷. 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 (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.

Access to credit is one of the most quoted constraints to business development by the self-employed and "micro entrepreneurs". From its creation up to the end of 2006, Banco Postal has granted 1.93 million loans. In table 3b, credit services are analyzed, including micro-credits, loans and e-loans. 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

⁷ Withdrawals refer to counter 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.

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.

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 table 4 of the appendix.

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 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 was 56% 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. These treated municipalities experienced a 20% higher growth in the number of additional new firms than non-treated municipalities.

B. DETERMINANTS OF MARKET PARTICIPATION

This sub-section provides a simple econometric model in order to estimate the impact of the different postal finance models described in section 3 on the market share of accounts. It tests whether or not the features of some model ease – or on the contrary – hinder market participation for the Post. One must keep in mind that the link between market participation and profit is not necessarily linear. This approach only constitutes a first step towards a better understanding of what frames the stake of the Post in one of the most important segments of

the retail banking business – namely deposits and accounts. It tries to quantify and test more rigorously the recent highlights of postal finance already presented in the paper.

As introduced in the previous section, in order to determine the model to which one postal provider of financial services is closer to, a qualitative assessment was undertaken and all countries cases allocated to at least one polar case, i.e. either the Chinese, Indian or Brazilian cases. The Russian polar case is not part of this exercise since it does not provide access to accounts. Some countries can share important features with two different cases, and are thus linked to two cases instead of one if necessary. Indeed, a continuum of models that share relatively important features with several polar cases was identified, underlining the great diversity of situations.

The econometric model tests the following hypotheses. First, postal finance is expected to matter: the impact of leveraging the postal network for increasing access to finance and accounts is expected to be significantly positive irrespective of the model of postal finance eventually selected for this purpose. The reason for this is the potential of using a widespread physical network of post offices. If this hypothesis cannot be rejected, the quantitative measure associated to it could be named the “postal network” effect. However, and this constitutes the second hypothesis, the model of postal finance adopted is not expected to be neutral in terms of market participation of the Post. If various models of postal finance would be neutral in terms of market participation outcome, then their respective potential contributions to the market share of the Post should not be significantly different. If true, we will refer to this result as the “non-neutrality of postal finance models”. Third, if the latter is confirmed, some models would then be related to greater market participation and others associated with a more limited one. Models where the provision of financial services is more integrated within the structure of the Post are expected to result in relatively higher market shares of accounts than those relying on external partnerships and agreements – this is the integration effect. The integration of the services provided is potentially reducing possible conflicts of interests between the parties involved in the business.

It is important to keep in mind that the model adopted by the Post is not necessarily a free choice, but is very much dependent on the local conditions and constraints it was facing when starting the service. Only external institutions can usually change these conditions (governments, ministry of finance, ministry of communications, central banks, financial regulator, postal regulator and sometimes others).

We would expect that models sharing many features with the Indian and Chinese cases – where the supply of account and savings services is more or almost fully integrated within the Post – are more favourable in terms of market participation of the Post than others where the interests of partner banks may conflict with those of the Post. Or alternatively, we could expect that models relying on the development and building of an integrated customer relationship centred on accounts strengthen the market position of the Post relative to models focused on the distribution of financial products and services and accounts designed by external partners. We do not conclude that a model is superior to another for the Post in terms of profitability – the market share only not being enough for this purpose – but simply analyze how a model determines the importance of the role of the Post on the market segment of accounts.

The following one-equation-OLS regression explaining the market share of the Post in the retail banking business in terms of accounts as a function of the business model adopted by the Post – and taking into account heteroskedasticity – was run:

$$\text{Market share of accounts (\%)} = a + b * \text{CHINA} + c * \text{INDIA*CHINA} + d * \text{BRAZIL} + e * \text{OUT} + (f * (\text{Initial Market Share})) + \text{error term}$$

where the explanatory variables CHINA, INDIA, and BRAZIL are dummy variables indicating whether the country's postal provider of financial services share some important features with the Chinese, Indian or Brazilian model (1 if yes, 0 otherwise), or with several of these models (several 1 being possible for each country) – none of them being mutually exclusive for a country except for China, India and Brazil as pure (polar) cases. The interaction term INDIA*CHINA takes the value 1 if a model share relatively important features with both the Chinese and Indian model. OUT is another indicator variable for those countries where the postal financial branch has been sold out but operates through the postal network – or where the Post is a minority shareholder in the bank operating it. INDIA alone is not part of the equation to avoid a perfect co-linearity situation when it is combined with other variables. The constant a can be interpreted as the average market share brought by a postal network irrespective of the model of postal finance adopted in the country. The terms a, b, c, d, e and (f) are parameters to be estimated econometrically. The full econometric results with more estimation details are provided in tables 5 and 6 in the appendix.

The first hypothesis – the significant “postal network effect” – not only means the non-negativity of the value of the constant a, but rejecting its value is 0 and below a threshold of 10%. The second hypothesis – the “non-neutrality of postal finance models” – means that the coefficients b, b + c, d, and e measuring the marginal contribution of each business model to the market share do not take the same values once the common “postal network effect” has been isolated by the constant a. The third hypothesis testing the “integration effect” – provided that the “neutrality of postal finance models” can be rejected – means that the coefficients b and b + c (expected to be positive) are significantly higher than the coefficients d and e.

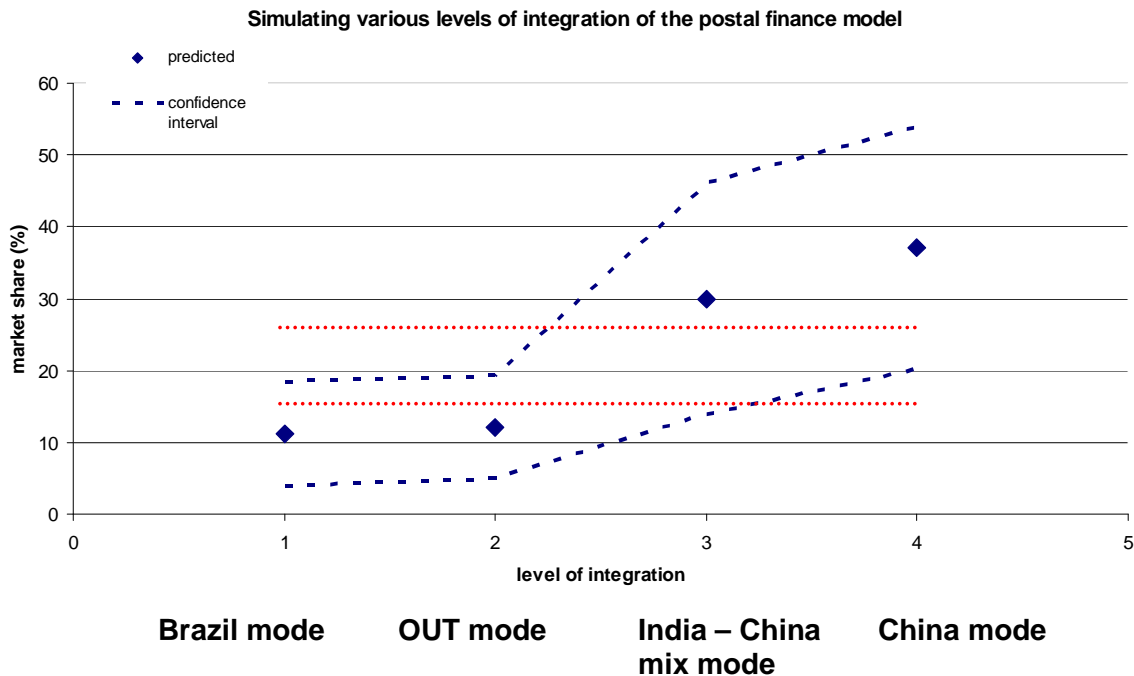
The first hypothesis of a significant “postal network effect” cannot be rejected. Generally, the positive value of the estimate of the constant term of the equation indicates an effect on the level of market share of the Post automatically brought by the postal network dimension regardless of the specific postal finance model adopted by the country. This effect is estimated by our econometric model between 15 and 26% of the market share of accounts in average. Customers geographically excluded from access to finance due to the location choices of banks most likely originate it. This outcome from the econometric estimation also confirms that a substantial proportion of the population of a country previously excluded from access to bank accounts had not voluntarily chosen not to use formal financial services, but was rather prevented from using them. If this is so, the overall market size of the retail banking business will eventually grow through the significant participation of the Post.

The second hypothesis of “non-neutrality of postal finance models” stating that the market share and importance of the role of the Post in the segment of retail bank accounts is not neutral to the model adopted is confirmed. Indeed, the importance of the role of the Post – as measured by its level of market participation – is framed by the features of its postal finance model.

As far as the third hypothesis of “integration effects” is concerned, the econometric estimation results are striking in the sense that - *ceteris paribus* - the Chinese model appears to be the most effective in terms of market share gains and importance of the role of the Post in openings of accounts, while the combination of the Indian and Chinese models features comes just behind in this respect. The Brazilian model features exert either negative or ambiguous marginal effects on the level of market participation once the “postal network effect” has been controlled for, and the OUT model features exert a statistically significant negative impact on the market participation of the financial institution associated with the postal network for its opening of accounts. We cannot reject that the OUT and Brazil models have similar effects. The main econometric estimation results remain qualitatively the same after introducing a variable better controlling for the initial level of market participation.

The results of the econometric model suggest that gains of market share and a greater role of the Post in the opening of new accounts is likely to be subject to the degree of integration of its account and other financial services within its own structure. Gaining more importance in the accounts business seems less easy with an exclusive partnership agreement as in Brazil (although by far not impossible) or in OUT models than in those where the postal institution was enabled – at some stage – to develop a full range of financial services by itself – without necessarily excluding partnerships as shown in the continuum of models sharing both important features of the pure Indian and Chinese models. Besides the pure Brazilian model, one of the least favourable options for the market position and associated importance of the Post is the OUT model without much surprise. Anecdotic evidence can be found on the cannibalistic strategy of banks acquiring or merging with former postal financial institutions or banks. More dramatically, the economic viability of a number of postal networks in least developed countries was jeopardized after separating and selling the postal financial institution attached to the Post, and financial exclusion fostered since the new financial institution was also losing access to most – if not all – post offices and often had to create new offices and counters. This was for instance the case in Mali and in Tanzania.

Figure 9: simulating various models



The choice of the business model is nevertheless influenced by a number of external constraints as was fully described for BRIC and NIFS in section 3. A supply of integrated postal financial services is not always possible in the short run. Sometimes, partnerships and less integrated services are the only possible choice for a Post given its initial knowledge of finance or the financial sector policy of the country. Nevertheless, different levels of integration lead to different intensities of participation of the Post in the retail banking business.

Using the estimates of the above econometric model, several levels of integration of the postal finance model were simulated in order to illustrate the impacts in terms of market participation (see figure 9 above). Before studying the impacts of the different levels of integration, the “postal network” effect is simulated in figure 9. Irrespective of the level of integration, the round dashed red line indicates the confidence interval for the market share threshold exclusively triggered by the network, after removing the effects of all other factors.

Then various scenarios of integration are simulated, namely 1 for the Brazil pure model, 2 for the OUT model, 3 for the mix of the pure Indian and Chinese models, and 4 for the pure Chinese model. In scenario 1, the Post does not have the sufficient capacity to develop its own postal financial services and decides to become a bank agent. Point 1 on the figure above indicates the level of market share predicted by the model. In this scenario, the expected market share is below what seems to be naturally ensured by the network effect (round dashed red lines). This is an “opportunity cost” to be supported in order to learn by doing and seeing in the finance world. It is likely to be an “acceptable cost” provided the experience could help

the Post evolve towards another solution at some stage. In scenario 2, the capacity of the postal financial institution was such that it became independent of the Post and was sold out to investors in the market. Point 2 predicts the new position of this former postal financial institution in the marketplace – today a bank renting or compensating the Post for its access to part of the postal network. In this scenario, the expected market share is also below what seems to be naturally ensured by the network effect (round dashed red lines), yet this is probably the impact of having renounced to using part of the postal network, facing unresolved conflict of interests with the Post, or simply having got rid of less profitable customers which had been previously financially included. A possible reason for scenario 2 (OUT) enabling the bank associated to the Post to achieve a slightly higher market participation than in scenario 1 (BRAZIL) is the existence of a postal financial institution preceding the “OUT mode” for many years in one case, while entry in retail banking was only recent in the other (BRAZIL).

In scenario 3, the Post was able to choose a mix model where it starts developing some key savings products by itself while simultaneously increasing the number of external partnerships so as to maximize growth of its postal finance business, i.e. its financial services are getting more integrated within its own structure. The new point 3 predicted in figure 9 is significantly higher than points 1 and 2 in terms of market share although the confidence interval of the predicted value has dramatically increased and a situation where the Post achieves a market outcome below what is naturally expected from the pure network effect cannot be totally ruled out as traced by the 95% confidence interval (the limit value of the lower bound of the confidence interval is not much higher than the expected values for scenarios 1 and 2). Integrating more services is closely related to a higher dispersion of outcomes, i.e. to a higher risk as well.

In the last scenario 4, the Post was ready to fully develop a complete scope of services: its own products dominate its offer although some partner may be occasionally selected for specific services. Point 4 in figure 9 above signals a much higher market participation of the Post and an even higher uncertainty than in scenarios 1, 2 and 3, though there is no risk of being below the level of market participation naturally ensured by the network (round dashed red lines). A strong integration of the provision of savings and other financial services help preserve the benefits brought over by the postal network comparative advantage in terms of market participation.

This section has thus underlined what might be the outcome of a change of business model once the latter is allowed to evolve by the government, central bank or other financial regulatory authority at some stage, and what could be the impact of this decision on the importance of the role of the Post in terms of access to and opening of postal (bank) accounts, which is likely to be at the centre of any ambitious financial inclusion policy.

5. FINANCIAL INCLUSION AND POSTS: MOBILIZING KEY RESOURCES IN POSTAL FINANCE MODELS

Different scenarios of postal finance were simulated in section 4 according to various levels of service integration. In turn, the occurrence of any of these scenarios was depending on the conditions of the external environment and the inputs available for the Post and its potential partners. Increasing the integration of the service seems to produce a positive outcome in terms of market participation of the Post, yet the latter requires to acquire, develop and maintain a number of skills – financial and IT – besides the use of a network.

On the one hand, three main inputs – or internal factors – necessary for providing financial services must be distinguished: the financial and banking know-how of the institution, the information and communications technology in place, and the physical network of offices or branches. Those are the core competencies necessary to deliver financial services. The experience of the countries studied in this paper also shows that they cannot be mobilized without an absolute commitment of the Post in terms of business strategy. Only a strong willingness of the Post in this area can mobilize these three key internal inputs. As already highlighted in the paper, these resources cannot always be available in-house or integrated within the Post's own structure. Nevertheless, partners in mutually beneficial exchanges can potentially trade these competencies or skills.

On the other hand, important external factors also matter in determining the model that would be naturally selected in a given environment. Those external factors are the willingness of the government, central bank or regulatory authorities to push for a financial inclusion agenda, the resistance of banks to the introduction of new competitors, the understanding of the role of the postal sector by its associated ministry or postal regulator, and last but not least the public trust of the Post relative to banks. These elements will interact together with the internal factors and lead to a choice with respect to the role of the Post in financial services, and more particularly in financial inclusion policies. It will also frame the extent to which the services are more or less integrated.

The Post can take advantage of its external environment by conditioning its involvement in the delivery of a specific goal – for instance financial inclusion – to a better access to internal factors, for instance maintaining a universal network yet being allowed to expand its activity in the area of financial services and gain experience in this field. The Post can also suffer from its external environment if banks succeed in maintaining barriers to entry for non-bank institutions in their country. Numerous cases are possible and also explain why the heterogeneity of postal finance models shown in the previous sections is so great.

Another issue is why – in presence of potential mutually beneficial exchanges of factors of production between the Post and a bank and with all actors' interest aligned in order to achieve a greater financial inclusion – there are no more agreements of the kind?

First, banks may be opposed to new entrants in spite of possible benefits for them: they are afraid of the competition of these new institutions in the longer run, particularly because they bring diversity to the financial sector. If they are too short-run driven, they are not seeing the benefits of the Post contributing to increase the overall market size of retail banking in the

long run. Second, as it can be understood from the paragraphs above, many different actors have to be involved – there is thus a coordination issue. Third, once the banking sector could not oppose new entrance, the mutual exchange of decisive factors of production and skills between a bank and the Post may be biased and suffer from asymmetries of information. In many countries, the bank may know more than the Post on the benefit of this exchange, and this could discourage the Post to enter into discussion with banks.

For the Post, the alternative to the typical commercial bank as a partner could thus be to internalize the externalities of this mutually profitable exchange through a greater integration of its financial services, and develop its own (postal) bank – an institution with a wider scope in terms of offer of services and adequate human resources. Yet, as illustrated in the previous section and above, this might not be possible in the short run in some circumstances. Another possibility could be to find another partner than a bank – such as a telecommunication firm or mobile operator potentially interested in a joint development of mobile and postal banking. One of the recent lessons drawn from the expansion of mobile banking services in less developed countries is the need of a physical and human network besides access to a mobile phone. Without a physical and human network, cash-in and cash-out operations required by customers are impossible. Without a human touch, developing financial services beyond a money transfer – such as savings and credit – is less likely as illustrated by the very narrow scope of services offered in mobile banking nowadays.⁸ Nevertheless, this is also dependent on the involvement of the mobile phone industry in the financial services provided in the country.

The diversity of situations can be multiplied and the selected model of postal finance is likely to be the one that makes the best use and/or combination of internal factors – both at the Post and potential partner – while continuously adapting to its external environment. By matching these models with wider financial inclusion goals, governments, central banks and other financial regulatory authorities can nevertheless facilitate the most adequate choices for their people's economic and social welfare.

⁸ While recent developments in Kenya would suggest the opposite with the launch of mobile savings services, a wider scope of mobile banking services still remains the exception rather than the rule.

6. CONCLUSION

This paper has provided new insights on the economic models of postal finance. It has also identified a significant recent trend towards diversification of Posts in this area in a period of structural declines of mail volumes, further intensified by the last global economic and financial crisis.

It has distinguished the case of advanced economies from emerging and developing countries where a number of postal operators are playing an increasing role in the provision of financial services in their country, particularly for populations typically un-banked or underserved by commercial banks. The financial inclusion agenda of the governments of these countries often matches the willingness of the Post to strengthen the economic viability of its network. Even with the emergence of new information and communication technologies and of mobile banking services, a physical and human network continues to be necessary for the providers of these innovative services.

There is no one-size-fits-all model of postal finance. A continuum of heterogeneous cases exists instead between pure polar cases such as those of BRIC countries. Internal and external factors frame the model and what the latter can achieve in terms of financial inclusion and economic development goals. The case of the Brazilian Banco Postal has revealed powerful impacts on local economic development of relatively deprived communities. In terms of market penetration, the postal network alone can ensure a significant participation of the Post in the market of retail banking once the Post was able to enter it, yet the modalities of the different models are not neutral with respect to the market share of accounts eventually held by depositors in postal financial institutions. The integration of the offer of financial services at some stage appears to be decisive if a Post is to play a leading role in access to finance in its country while simultaneously securing its future economic viability. A vast untapped market of almost two billion un-banked customers – 1.1 billion of which already being users of non account-based postal financial services – seems available for the Post if it is ready and determined to seize the opportunities. These ambitions have much better prospects though if they are closely linked to financial inclusion policies at the government, central bank or financial regulatory authority level.

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APPENDIX

Table 1: estimation of various econometrics models

Variable	Share (%) of financial services in income as a function of time	Substitution of letter-post by financial services revenue	Total postal income as a function of accounts and letters
Constant	21.6** (2.9)	0.03 (0.5)	1.78* (1.08)
Time	0.49** (0.15)		
Share of financial services in tot. income (year-to-year difference)		- 0.31** (0.09)	
Share of parcels and logistics in tot. income (year-to-year difference)		- 0.55** (0.14)	
Number of postal (savings) accounts (year-to-year difference)			83.9* (47.0)
Number of domestic letter-post items (year-to-year difference)			-1.29** (0.39)
Lagged variables	No	Yes	Yes
Year dummies 2001-08	No	Yes	Yes
Econometric estimation method	Panel data: random-effect GLS	Dynamic panel data: Arellano- Bond GMM	Dynamic panel data: Arellano- Bond GMM
Number of observations	945	596	144

Notes:

1. The source of data is UPU Postal Statistics from 2001 to 2008.
2. Standard errors of the estimates are provided between parentheses below the coefficient value.
3. ** and * describe statistically significant variables at the 5 and 10% level respectively.
4. Specification tests such as first and second-order autocorrelation for dynamic panel data econometric estimations were conducted satisfactorily.

Table 2a: Posts and accounts in emerging and developing countries

Country (associated model(s))	Evolution of the market share of the Post				Total of the Post and CAGR	
	Value of deposits (market share)		Number of accounts (market share)		Value of deposits	Number of accounts
	Starting period (1999)	Ending period (2008)	Starting period (1999)	Ending period (2008)	Ending period (2008)	
Brazil (Brazil)			0%	7%		8 mio
India (India)	10%	11%	20%	28%	5.5 tio (CAGR 13%)	206 mio (CAGR 7%)
China (China)	6%	10%	25%	39%	2.32 tio (CAGR 19%)	342 mio (CAGR 9%)
South Africa (China)			12%	20%		6 mio (CAGR 15%)
Egypt (China, India)			30%	45%		18 mio (CAGR 11%)
Kazakhstan (China, India))			0%	27%		3 mio
Namibia (China)			50%	68%		0.5 mio (CAGR 10%)
Senegal (China, India)			3%	8%		0.3 mio (CAGR 20%)
Algeria (China, India)			29%	29%		4 mio (CAGR 2%)
Tunisia (China, India)			40%	50%		3 mio (CAGR 6%)
Yemen (China, India))			6%	13%		0.4 mio (CAGR 19%)
Comoros (?)						0.02 mio
Burkina Faso (China, India)				10 %		0.4 mio (CAGR 3%)
Burundi (China, India)				85%		0.1 mio (CAGR 13%)
Belarus (?)				8%		0.2 mio (CAGR 0%)
Morocco (China, India)			13%	18%		3 mio (CAGR 9.1%)
Pakistan (China, Inida)				14%		3.2 mio (CAGR 0%)

Table 2b: Posts and accounts in advanced economies

Country (associated model(s))	Evolution of the market share of the Post				Total of the Post and CAGR	
	Value of deposits (market share)		Number of accounts (market share)		Value of deposits	Number of accounts
	Starting period (1999)	Ending period (2008)	Starting period (1999)	Ending period (2008)	Ending period (2008)	
France (China)				21%		40 mio
Italy (India)			16%	20%		30 mio (CAGR 4%)
Switzerland (India)		9%	9%	17%	47 bio (CAGR 8%)	3.6 mio (CAGR 7%)
Germany (Out)			10%	8%		22 mio (CAGR 0%)
Netherlands*** (Out)				30%		16 mio
Japan (China)			53%	54%	578 bio (USD)	239 mio (CAGR 1%)
New Zealand (China)			0%	20%		2.6 mio
South Korea (India)						21 mio (CAGR 0%)
Greece (Brazil, Out)				6%		0.9 mio (CAGR 6%)
Slovenia (Brazil, Out)				4%		0.3 mio (CAGR 0%)

Notes:

1. Total number of accounts: 973 millions (mio) postal (savings) accounts – 600 millions (mio) in developing and emerging countries. Since very few relevant countries in terms of market size are missing, the total should approximate 1 billion (bio) accounts in authors' views. In turn, this total number of postal accounts corresponds to 19.2% of total personal (savings) accounts in the world (see sources of data and assumptions made below). It is worth to be noted that this number was also approximated recently by the World Savings Banks Institute (WSBI) (e.g. in CGAP Advancing Savings Services Meeting Briefing Note, Paris, 23-24 February 2010, or Peachy (2006)) yet a number of savings institutions are not postal financial institutions and vice versa.
2. One of the pure polar cases of postal finance according to section 3 – Russia – is not mentioned in the table since it does not provide accounts yet.
3. The data source for the number of postal accounts and value of deposits is a combination of UPU Postal Statistics and direct data provided in events such as the 2009 UPU-AFI Conference on Financial Inclusion and Postal Banking, the 2010 UPU POC Forum on Postal Financial Services or the 2010 UPU POC Plenary Forum.
4. The data source for the number of total retail banking accounts is the Financial Access Initiative Framing Note (October 2009) "Half the World is Unbanked" produced by McKinsey & Company, further developing a work started by Honohan (2008). In some cases, the total value of deposits in a country is obtained through central bank data.
5. The assumptions made on the number of banks account per banked adult are derived from the Financial Access 2009 report by the Consultative Group to Assist the Poor (CGAP). CGAP roughly estimates to three the number of deposits per banked adult world-wide. In our table, two accounts per banked adults were assumed in developing and emerging countries, while four accounts per banked adults were supposed in advanced economies.
6. The compounded annual growth rate (CAGR) corresponds to the most recent period 2004-8.
7. While the ending period (2008) market share is directly computed by dividing the number of postal accounts by the total retail banking accounts, the market share for the starting period is interpolated by establishing a relationship between the CAGR of postal accounts and the growth rate of the gross domestic product (GDP) during the same period. This means

that the initial market share is significantly lower than in the ending period if the CAGR of postal accounts or deposits was significantly above the GDP growth rate. It is assumed that the total retail banking accounts grow at the GDP rate.

8. The value of deposits is indicated in local currency, except if otherwise indicated between parentheses (often expressed in trillions (trio)).
9. Netherlands is considered as a special case in this table since the financial institution that partly took its roots in the Post is now an international banking group with a non-significant participation of the historical postal operator in its capital and strategies.

Table 3a: summary of the distribution of the use of services of Banco Postal from Ansón and Bosch Gual (2008)

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	%	% cumul	average	%	% cumul	average	%	% cumul	
< 1975.72	2,49	2,49	3,86	3,86	2860,16	4,42	4,42	717,81	4,53	4,53	9,2
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	8,1
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	9,1
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	8,1
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	8,1
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	8,1
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	9,1
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	8,1
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	8,1
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	7,1
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	7,1
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	7,1
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	7,1
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	8,1
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	9,1
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	1,1
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	1,1
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	1,1
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	1,1
> 18296.01	20,65	100,00	9,93	100,00	7374,00	11,62	100,00	1894,05	12,69	100,00	2,1

Table 3b: summary of the distribution of the use of services of Banco Postal from Ansón and Bosch Gual (2008)

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	%	% 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	4,01	7,94	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	515,509	3,07	9,97	152841	1,34	3,41	19,08	0,00	0,00	0,00	7,38	15,32	29,60	3,98	12,46	16,12	6,62	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	158021	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	648,921	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	223666	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	236801	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	251472	3,83	32,07	54,23	1,99	5,29	0,29	3,73	59,48	14,84	4,92	64,10	19,77	3,94	66,57	87,00
6846.34 to 7480.5	3,18	39,90	4,76	54,34	738,061	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 8139.71	4,73	44,63	5,44	59,78	843,842	5,52	57,46	273802	3,92	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
8139.71 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	66,08	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	301153	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

Table 4: summary of the results of the impacts of Banco Postal from Ansón and Bosch Gual (2008)

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

Table A.4 ATT for the whole sample					
OutcomeVariable	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	0.184	0.480	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						Table A.4.2 ATT for municip. with 1 to 5 banks in 2001					TableA.4.3 ATT for municip. with more than 5 banks in 2001				
OutcomeVariable	Treated	Controls	Diff.	S.E.	T-stat	Treated	Controls	Diff.	S.E.	T-stat	Treated	Controls	Diff.	S.E.	T-stat
	(i)	(ii)	(iii)			(i)	(ii)	(iii)			(i)	(ii)	(iii)		
Nb of new firms	26.830	27.338	-0.509	1.913	-0.270	136.477	127.420	9.057	8.452	1.070	1091.218	970.135	121.083	155.615	0.780
Growth of average firms' employees	1.213	0.490	0.723	0.809	0.890	0.347	0.345	0.001	0.132	0.010	0.267	0.209	0.059	0.137	0.430
New employees	263.75	186.27	77.48	86.17	0.90	860.73	796.08	64.65	61.74	1.05	8014.35	7127.62	886.74	1227.55	0.72
Growth in share salaried	0.038	0.019	0.019	0.011	(1.76)**	0.020	0.018	0.002	0.005	0.410	0.012	0.006	0.005	0.006	0.950
Nb of new bank agencies	0.135	0.270	-0.135	0.026	(-5.19)***	0.051	0.011	0.040	0.025	(1.63)*	0.553	0.142	0.411	0.297	(1.39)*
Nb of new correspondents	0.370	0.438	-0.068	0.049	(-1.39)*	1.881	1.868	0.013	0.148	0.090	14.963	17.220	-2.257	2.439	-0.930
Growth of real GDP (2005)	0.045	0.045	-0.001	0.008	-0.070	0.023	0.026	-0.003	0.007	-0.390	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%

Table 5: estimating the share of a Post in the market of (bank) accounts according to the postal finance model

Variable (coefficient)	Eicker-White OLS regression 1	Eicker-White OLS regression 2	Eicker-White OLS regression 3
Constant (a)	21.6** (2.9)	20.3** (2.9)	8.8** (2.6)
CHINA (b)	15.4* (9.0)	16.7* (9.1)	7.4* (3.6)
CHINA*INDIA (c)	- 7.1 (11.8)	- 7.1 (11.9)	- 3.9 (4.6)
BRAZIL (d)	- 14.3** (5.2)	- 9.2** (3.8)	- 1.8 (2.6)
OUT (e)	- 2.4 (6.0)	- 8.2** (3.8)	- 9.4** (1.5)
Initial Market Share (f)			0.9** (0.1)
Number of observations	24	23	17
R-squared	0.23	0.25	0.87
F-Stat	12.8**	9.3**	

Notes:

1. Compared to regression 1, regression 2 does not include the Netherlands in the estimation sample since it is considered as a special case (see comments in table 2b of the appendix). The Netherlands and other countries for which it was not possible to estimate the initial market share are not part of the observations for regression 3. This last regression should be taken with lots of caution due to the very low number of observations.
2. Regression 2 is the one used for simulating the scenarios of different level of services integration in section 4, as well as for testing the three main hypotheses specified in table 6 of the appendix.
3. The source of data is found in tables 2a and 2b of the appendix.
4. Standard errors of the estimates are provided between parentheses below the coefficient value.
5. ** and * describe statistically significant variables at the 5 and 10% level respectively. These levels are relevant due to the limited number of observations.
6. When not controlling for the initial market share, R-squared are typically low as usual in cross-sectional regressions.
7. F-Stat confirms that the variables are jointly statistically significant.

Table 6: testing various hypotheses

Tests	Specification of the hypothesis	Statistical result	Rejected or not
I. Postal network effect (rejection meaning significant network effect)	$a = 0$ (expected to be rejected $a > 0$)	48.9**	Rejected
	$a = 10$ (expected to be rejected and $a > 10$)	12.6**	Rejected
II. Non-neutrality of the postal finance model (if all as expected, then models of postal finance are not neutral in terms of market participation)	$b = (b + c) = d = e$ (expected to be rejected)	4.27**	Rejected
	$b = (b + c)$ (not necessarily expected to be rejected)	0.36	Not rejected
	$d = e$ (not necessarily expected to be rejected)	0.02	Not rejected
III. Integration effects (rejection meaning positive impact of integration on market participation)	$b = d$ (expected to be rejected and $b > d$)	7.7**	Rejected
	$b = e$ (expected to be rejected and $b > e$)	7.1**	Rejected
	$(b + c) = d$ (expected to be rejected and $(b + c) > d$)	4.39**	Rejected
	$(b + c) = e$ (expected to be rejected and $(b + c) > e$)	3.9*	Rejected

Notes:

1. Statistical results are provided in terms of F-stat.
2. ** and * describes statistically significant test values at the 5 and 10% level respectively. These levels are relevant due to the limited number of observations.
3. All tests have the expected results, thus confirming a postal network effect, non-neutrality of the postal finance models and significant integration effects.