Eliminating entry barriers for the provision of banking services: evidence from ‘banking correspondents’ in Brazil*

By Juliano Assunção †

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This paper shows that the contractual arrangement of ‘banking correspondents’ has eliminated entry barriers for the provision of banking services. The evidence is based on the estimation of an entry model of financial providers in Brazilian municipalities. I estimate a zero population entry threshold for banking correspondents for the period from 2002 to 2007. The estimated population entry thresholds for bank branches in the same period are relatively stable at approximately 8,000 to 9,000 people. The population entry thresholds for the second to fifth players for banking correspondents are also consistently lower than those for bank branches.

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Keywords: Development and finance, Banking

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I. Introduction

Access to bank facilities is essential to economic development. This access assists individuals in improving their living conditions and overcoming poverty (Pande and Burgess 2005), enhances risk sharing (Suri and Jack 2011b), promotes more start-up businesses and enables established firms to growth (Bruhn and Love 2009), and improves technology adoption (Mukherjee 2011). Physical access is one of the major barriers that prevents small firms and poor households to use banking services. Even in the context of recent technological improvements, access to bank branches remains important for key transactions. Relevant variation in the density of branch networks can be found across countries: Ethiopia has fewer than 1 branch per 100,000 people, and Botswana has 1 branch per 10,000 square kilometers, whereas Spain has 96 branches per 100,000 people and 790 branches per 10,000 square kilometers (Demirgüç-Kunt, Beck and Honohan 2008). How can we improve access to banking services and thereby reduce the entry barriers for banking services in poorer and less populated areas? The identification of new forms of increasing banking access through feasible and scalable policies can have positive effects on the welfare of these poorly served areas.

This paper studies a new institutional arrangement for the distribution of banking services in Brazil. In 1999, the Central Bank enacted a resolution that allowed banks to establish agreements with non-banking firms to provide financial and payment services. Under this agreement, firms become ‘banking correspondents’ and work as bank branches with some restrictions.

The number of banking correspondents has increased rapidly. By the end of 2007, the number of banking correspondents was approximately 80,000, which is four times the number of bank branches in the country. Banks began to recognize that banking correspondents constitute an important part of their distribution network. Indeed, in May 2011, Banco do Brasil paid approximately USD 1.75 billion for a contract with Correios (The Brazilian Post Offices) to use their
network of 6,195 points of sale to distribute their banking products until 2015. ¹

Banks initially considered the use of banking correspondents as a method of expanding access to less populated and poorer municipalities; the number of banking correspondents in comparison with the number of regular branches was negatively correlated with population and per capita income. This correlation became positive over time, and banks have recently begun to increase their networks of banking correspondents in more populated and richer municipalities.

I investigate the extent to which banking correspondents reduced the barriers for the provision of financial services and improved the outreach of the banking network in Brazil. This analysis is based on the estimation of a simple entry model for the period between 2000 and 2007 based on Bresnahan and Reiss (1991). The estimates indicate that the entry barriers were reduced to zero in 2002 for banking correspondents. However, for bank branches, the entry barriers remained stable and comprised population levels from 8,000 to 9,000 for the first entrant of a municipality. The entry population thresholds for the second to fifth banking correspondents in each municipality also decreased sharply over time.

These results suggest that banks can serve all of the 2187 municipalities (out of 5507 municipalities) without any bank branches in 2000 by using banking correspondents to connect approximately 20 million people to the financial sector. Actually, our data reveal that only 217 municipalities did not have banking correspondents in 2007. In 2010, Banco Central do Brasil (2010) shows that this number is further reduced to 30 municipalities without the use of banking correspondents.

Consequently, the new institutional framework that is facilitated by banking correspondents is shown to substantially reduce the fixed cost of entry. In fact, banking correspondents can rely on the pre-existent infrastructure to provide

¹ The price of the operation was established in an ascending auction with the participation of private commercial banks. The highest bid was BRL 2.8 billion, and the second highest bid was BRL 2.75 billion by Bradesco, a large commercial bank that has held the contract since 2001. Under the agreement, Correios will also retain 50% of the fees that are collected by Banco do Brasil from the banking correspondents.
financial and payment services and thus substantially reduce the fixed costs of expanding the banking distribution network. In addition to the recent mobile money technology, as described by Suri and Jack (2011a), banking correspondents represent an innovative and feasible means of increasing the outreach of banking services at low set-up costs. Although they differ in their operations, mobile money technology and banking correspondents are similar in that they benefit from pre-existing network infrastructure.

This paper is organized as follows. Section II presents a historical background regarding banking correspondents in Brazil. Section III describes the simplified version of the model of (Bresnahan and Reiss 1991) that is used in this analysis. The empirical results are presented in section IV. Section V concludes the paper. A description of the data description is found in the appendix.

II. Historical background

In 1999, the Brazilian Central Bank enacted Resolution #2640/99, which enabled the increased presence of banking correspondents. In 2000, which is the first year of my working sample, approximately 40% of the municipalities (2187 out of 5507) did not have bank branches. In the absence of other alternatives, almost 20 million people that lived in these municipalities without banks could not access financial services without traveling to other cities. The motivation behind the initiative of the Central Bank was to increase access to a financial system by creating alternative pathways based on non-banking distribution networks.

A banking correspondent is established as a contractual agreement between a bank and a non-bank firm. Contracts can be either exclusive or non-exclusive. The legislation allows banking correspondents to receive applications (forms and documents) for opening checking accounts and savings accounts; collect deposits and provide payments for checking accounts, savings accounts and investment funds; implement payments for the hosting institution (bank); receive credit applications; perform credit evaluation; and other services that are subject to the
Banking correspondent approval of the Central Bank.

Banking correspondents can act as regular bank branches for most retail banking operations and are thus able to manage different types of accounts and provide loans and payment services. The main difference between banking correspondents and regular bank branches is that banking correspondents do not carry any of these operations on their balance sheets. In practice, these arrangements provide banks with a means of outsourcing the distribution of banking services to other firms through a contractual agreement.

The adoption of the new framework was rapid. Figure 1 shows the expansion of banking correspondents in comparison with bank branches. Although the number of bank branches remained stable from 2000 to 2007, with an average of approximately 3 branches per municipality, the number of banking correspondents increased rapidly from 1.1 in 2000 to almost 15 banking correspondents per municipality in 2007. In 2002, three years after the legislation change, the number of banking correspondents surpassed that of bank branches.

Table 1 shows that the expansion of banking correspondents since 2000 dramatically reduced the number of municipalities without any points of sale for financial products (branches or banking correspondents). The number of municipalities without branches remained relatively stable in the period from 2000 to 2007; this number varied between 2021 and 2187. However, the number of municipalities without any correspondents decreased from 3461 in 2000 to 117 in 2007.
The profile of municipalities with at least one banking correspondent also changed in this period, as shown in table 2. Over time, there was a reduction in the average population and an increase in the distance to the state capital. This evidence shows that the expansion of banking correspondents was largely determined by the incorporation of smaller, more isolated municipalities.

The sharp expansion of the banking correspondent network, especially in municipalities without bank branches, suggests that the costs of delivering banking services through this distribution channel is lower than those of regular branches. A key feature of this new arrangement is that the incremental cost for a firm that agrees to operate as a banking correspondent may be low because most of the capital expenditure and staff have already been established for its main activities (lottery houses, post office branches and small retailers).

Table 3 maps the relative use of banking correspondents and bank branches based on market characteristics, such as population, GDP per capita and distance to the capital. I consider two different measures of relative distribution channels: panel (A) considers the difference between the number of banking correspondents and the number of bank branches per municipality, whereas panel (B) considers the fraction between these two measures. Because panel (B) considers only municipalities with at least one bank branch, the number of observations is systematically lower. I estimate one regression for each year.

[Table 3 - Banking correspondents versus bank branches as alternative distribution channels]

In panel (A), in which all municipalities are included in the regressions, the use of banking correspondents in comparison with the use of branches is negatively correlated with population and GDP per capita in 2000. Banks appear to have been using correspondents to serve smaller and poorer municipalities at that time. However, these correlations increased over time and even became positive in 2003. After expanding into smaller and more isolated municipalities, banks
began to increase the use of correspondents in larger cities. Panel (B) shows a similar pattern after 2002.

III. A simplified entry model

A. Structure

This analysis is based on a simplified version of the analysis of Bresnahan and Reiss (1991). The model is used to derive the likelihood of observing a given number of banking correspondents, depending on the market size of each municipality. Based on this likelihood, an estimate of structural parameters that is related to the entry decisions of banking correspondents is derived.

Consider a market for banking services for which size is denoted by $S$. For instance, $S$ can represent the population of a municipality. I denote $\Pi_c(S)$ as the profit of each banking correspondent in a market of size $S$ and $c$ players. The profit function of a banking correspondent is written as follows:

\[
\Pi_c(S) = \alpha_c S - \gamma_c - \epsilon,
\]

where $\alpha_c$ is the per capita variable profit, $\gamma_c$ is the fixed cost of operating in a market with $c$ players, and $\epsilon$ is a random term with a zero mean and a distribution function $\Phi$. Following Bresnahan and Reiss (1991), I assume that competition may increase with the number of players. As a consequence, profits are non-increasing with $c$: $\Pi_c(S) \geq \Pi_{c+1}(S)$, $c = 1, 2, ...$. A sufficient condition this assumption, also considered in Bresnahan and Reiss (1991), is that $\alpha_c \leq \alpha_{c+1}$ and $\gamma_c \geq \gamma_{c+1}$ for $c = 1, 2, ....$

Entry occurs when expected profits are non-negative. Thus, the expected entry threshold for private banks in a market with $c$ banking correspondents is given by the following:

\[
\overline{S}_c = \frac{\gamma_c}{\alpha_c}.
\]
Note that $S_1$ is the entry threshold for the first banking correspondent. For example, markets with $S < S_1$ are expected to have no access to financial services through banking correspondents, and markets with $S_1 < S < S_2$ are expected to have only one banking correspondent. A similar analysis can be reproduced for bank branches.

B. Deriving the likelihood

The model determines the expected number of players for each market of size $S$. The likelihood of observing a particular number $c$ of banking correspondents is given by the following:

$$\Pr (c = 0 | S) = \Pr (\Pi_1 (S) < 0) = 1 - \Phi(\alpha_1 S - \gamma_1),$$

$$\Pr (c | S) = \Pr (\Pi_c (S) \geq 0, \Pi_{c+1} (S) < 0) = \Phi(\alpha_c S - \gamma_c) - \Phi(\alpha_{c+1} S - \gamma_{c+1}),$$

for $c = 1, 2, \ldots$.

Consider a sample of $N$ markets that are indexed by $i = 1, \ldots, N$. For each market, we observe the market size $S_i$ and the number of banking correspondents $c_i$. We can write the log-likelihood function as follows:

$$\ln L = \sum_{i=1}^{N} \ln (\Pr (c_i | S_i)).$$

IV. Results

The model that is presented in section III is estimated separately for banking correspondents and bank branches in each year of the period from 2000 to 2007. Table 4 presents the estimated entry thresholds $S_c$ for each year, and figure 2 shows the evolution of the entry thresholds for banking correspondents and bank branches.

[Table 4 - Estimated entry threshold for banking correspondents and bank
Table 4 shows that the entry barriers for financial provision were eliminated for banking correspondents in 2002, when the entry threshold $S_1$ became 0. According to 2, this result implies that $\gamma_1 = 0$. The fixed cost for the entry of the first banking correspondent is estimated to be zero. Under the new institutional framework, banks are allowed to rely on the existing infrastructure of the banking correspondents to distribute their services. The fixed cost is covered by the main activities that are undertaken by the banking correspondents, which typically include post offices, lottery houses and small retailers. This cost may explain the results that were estimated for the first player. The entry thresholds for other players (e.g., second, third) also decline substantially over time.

For the bank branches, the entry threshold $S_1$ remains relatively stable in the range of 7,818 to 9,333 individuals. The result for bank branches is compatible with the general rule that is used by banks, who consider opening an initial branch only in a municipality with a population of at least 10,000 individuals. This stability is also observed for the other players.

Since 2003, the entry thresholds for banking correspondents have become consistently lower than those of bank branches. The new contractual arrangements that are provided by the banking correspondents are effective in reducing the costs of delivering banking services.

V. Conclusion

In this paper, I provide evidence that banking correspondents have eliminated entry barriers for the provision of banking services in Brazil. Banking correspondents are established through contractual arrangements that allow banks to
outsource the distribution of their services to partner firms. The parameters that were estimated based on a structural model suggest that the fixed cost for the entry of the first banking correspondent in a municipality is 0 after 2002. This result is compatible with situations in which a partner firm uses its existing capital and infrastructure to operate as a banking correspondent. Consequently, banking correspondents can assist in increasing the outreach of banking services, especially in less populated and more isolated regions.
Appendix: Data description

We use data from two different sources at the municipality level for the period between 2000 and 2007. From the Brazilian Central Bank, we use data on the locations of banking correspondents and bank branches. From Ipea (Applied Economics Research Institute), we gather data pertaining to population and distance from the state capital (in kilometers) for each municipality.

The data for banking correspondents include the complete addresses of the 20 largest financial institutions with banking correspondents. These institutions account for more than 90% of the banking correspondents in the country. Most of the banking correspondents that were excluded from the analysis are located in state capitals; thus, these exclusions do not significantly affect our analysis of the provision of financial services for small municipalities. However, the data on bank branches comprise all branches in the country.
REFERENCES

Banco Central do Brasil. 2010. “Relatório de Inclusão Financeira.”


Figure 1. Expansion of the average number of bank branches and banking correspondents per municipality in Brazil.

Source: Brazilian Central Bank.
Figure 2. Estimated entry thresholds for banking correspondents and bank branches.
Table 1—Distribution of municipalities according to the number of banking correspondents and bank branches

<table>
<thead>
<tr>
<th></th>
<th>Number of banking correspondents</th>
<th></th>
<th>Number of bank branches</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0  1   2   3 +</td>
<td>0  1   2   3 +</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>3461 1598 166 282</td>
<td>2187 1342 689 1289</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>2606 2322 187 392</td>
<td>2241 1394 636 1236</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>216 1760 2616 915</td>
<td>2230 1405 640 1232</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>195 1423 2715 1174</td>
<td>2238 1395 638 1236</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>180 1168 2455 1704</td>
<td>2033 1580 652 1242</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>163 903 1845 2596</td>
<td>2028 1526 696 1257</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>138 748 1421 3200</td>
<td>2021 1493 721 1272</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>117 525 1031 3834</td>
<td>2039 1475 718 1275</td>
<td></td>
</tr>
</tbody>
</table>

Source: Brazilian Central Bank.

Note: Each cell represents the number of municipalities with the specified number of banking correspondents or bank branches. There are 5,507 municipalities in the sample. All columns of a row in each category (banking correspondents and bank branches) sum up to 5,507.

Table 1 presents a rapid increase in the number of banking correspondents and a relatively stable picture for the distribution of bank branches in the period. Also show how banking correspondents increase the access to financial services in many municipalities - in 2007, there was still 2,039 municipalities without bank branches in contrast to only 117 without banking correspondents.
<table>
<thead>
<tr>
<th>Year</th>
<th>Municipalities with no banking correspondent</th>
<th>Municipalities with 1 banking correspondent</th>
<th>Municipalities with 2 banking correspondents</th>
<th>Municipalities 3+ banking correspondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Distance to state capital</td>
<td>Population</td>
<td>Distance to state capital</td>
<td>Population</td>
</tr>
<tr>
<td>2000</td>
<td>211</td>
<td>6930</td>
<td>261</td>
<td>5472</td>
</tr>
<tr>
<td>2001</td>
<td>261</td>
<td>9314</td>
<td>256</td>
<td>7217</td>
</tr>
<tr>
<td>2002</td>
<td>211</td>
<td>3975</td>
<td>260</td>
<td>5953</td>
</tr>
<tr>
<td>2003</td>
<td>211</td>
<td>45620</td>
<td>260</td>
<td>5472</td>
</tr>
<tr>
<td>2004</td>
<td>211</td>
<td>244386</td>
<td>170</td>
<td>5472</td>
</tr>
<tr>
<td>2005</td>
<td>211</td>
<td>244386</td>
<td>170</td>
<td>5472</td>
</tr>
<tr>
<td>2006</td>
<td>211</td>
<td>244386</td>
<td>170</td>
<td>5472</td>
</tr>
<tr>
<td>2007</td>
<td>211</td>
<td>244386</td>
<td>170</td>
<td>5472</td>
</tr>
</tbody>
</table>

Source: Brazilian Central Bank.

Note: Each cell represents the average of each variable (population and distance to state capital) among the municipalities in each group (0, 1, 2 and 3+ banking correspondents).

Table 2 shows that the expansion of banking correspondents reached less populated and more isolated municipalities over time. This change is so intense that the average population of municipalities with 1 or 2 banking correspondents is less than the average population of municipalities without banking correspondents. A notable trend is the decrease in distance to the state capital for municipalities with a higher number of banking correspondents.
Table 3—Banking Correspondents versus Bank Branches as alternative distribution channels

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel (A)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(population)</td>
<td>-1.471***</td>
<td>-1.232***</td>
<td>-0.566***</td>
<td>0.196*</td>
<td>2.308***</td>
<td>4.085***</td>
<td>6.446***</td>
<td>9.309***</td>
</tr>
<tr>
<td></td>
<td>(0.078)</td>
<td>(0.068)</td>
<td>(0.060)</td>
<td>(0.105)</td>
<td>(0.234)</td>
<td>(0.289)</td>
<td>(0.373)</td>
<td>(0.470)</td>
</tr>
<tr>
<td>ln(GDP per capita)</td>
<td>-1.604***</td>
<td>-1.340***</td>
<td>-0.658***</td>
<td>0.1</td>
<td>2.340***</td>
<td>4.117***</td>
<td>6.556***</td>
<td>9.614***</td>
</tr>
<tr>
<td></td>
<td>(0.091)</td>
<td>(0.078)</td>
<td>(0.069)</td>
<td>(0.090)</td>
<td>(0.192)</td>
<td>(0.253)</td>
<td>(0.350)</td>
<td>(0.460)</td>
</tr>
<tr>
<td>ln(distance to capital)</td>
<td>-0.02</td>
<td>-0.129**</td>
<td>-0.233***</td>
<td>-0.487***</td>
<td>-1.060***</td>
<td>-1.157***</td>
<td>-0.858***</td>
<td>-0.594</td>
</tr>
<tr>
<td></td>
<td>(0.069)</td>
<td>(0.059)</td>
<td>(0.063)</td>
<td>(0.097)</td>
<td>(0.208)</td>
<td>(0.264)</td>
<td>(0.328)</td>
<td>(0.404)</td>
</tr>
<tr>
<td></td>
<td>(0.717)</td>
<td>(0.632)</td>
<td>(0.575)</td>
<td>(0.891)</td>
<td>(2.051)</td>
<td>(2.768)</td>
<td>(4.006)</td>
<td>(5.292)</td>
</tr>
<tr>
<td>Observations</td>
<td>5395</td>
<td>5452</td>
<td>5452</td>
<td>5452</td>
<td>5452</td>
<td>5452</td>
<td>5452</td>
<td>5452</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.38</td>
<td>0.34</td>
<td>0.12</td>
<td>0.02</td>
<td>0.2</td>
<td>0.3</td>
<td>0.35</td>
<td>0.4</td>
</tr>
</tbody>
</table>

|                |          |          |          |          |          |          |          |          |
| **Panel (B)**  |          |          |          |          |          |          |          |          |
| ln(population) |    0.014**| -0.005   | -0.183***| -0.132***| 0.053*** | 0.216*** | 0.376*** | 0.538*** |
|                | (0.007)  | (0.008)  | (0.012)  | (0.014)  | (0.014)  | (0.021)  | (0.028)  | (0.040)  |
| ln(GDP per capita) | 0.013***| -0.005   | -0.180***| -0.133***| 0.052*** | 0.168*** | 0.306*** | 0.481*** |
|                | (0.005)  | (0.006)  | (0.008)  | (0.010)  | (0.015)  | (0.021)  | (0.030)  | (0.039)  |
| ln(distance to capital) | -0.020**| -0.046***| -0.068***| -0.146***| -0.242***| -0.294***| -0.189***| -0.075   |
|                | (0.009)  | (0.010)  | (0.016)  | (0.022)  | (0.032)  | (0.043)  | (0.058)  | (0.070)  |
| Constant       | 0.248*** | 0.709*** | 3.610*** | 3.642*** | 2.456*** | 1.625*** | 0.16     | -1.109   |
|                | (0.093)  | (0.107)  | (0.154)  | (0.198)  | (0.278)  | (0.383)  | (0.560)  | (0.730)  |
| Observations   | 3244     | 3226     | 3237     | 3229     | 3432     | 3437     | 3444     | 3427     |
| R-squared      | 0.01     | 0.01     | 0.11     | 0.05     | 0.05     | 0.06     | 0.04     | 0.05     |

Source: Brazilian Central Bank.

Note: Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Each panel shows the changes in the profile of the presence of banking correspondents in comparison to bank branches. Panel (A) shows the results for the number of banking correspondents minus the number of branches, while panel (B) presents the estimates for the ratio between the number of banking correspondents over the number of branches at the municipality level. Differences in the number of observations between the two panels are due to municipalities with zero branches in the sample.

Table 3 suggests that the distribution channel of banking correspondents in comparison to bank branches, at the early years, was concentrated in poorer and less populated areas. However, after 2003 or 2004 (depending on the specification), the pattern changed and the banking correspondents were more prevalent than bank branches in more populated and richer areas.
Table 4—Estimated critical entry thresholds for banking correspondents and bank branches

### Panel (A) - Critical population entry threshold

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banking Correspondents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>26,470</td>
<td>13,530</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>71,890</td>
<td>67,320</td>
<td>10,661</td>
<td>8,903</td>
<td>7,880</td>
<td>5,606</td>
<td>4,409</td>
<td>2,793</td>
</tr>
<tr>
<td>3</td>
<td>88,680</td>
<td>82,110</td>
<td>38,947</td>
<td>36,575</td>
<td>26,150</td>
<td>16,737</td>
<td>12,000</td>
<td>8,595</td>
</tr>
<tr>
<td>4</td>
<td>102,130</td>
<td>95,340</td>
<td>54,789</td>
<td>49,102</td>
<td>32,938</td>
<td>22,989</td>
<td>16,345</td>
<td>12,762</td>
</tr>
<tr>
<td>5 or more</td>
<td>123,440</td>
<td>109,930</td>
<td>73,187</td>
<td>59,264</td>
<td>38,463</td>
<td>27,109</td>
<td>19,757</td>
<td>16,609</td>
</tr>
<tr>
<td>Bank branches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>8,418</td>
<td>9,219</td>
<td>9,174</td>
<td>9,333</td>
<td>7,818</td>
<td>7,795</td>
<td>7,782</td>
<td>8,132</td>
</tr>
<tr>
<td>3</td>
<td>30,969</td>
<td>32,809</td>
<td>33,279</td>
<td>33,730</td>
<td>34,552</td>
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<td>4</td>
<td>38,301</td>
<td>40,936</td>
<td>41,165</td>
<td>41,837</td>
<td>42,628</td>
<td>43,021</td>
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<td>43,827</td>
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<td>45,858</td>
<td>49,153</td>
<td>49,854</td>
<td>50,631</td>
<td>51,745</td>
<td>52,211</td>
<td>53,326</td>
<td>53,509</td>
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</tbody>
</table>

### Panel (B) - Critical population entry threshold per firm (2nd to 5th player)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
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<tbody>
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<td>Banking Correspondents</td>
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<tr>
<td>2</td>
<td>35,945</td>
<td>33,660</td>
<td>5,331</td>
<td>4,452</td>
<td>3,940</td>
<td>2,803</td>
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<td>12,192</td>
<td>8,717</td>
<td>5,579</td>
<td>4,000</td>
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<tr>
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<td>25,533</td>
<td>23,835</td>
<td>13,697</td>
<td>12,276</td>
<td>8,235</td>
<td>5,747</td>
<td>4,086</td>
<td>3,191</td>
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<td>21,986</td>
<td>14,637</td>
<td>11,853</td>
<td>7,693</td>
<td>5,422</td>
<td>3,951</td>
<td>3,322</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>2</td>
<td>10,863</td>
<td>11,818</td>
<td>11,880</td>
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<td>12,141</td>
<td>11,925</td>
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<td>11,517</td>
<td>11,583</td>
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<td>9,971</td>
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<td>10,349</td>
<td>10,442</td>
<td>10,665</td>
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</table>

Note: Each cell in panel (A) presents the estimated entry thresholds, measured in terms of population, for banking correspondents and bank branches, based on Bresnahan and Reiss (1991) model. Panel (B) presents the entry threshold per firm.

Table 4 shows that the banking correspondents eliminated the fixed cost associated with the provision of financial services after 2002, when the entry threshold becomes equal to zero. From 2004 to 2007, all entry thresholds for banking correspondents become substantially lower than those for bank branches.