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Foreign Investment in Colombia's Financial Sector¹

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Abstract

This study analyzes foreign investment in Colombia's financial system, chronicling major changes in legislation, describing how investment flows evolved over time, and comparing performance of foreign-owned versus domestic banks. Panel data estimations reveal that financial liberalization in general had a beneficial impact on bank behavior in Colombia. Although the positive contribution of foreign entry may be overstated in recent studies by not controlling for other liberalization factors, foreign (and domestic) entry beginning in 1990 did improve bank behavior by enhancing operative efficiency and competition. However, this came at the expense of a deterioration in the loan quality of domestic banks.

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I. INTRODUCTION

After several decades of varying degrees of restriction on direct foreign investment (DFI) and direct foreign investment in the financial system in particular (DFIFS), Colombian policymakers decided to allow virtually free entry of DFIFS in the early 1990s. This decision was taken as a part of a larger process of external and financial sector liberalization, and was aimed at enhancing competition, improving resource allocation, and obtaining greater administrative efficiency in financial institutions.

There is evidence that financial sector opening and the entry of foreign-owned financial institutions may provide significant benefits to a country's financial system. Analysis of cross-country information has shown how foreign entry tends to lower intermediation spreads and overhead expenses over time, with subsequent benefits for consumers of financial services (Claessens, et al., 1998). Case studies of some individual countries confirm these positive results (Honohan, 1997; Pastor, et al., 1997; Denizler, 1999).

A recent study (Barajas, et al., 1999) that used aggregate data to analyze the determination of intermediation spreads in Colombia found evidence of benefits derived from the liberalization reforms implemented in the early 1990s. Although the average level of spreads did not change significantly when comparing pre and post-liberalization samples, competition appeared to have increased and there was evidence that bank behavior became more prudent as banks increased the sensitivity of their pricing decisions to changes in loan quality. However, this study did not separate different effects of the liberalization, such as increased entry of new foreign and domestic participants, nor did it test whether significant changes in the *determinants* of spreads had occurred.

In the present study we use a panel data set encompassing both pre and post-liberalization periods and set out to separate different effects of the liberalization, testing their significance in explaining changes in intermediation spreads, the level of nonfinancial costs, and the quality of the loan portfolio. In particular, we analyze the behavior of DFIFS in Colombia and examine several hypotheses regarding the difference in behavior of foreign-owned banks as well as the impacts of foreign entry on different types of banks. The organization of the paper is the following. First, in Section II we chronicle the changes in legislation regarding DFIFS, from relative openness before 1967, to increased restriction culminating in a "Colombianization" of the financial system in 1975, and finally to renewed openness in the 1990s. Second, in Section III we examine several performance indicators during the 1991-98, focusing on differences between domestic and foreign-owned banks on the one hand, and between domestic banks acquired by foreign investors and all other foreign banks, on the other hand. Third, in Section IV we use panel data on individual banks during the 1985-1998 period and test whether significant differences in pricing behavior, administrative costs, and loan quality arise between domestic and foreign owned banks, whether foreign entry has affected the performance of domestic banks, and whether the mode of foreign entry matters (i.e., purchase of existing banks versus the establishment of new foreign-owned banks). Finally, in Section IV we provide a summary of the major conclusions and findings.

II. INSTITUTIONAL AND REGULATORY ASPECTS

In this section we will describe the changes in regulation regarding direct foreign investment in the financial system (DFIFS) within the context of direct foreign investment (DFI) in general, noting that the financial system has always received differential treatment in Colombia, being, until recently, one of the most protected sectors.

From the late 1960s through the 1980s foreign investment in the financial system faced severe legal restrictions. The foreign exchange regime introduced in 1967 (through Decree Law 444) and the overall policy towards foreign investment essentially closed the doors to foreign participation in Colombia's financial sector, and in the 1980s, as a result of a deep financial crisis the authorities devoted most of their attention to the strengthening of financial institutions rather than liberalizing the system and allowing greater foreign participation. It was only at the beginning of the 1990s that DFIFS was permitted to increase as the foreign exchange regime was liberalized and a financial sector reform was put in place that aimed at enhancing efficiency and competition.

Between 1970 and 1990, the restrictive legal framework led to stagnation in the flows of DFIFS. During the 1970s an explicit purpose of the policies in place was to substitute foreign with domestic capital. The result was that, after being rather volatile at a reasonably high level in the early 1970s, DFIFS practically disappeared in the following ten years, and only recently has regained some momentum (see Table 1). As a percentage of total DFI, the flow of DFIFS went from an average of 27.4% during 1970-74, to -0.2% in 1986-89 and to 19.2% between 1990 and 1997. As a percentage of GDP, the average flow of DFIFS was nil until 1989, and has recently increased, reaching 0.5%.

Table 1
Colombia: Direct Foreign Investment in the Financial System (DFIFS)

	1970-74	1975-79	1980-85	1986-89	1990-97
	(Period Averages)				
<i>Millions of dollars</i>					
DFI stock	529	784	1,462	2,986	5,766
DFIFS stock	77	110	134	173	658
DFI flow	46	75	212	260	1,002
DFIFS flow	8	5	10	-1	217
<i>DFIFS as % of Total DFI</i>					
Stock	14.5	14.2	9.4	5.8	9.5
Flow	23.3	7.4	4.5	-3.9	20.0
<i>DFIFS as % of GDP</i>					
Stock	0.8	0.6	0.4	0.5	0.9
Flow	0.1	0.0	0.0	0.0	0.3

Source: Banco de la República

In the following section we describe three periods marked by major changes in the regulation regarding DFIFS: i) the period prior to 1967; ii) the period known as that of "Colombianization of the banking system" (1970-1989); and iii) the liberalization period of the 1990s.

A. Pre-1967: no specific policy regarding foreign capital²

Historically, the Colombian authorities perceived foreign investment as a positive development, and therefore it was not restricted at all. This policy fit well within the outward-oriented development model then in place. As overall DFI began to gain importance in key export-intensive sectors, the authorities decided to keep track of new investments, in order to have proper knowledge of the foreign exchange movements they entailed. Legislation safeguarded the right to remit profits and reimburse capital, while establishing some conditions in order to purchase foreign exchange from the central bank.

Foreign investment in the financial system dates from 1912. Between that year and the end of the 1920s several foreign-owned institutions were established in Colombia,³ but DFIFS still represented only a small part of total DFI. Law 45 of 1923—which created Banco de la República, Colombia's current central bank—established the first regulations on DFIFS, which were not restrictive. The Law granted powers to the Banking Superintendency (i.e. the comptroller of the currency) to authorize new foreign investment in the financial sector, and to revoke authorizations in case of any wrongdoing. In 1931 the office of foreign exchange control (Oficina de Control de Cambios) was created at the central bank and was put in charge of authorizing all DFI. Between 1930 and 1965 the main purpose of the legislation was to ensure that all foreign investment was properly registered, as there were no restrictions regarding sectors that could receive investments or norms determining transfer of technology requirements. It was only in 1967, with the introduction of a new foreign exchange regime, that a specific DFI policy was enacted.⁴

² This section is based, among others, on Gómez and Botero (1987), Ospina and Kacew (1989) and Superintendencia Bancaria (1989).

³ In 1912 the Banco Alemán Antioqueño established a branch. It would later locate its headquarters in Medellín. In the following years branches were established by the Anglo South American Bank Limited of London, the French and Italian Bank and the Royal Bank of Canada.

⁴ For this period, data on DFI is scarce. It is only after 1967, with the requirement to register any new investment, that consistent series can be constructed.

B. “Colombianization” of the banking system (1967–1989)

i) Decree Law 444 of 1967

Until 1967 Colombia had a fixed exchange rate. As a result of export volatility (closely linked to the evolution of coffee prices) and of expansionary policies that weakened the balance of payments, the parity was adjusted on several occasions.

A critical balance of payments situation emerged in 1966. Following a prolonged dispute with the IMF, and given that the Colombian authorities did not want to undertake a massive devaluation, a new foreign exchange and trade regime (through Decree Law 444 of 1967) was adopted, the key element of which was the introduction of stiff foreign exchange controls. The Banco de la República was granted full monopoly over the demand and supply of foreign exchange, and several mechanisms were introduced in order to protect domestic production, promote exports, and control and guide DFI. Regarding exchange rate policy, starting in 1967 a crawling–peg regime was introduced.

This new foreign exchange regime introduced authorization and registration procedures and gave the government the tools to direct foreign investment towards those areas considered a priority for the country’s economic development. The National Planning Department (DNP) had to approve all DFI, following the guidelines established by the National Council on Economic and Social Policy (CONPES). In order to remit or reinvest profits or to withdraw capital, registration at the office of foreign exchange control was made mandatory. Foreign companies were to be supervised either by the Superintendencia Bancaria (if involved in financial activities) or by the Superintendencia de Sociedades (otherwise). Even though Decree Law 444 did not explicitly restrict foreign investment to any economic sector, in practice no new DFI was authorized in the financial sector or in public utilities for several years .

ii) Decision 24 of 1970 of the Andean Pact

DFI policy became even more restrictive in 1970, as a result of Andean Pact’s⁵ Decision 24, which was partially adopted by Colombia. At the time, Colombia was facing very favorable economic conditions: coffee prices were high, nontraditional exports were increasing, savings were on the rise, and there was abundant foreign financing. This setting was deemed appropriate to restrict DFI in general, and DFIFS in particular.

⁵ The Cartagena Agreement (Acuerdo de Cartagena), which gave rise to the Andean Pact, was signed in 1969. It originally included Bolivia, Chile, Colombia, Ecuador and Perú. Later, Chile withdrew and Venezuela joined. Chile’s withdrawal was largely the result of the Pact’s restrictive practices with regard to DFI, which openly contradicted the market—oriented policies that this country was to implement starting in the mid 1970s.

The integration of the Andean countries, undertaken within the context of the prevalent import substitution development strategy, was aimed at increasing regional trade. The agreement called for regional policy harmonization, particularly with regard to exchange rate, monetary, fiscal, trade and foreign investment matters. In reference to the latter, the purpose was to substitute foreign with domestic capital, under the belief that DFI could have adverse balance of payments effects.

Decision 24 was intended to prevent “foreign capital from reaping the benefits of integration, then transferring those benefits overseas” (Garay and Pizano, 1979). Among its most salient restrictions were the following: foreign firms were required to transform themselves into joint ventures (foreign/domestic) in no more than 15 years; limits were established for profit remittances and reinvestments; transfer of technology was made mandatory; access of foreign firms to short-term domestic credit was made subject to limits.

In addition, certain sectors—including the financial sector—were reserved for domestic investors. According to Article 42 of Decision 24, all new DFIFS—other than that from other member countries—was prohibited. Branches of foreign banks had to convert themselves into domestic firms—i.e. firms in which foreign capital did not exceed 20% of total capital. However, by invoking exemptions in Article 44, Colombia only applied these restrictions to insurance companies.

iii) The “Colombianization” of financial intermediaries

Law 75 of 1975 (or “law of Colombianization of the financial system”) represented a milestone in terms of DFIFS. Decision 24 was applied to the financial system, and Law 75 prohibited any new DFI in the financial system. Foreign banks that wished to continue operations in Colombia had to transform themselves into joint ventures within three years. The new joint venture would be required to have no less than 51% of equity owned by Colombian nationals, and any further capitalization had to be undertaken by Colombian interests⁶.

According to López (1976), the events of 1975 are partly explained by the fact that the Pastrana administration (1970–74) had not only excluded the financial sector from Decision 24, but in fact had allowed an unprecedented increase in DFIFS. This was a matter of concern, because of several reasons: i) since businesses mostly financed their investment through borrowing rather than through the capital market, it was thought that it would be

⁶ As a result of Law 75, the following joint—ownership banks were established: Banco Internacional de Colombia (formerly First National City Bank of New York), Banco Royal Colombiano (formerly Royal Bank of Canada), Banco Sudameris (formerly French and Italian Bank), Banco Colombo Americano (formerly Bank of America), Banco Anglo Colombiano (formerly Bank of London and Montreal), Banco del Comercio (formerly Chase Manhattan Bank) and Banco Real de Colombia (formerly Banco Real do Brasil). For more details see Superintendencia Bancaria (1989).

inconvenient for the providers of these funds to be foreign institutions, since this would give foreigners undue control over Colombia's means of production; ii) given that foreign institutions mostly intermediated domestic financial resources, Law 75 sought to prevent their reaping the benefits of an enhanced pool of domestic savings achieved in part from the interest rate liberalization undertaken in the early 1970s. This argument was strengthened by the fact that foreign banks loaned funds especially to multinational corporations not involved in those sectors deemed crucial for Colombia's economic development; iii) while domestic financial institutions were closely supervised, thanks to their transnational structure, foreign banks could evade many of the controls.

Since it forced foreign firms to transform into joint—ownership banks⁷ and not into fully domestically owned institutions, Law 55 seemed to be less restrictive than Decision 24. However, it still had a very adverse effect on DFIFS flows, which went from 23.3% to 7.4% of total DFI between 1970-74 and 1975-79 (Table 1).

According to the Superintendencia Bancaria (1989), the “Colombianization law” did not yield its expected results, particularly in regard to altering the control of institutions. On the contrary, it had undesired consequences. By forcing foreign intermediaries to transform themselves into joint ventures, foreign investors undertook the transformation process without surrendering control, since sales of shares were done in small lots (i.e. selling the required 51% to a large number of small investors)⁸. Furthermore, once the transformation process was completed, there were no incentives to increase the capital base.

It is interesting to note that in spite of the fact that foreign capital was forced to contract, the relative size of jointly owned banks—either in terms of capital or in terms of assets—was not affected. In fact, they grew at a slightly faster pace than domestic banks, but now had less foreign capital. As can be seen in tables 1 and 2, even though DFIFS flows fell sharply, in terms of assets the importance of banks with significant amounts of foreign capital actually increased (from 8.8% in 1975-79 to 9.5% in 1980-85). Since control of these institutions remained in foreign hands, one could conclude that a higher portion of domestic savings was now being controlled with less foreign capital. In this sense, the policy had unintended effects.

⁷ A firm was considered domestic if foreign capital was 20% or less of total capital. If this percentage was between 20 and 49, the firm was considered a joint venture.

⁸ Not surprisingly, when in the early 90s foreign investment was liberalized, banks with joint ownership were easily converted back into foreign banks. Furthermore, the former minority owners came to own practically all of the equity.

iv) Financial crisis and liberalization attempts (1980–89)

At the end of the 1970s and during the early 1980s, coffee prices collapsed, growth stalled, the fiscal situation worsened and foreign indebtedness reached record levels. Then, as a result of the international debt crisis, access to foreign credit drastically declined. Simultaneously, Colombia's financial sector entered an unprecedented period of crisis, as a result of: i) the economic downturn; ii) sloppy management of financial institutions and corruption; iii) weak and outdated supervision; and iv) lack of prudential norms and requirements (Montenegro, 1983).

The economic crisis of the early 1980s underscored the need to supplement the scarce level of domestic savings in order to be able to sustain adequate growth rates. As a consequence, it led to a re-thinking of the policy regarding DFI. Regulations in this area began changing when Colombia adopted the Andean Pact's Decision 220 (through Decree 1265 of 1987 and CONPES⁹ Resolution 44)¹⁰, which allowed some flexibility in how each country could regulate DFI. However, in Colombia DFIFS continued under the tutelage of Law 75 and, as a result, investment flows in this sector continued to fall both in terms of total DFI and as a proportion of GDP (Table 1).

Starting in 1985, several attempts were made in order to change the laws governing the financial sector (Vesga, 1989). The focus was not so much on the role of foreign investment, but rather on strengthening the financial system following the crisis. The most important reforms were the introduction of deposit insurance, the establishment of a guarantee fund, and the re-privatization of those banks that had been nationalized during the crisis.

There were some attempts at liberalizing DFIFS within the financial sector reform. In particular, some thought that lack of competition was one of the main structural problems faced by Colombia's financial system, and that foreign investment could help achieve a much desired increase in the system's capital base. However, most of these reform initiatives faced stiff opposition in Congress. Once again, there were many who believed that foreign

⁹ The National Council for Economic and Social Policy.

¹⁰ The most important features in the context of Decision 220 were: i) new foreign investment was allowed in those firms that wanted to increase their capital base (and not only in those in imminent danger of bankruptcy, as under Decision 24); ii) foreign firms were no longer required to transform themselves into domestic or into joint ventures; iii) there would be no limit to foreigner's participation in the equity of a firm; iv) Chapter 3 of Decision 24, dealing with sectors in which DFI was prohibited, was eliminated; and v) the 7% limit to profit reinvestment was also deleted. For details see Gómez and Botero (1987) and Ospina and Kacew (1989).

investment would consolidate monopolies and extract rents rather than promote economic development, and it was believed that in order to enhance the financial system's capital base, the government should take the lead. Finally, it was argued that the 1980s crisis had affected both domestic and foreign institutions.

It should be noted that although joint-ownership banks faced a difficult situation during the crisis years, they generally performed better than domestic banks. Although profitability decreased across the board, in the critical year of 1985 domestic banks did particularly poorly. Their average return on assets was -5%, compared to -2% in the case of the joint ownership banks (Figure 1.A), even though administrative efficiency—as proxied by the ratio of labor costs to assets—was similar in both groups, hovering around 4-5% (Figure 1.B). The most significant differences involved capitalization and the quality of assets. While the capital-asset ratio went from 7% in 1975 to 4% in 1985 for domestic banks, joint-ownership banks maintained a capital-asset ratio of 5-6% throughout the 1980s (Figure 1.C). The percentage of nonperforming loans ballooned from about 3% at the beginning of the decade to 17% in 1985 in the case of domestic banks, while it reached only 6% in the case of joint-ownership banks (Figure 1.D).

Even though on average joint-ownership banks seemed to have been managed more prudently and therefore were able to weather the crisis, it is still the case that some of these institutions were severely affected during the crisis. Banco Tequendama and Banco del Comercio had to be nationalized in 1986 and 1987, respectively. In addition, exemptions to Andean Pact Decision 24—allowing for foreigners to own more than 49% of a financial institution if this would prevent it from collapsing—were applied in the case of several banks (Mercantil, Crédito y Comercio, Colombo and Real).¹¹

C. Liberalization of DFIFS (1990-98)

By the early 1990s Colombia's financial sector still lacked competitiveness, was highly inefficient and severely repressed, and owned to a great extent by the government. Reserve requirements stood at around 40%, while interest rate spreads surpassed those in developed countries by more than 500 basis points and those of neighboring economies by more than 100 basis points.¹² In 1991 the government owned more than 50% of the assets of the banking system (Table 3).

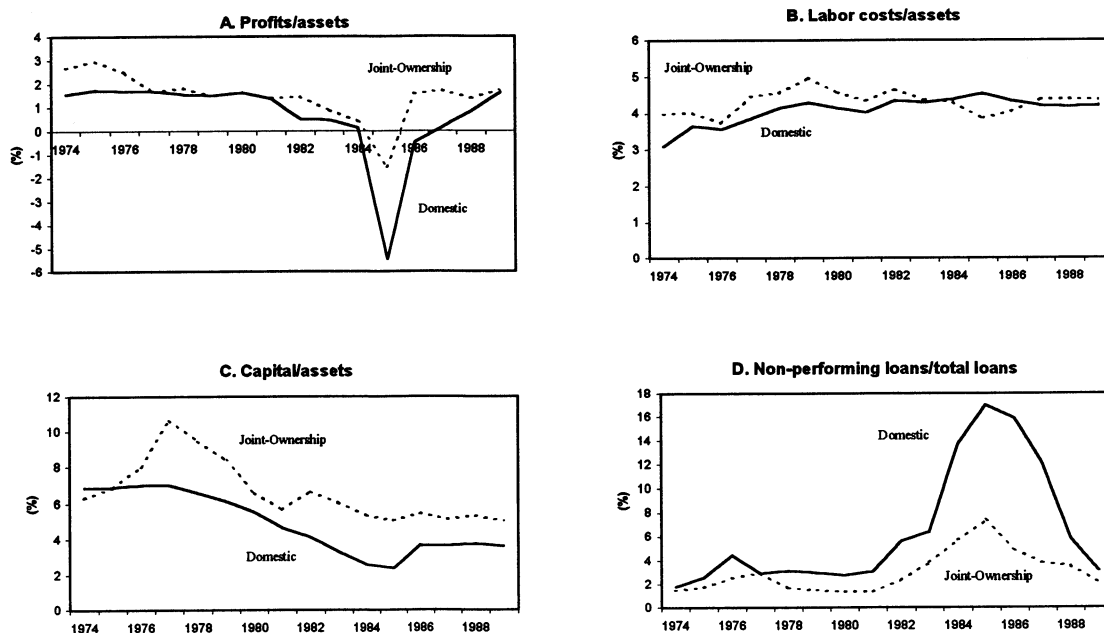
A broad market-oriented structural reform program was initiated in 1989-1990. The cornerstone was Law 9 of 1991, which introduced a change in the foreign exchange regime, significantly opening the capital account and eliminating the central bank's monopoly over

¹¹ In addition, in 1988 Banco Royal Colombiano was purchased by domestic investors.

¹² More detailed information can be found in Barajas *et al.* (1999).

purchases and sales of foreign currency.¹³ With regard to the financial sector, the authorities embarked on an ambitious program aimed at redefining the role and structure of the financial sector and introduced major reforms through Law 45 of 1990 and Law 35 of 1993. The most salient features included the simplification of rules for entry and exit of firms,¹⁴ the adoption

Figure 1
Domestic and joint-ownership banks (1974-1988)



of an almost universal banking scheme aimed at reducing firm specialization; a reduction of intermediation taxes (including reserve requirements and mandatory investments); the establishment of a tighter prudential regulation; and the re-privatization of those institutions that had been nationalized during the crisis. In the context of the reform, and given the new DFI framework, there was now free entry and exit of foreign investment in the financial sector.

Key changes in the regulation regarding DFI came early in the decade, within the context of Andean Pact's decisions 291 and 292, which liberalized foreign investment, eliminated any distinction between domestic and foreign investors, and removed all limits on

¹³ Because of macro stability considerations, capital account liberalization has been reversed on several occasions. Starting in 1993, a non interest-bearing reserve requirement is applied on short-term foreign borrowing.

¹⁴ Norms regarding transfers, mergers and divisions were also simplified.

profit remittances.¹⁵ Law 9 of 1991 also conceived the general framework for foreign investment, instructing CONPES to regulate DFI, following three general principles: equal treatment for nationals and foreigners, universal access to all sectors and automatic granting of authorizations. This framework was incorporated into CONPES's Resolutions 49 and 51.

Equal treatment implied, among other things, that taxes be the same for all investors, regardless of origin. Universal access meant DFI could go to virtually all sectors—only security, defense and treatment of toxic wastes were excluded. Finally, automaticity implied that DFI did not require DNP authorization—except in the case of projects of over \$100 million in the areas of public utilities, waste management or oil extraction. DFIFS was also to be guided by these general principles.

These institutional changes had a positive effect on DFIFS. As a percentage of overall DFI flows, it went from -4% in 1986-89 to 20% in 1990-97 (Table 1), and within the banking system, the share in total assets of banks having foreign investment went from 9.1% in 1986-89 to 13.2% on average in 1990-97 (Table 2). One can also note that foreign banks (joint-ownership banks before 1991) increased their participation both in the banking system's capital base and in the generation of employment. On the other hand, the share in assets of government-owned banks significantly diminished, from 55% of total assets in 1991 to 10.3% in 1998 (Table 3), while foreign banks went from having 7.6% of total assets in 1991 to having 31.4% in 1998.¹⁶

Table 2
Indicators of Foreign Investment in the Banking System
(Percentages)

	1970-74	1975-79	1980-85	1986-89	1990-97
Banks with foreign participation, shares in: 1/					
Total assets	10.3	8.8	9.5	9.1	13.2
Capital 2/	10.3		7.8	7.2	7.5
Number of banks	29.4	34.9	40.0	31.3	36.4
Total number of employees 2/	8.3	11.0	15.0	12.5	20.8
Share in total assets:					
Largest bank 3/		23.3	13.36	12.55	11.63
Largest bank with foreign participation 3/		2.25	2.55	3.19	11.63

1/ Banks with foreign participation are those in which at least 30% of equity is foreign-owned

2/ Data up to 1996

3/ Data refer to the last year of the sub-period

Source: Own calculations based on Asociación Bancaria and Superintendencia Bancaria.

¹⁵ For more details, see Steiner and Giedion (1995) and Fedesarrollo and Coinvertir (1998).

¹⁶ It is worth recalling the changes in ownership. Banks that prior to 1975 were foreign and had to transform into joint ventures—including Citibank, Anglo, Andino, Sudameris, Extebandes, of America and Real—once again are fully owned by foreigners. Banco de los Trabajadores and Banco Tequendama, which were nationalized during the crisis, were sold to foreigners. Some foreign banks have recently started operations in Colombia (Bank of Boston, Banco del Pacífico and ABN Amro). In addition, the largest domestic bank and one medium sized bank (Banco Ganadero and Banco Comercial Antioqueño, respectively) were recently purchased by Spanish investors.

In conclusion, regulation has certainly affected the evolution of DFIFS. When the DFI regime became severely restricted in the 1970s and 1980s, foreign investment in the financial

Table 3
Structure of the Banking System

	1991	1994	1996	1998
	June	December	June	June
	(Percentage of total assets)			
1. Government owned	55.0	22.1	20.6	10.3
2. Private	45.0	77.9	79.4	89.7
2.1 Private with foreign participation 1/	7.6	8.6	9.7	31.4

1/ Banks with foreign participation are those in which foreigners own at least 30% of equity.
Source: Own calculations based on Asociación Bancaria and Superintendencia Bancaria

system all but vanished. However, if one looks at bank ownership, it is quite clear that one of the main goals of Law 55 of 1975 was not achieved, as control of joint—ownership banks appeared to remain very much in foreign hands. Conceivably, this had some bearing on the fact that these institutions fared somewhat better than domestic ones during the financial crisis of the early 1980s. In the 1990s, with the liberalization of foreign investment, DFIFS became very dynamic, and foreign banks that had been forced to change ownership in the 1970s were re—acquired by foreign investors. In addition, other foreign banks have established branches in Colombia, while two domestic banks of important size were purchased by Spanish investors. Currently, more than 30% of assets in the banking system are owned by foreign investors.

III. DESCRIPTIVE AND PERFORMANCE INDICATORS DURING THE 1990S

We proceed to describe some key banking sector indicators for the 1991–98 period, focusing on two key distinctions: (1) between private domestic banks and foreign—owned banks, and (2) between former domestic banks acquired by foreign investors and all other foreign banks.

A. The Data

In this section we define as foreign—owned those banks in which foreigners own at least 30% of total equity.¹⁷ As was mentioned above, several changes in ownership have taken place in the 1990s. Some of them occurred at the beginning of the period, and others

¹⁷ Banks such as Banco de Colombia, Banco de Bogotá, Banco de Crédito, Banco Intercontinental and Banco Selfin have foreign capital that does not surpass 30% of total capital.

towards the end. In order to simplify the descriptive analysis, we have classified banks as being foreign—owned or domestic depending on which status prevailed during the longest period of time. That being the case, we classify two currently foreign—owned banks (Ganadero and Santander) as domestic since their purchase by foreign investors came about relatively late in the sample period (1997), while we classify as foreign banks two others that were first privatized and sold to foreign interests early on (Mercantil and Tequendama).¹⁸

The frequency of the data is **semi—annual**, and is based on balance sheets and profit/loss statements obtained from the Colombian Bankers' Association (1991–96) and the Banking Superintendency (1996–98)¹⁹.

B. Domestic vs. foreign—owned banks

The importance of (non interest—bearing) demand deposits has fallen sharply for both types of banks, and foreign—owned banks have consistently lower ratios of demand deposits to total deposits (Figure 2). Consequently, since reserve requirements are higher for demand deposits than for other type of deposits, these institutions have generally been subjected to lower overall reserve requirements.²⁰ During the 1990–98 period demand deposits as a percentage of total deposits stood at 48.5% in the case of domestic banks and at 38.5% in the case of foreign—owned institutions (Figure 2.A), and the average reserve requirement has been 23.4% for the former group, 19.8% for the latter (Figure 2.B). The less intensive use of demand deposits by foreign—owned banks is also reflected in higher interest payments relative to total deposits (17.9% vs. 15% in the case of domestic banks, Figure 2.C). For all three indicators, the differences across the two types of banks appear to be diminishing over time.

Regardless of ownership, Colombian banks show a similar ratio of labor costs to total assets, around 5% (Figure 3.A). However, other indicators of productivity are higher in the case of foreign—owned institutions; they tend to have less personnel per loan and pay higher wages²¹, thus suggesting a higher level of qualification of their employees (Figures 3.B and

¹⁸ In the previous section, and in order to show the recent importance of DFIFS, we did take into account the change of ownership in these banks.

¹⁹ The change in sources is due to the fact that the printed quarterly report of the Banking Superintendency was the sole source for detailed bank—specific data prior to 1991, while the Colombian Bankers' Association was able to provide an electronic monthly database with information starting in 1991.

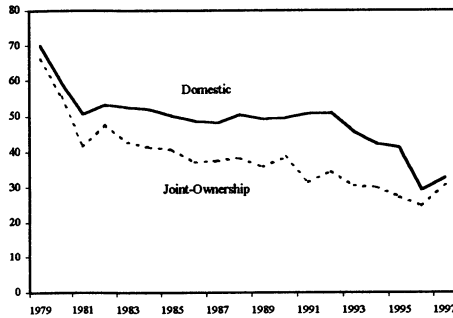
²⁰ In recent years all reserve requirements have gone down, the more so in the case of demand deposits.

²¹ During the 1991–98 period, average real wages per employee 18% were higher for foreign banks than for domestic banks.

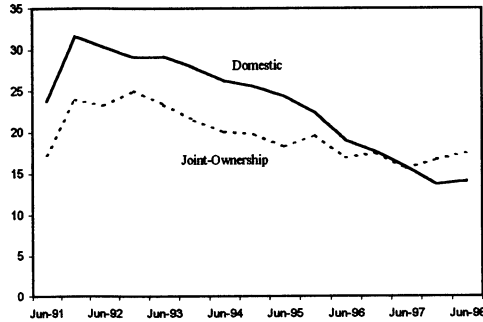
3.C). Regarding the quality of assets, both groups show an improvement through time, more significant in the case of foreign—owned institutions. At the end of our sample non—performing loans stood at 4.3% of total loans in the case of foreign—owned banks and at 5.5% in the case of other private institutions (Figure 3.D).

Figure 2
Foreign and domestic banks (1991-1998)

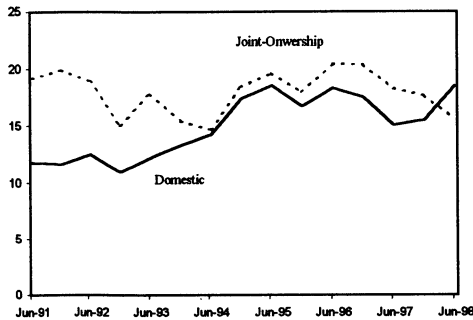
A. Demand deposits/total deposits (%)



B. Bank reserves/deposits (%)

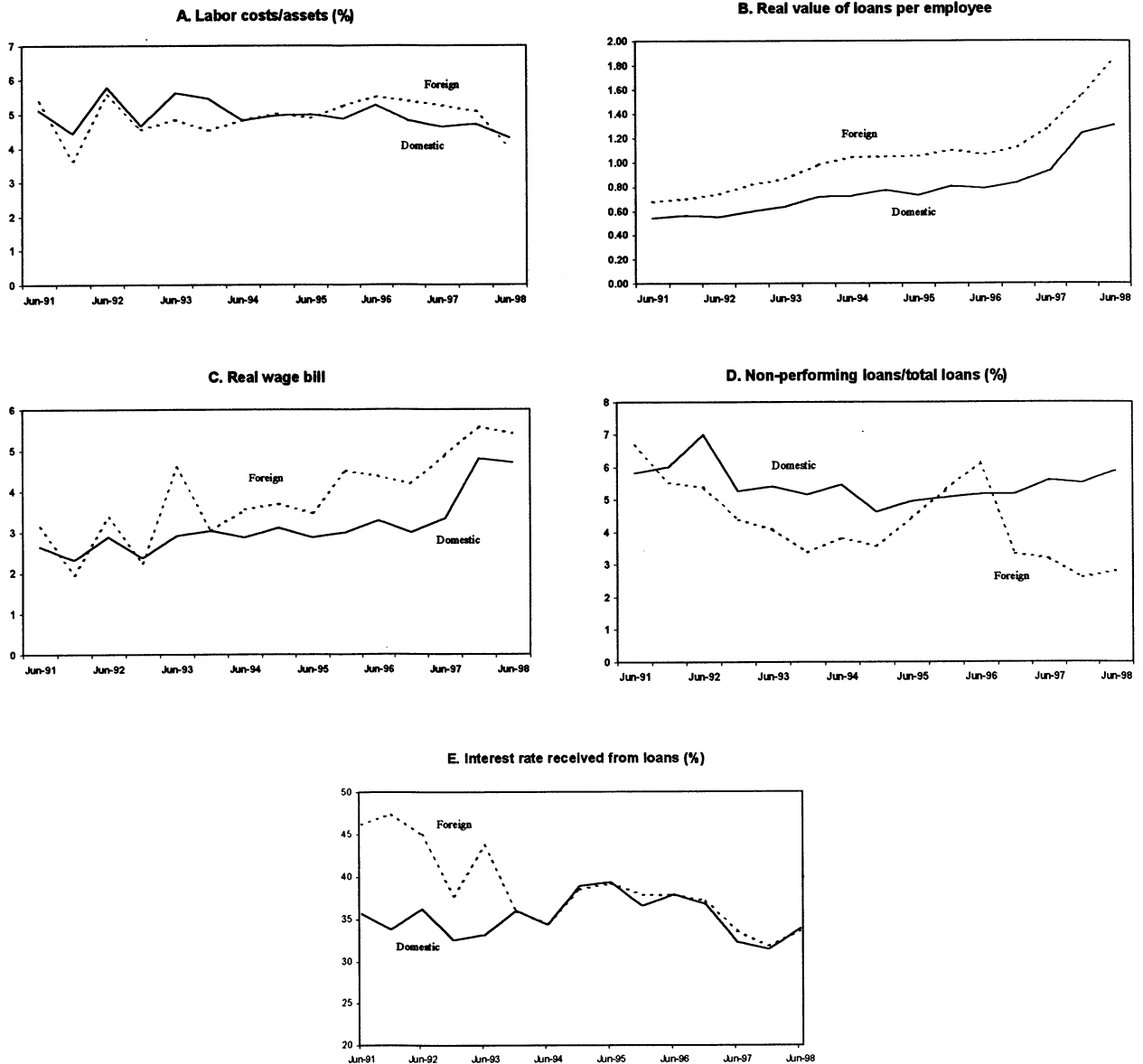


C. Interest payments on deposits (%)



Higher efficiency and better quality of loans should imply that foreign—owned banks could afford to charge a lower interest rate on loans. As Figure 3.E. illustrates, at least until

Figure 3
Foreign and domestic banks (1991-1998)



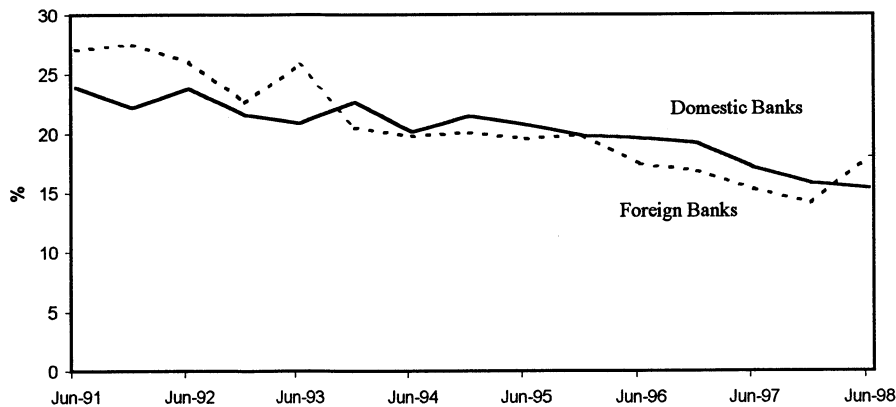
1993 this was not the case.²² In fact, on average for the 1991–98 period, they charged a slightly *higher* rate (38.7%) than their domestically—owned counterparts (35.3%).

The intermediation spread (m), as defined in Barajas, *et al.* (1999), is the difference between the implicit rate earned on loans (i_l) and the implicit rate paid on deposits (i_d), where

²² In fact, there is almost complete convergence in recent years.

i_l is measured as the ratio of interests (plus commissions) received to performing loans, and i_d is the ratio of interests paid to total deposits.²³ Intermediation spreads have declined considerably for the two groups (almost 8 percentage points between 1991 and June 1998, Figure 4). Spreads are very similar for both groups (on average, 20.3% for domestic banks and 20.7% for foreign—owned), with the higher lending rate by foreign—owned banks making up for their relatively more costly funds (less reliant on demand deposits).

Figure 4
Intermediation Spread: Domestic vs. Foreign Banks



C. Banks originally established as foreign vs. former domestic banks acquired by foreign investors

DFIFS has taken two basic forms in Colombia. First, some foreign banks have established branches in Colombia. Second, foreign investors have purchased existing domestic banks. In this section we look at some stylized facts in order to determine whether there are visible differences as a result of dealing with one alternative or the other.

With the liberalization of DFIFS in the early 1990s, banks that were foreign—owned prior to 1975, and that had to be transformed into joint—ownership banks during the 1970s and 1980s, once again became fully owned by their original foreign proprietors. Other new foreign banks—including Banco del Pacífico, Bank of Boston and ABN—Amro—have entered Colombia for the first time. Finally, foreign investors have purchased banks that had been nationalized during the 1980s crisis (Banco Tequendama and Banco Mercantil) and others that had not (Banco Ganadero and Banco Comercial Antioqueño). As was already explained, we do not consider the latter two as foreign—owned. Therefore, in this section we

²³ We include as part of interest earned only those commissions that banks charge on their loan operations.

limit ourselves to establishing differences between Bancos Tequendama and Mercantil on the one hand (domestic banks acquired by foreigners, or acquired banks), and the rest of foreign—owned banks on the other (i.e., re—acquired previously joint—ownership banks and new foreign banks).

Reserve requirements of the acquired banks have declined significantly (from 30.4% in June 1991 to 15.8% in June 1998, Figure 5) while for other foreign—owned banks the indicator has remained stable, at around 19%. This of course reflects changes in the composition of deposits, which in turn has had some bearing on interest rate payments, which, in the case of acquired banks, increased from 12.6% in June 1991 to 21.2% in June 1998. For other foreign—owned banks interest rate payments have remained stable, at close to 18%.

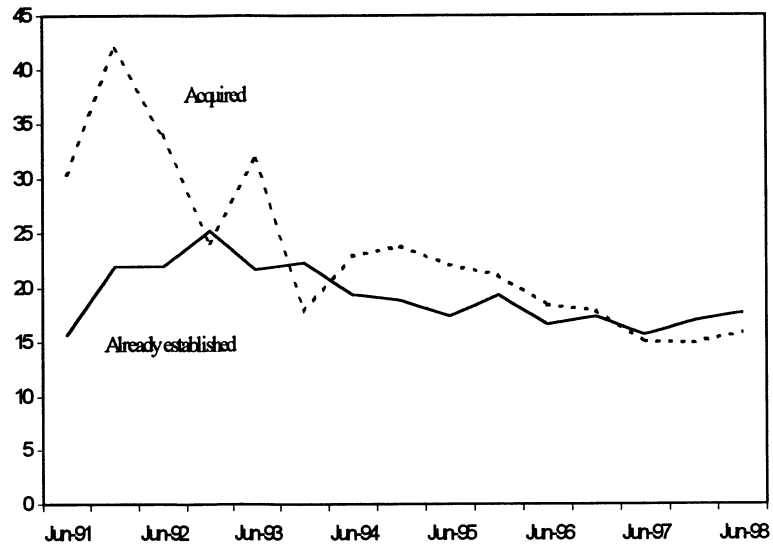
Most other factors affecting the interest rate spread have improved for acquired banks; labor costs have fallen in relation to total assets, the real value assets per employee has increased, the percentage of nonperforming loans has fallen, and the average interest rate charged on loans has declined (Figure 6). In relation to the rest of foreign—owned banks, acquired banks began the decade at a disadvantage but have made up the difference, in some cases outperforming the other group by mid—1998. On average, efficiency, as measured by (the inverse of) labor costs to total assets, was slightly higher than in the case of other foreign—owned banks (on average, 4.7% vs. 4.9%), and productivity and real wages are similar for the two groups. Non—performing loans as a proportion of total loans have declined nearly 7 points in acquired banks but only by 3.5 points in other foreign—owned institutions. Interest rates charged on loans have declined significantly in acquired banks purchased, from levels of around 50% to close to 25%. The comparator group has also seen a drop, but much smaller in comparison.

As a result, spreads have declined for both groups (Figure 7), more sharply in the case of acquired banks purchased by foreigners; for this group, the average spread was around 6% in 1998, while for foreign—owned banks spreads were around 20%.

The main conclusion that emerges from this descriptive analysis is that foreign—owned banks, regardless of whether they were originally owned by nationals or not, have less non—performing loans, less reserve requirements and are more productive than domestic banks. In spite of this, they do not work with smaller spreads, as they presumably reap the benefits of lack of competition within Colombia's financial system. A second conclusion is that, within the context of foreign—owned banks, those that had previously been government owned have experienced the greatest improvements in most indicators. In recent years this has allowed them to operate with lower spreads than those of other foreign—owned institutions.

Figure 5
Foreign-owned banks: acquired and already established (1991-1998)

A Bank reserves/deposits (%)



B Interest paid on deposits (%)

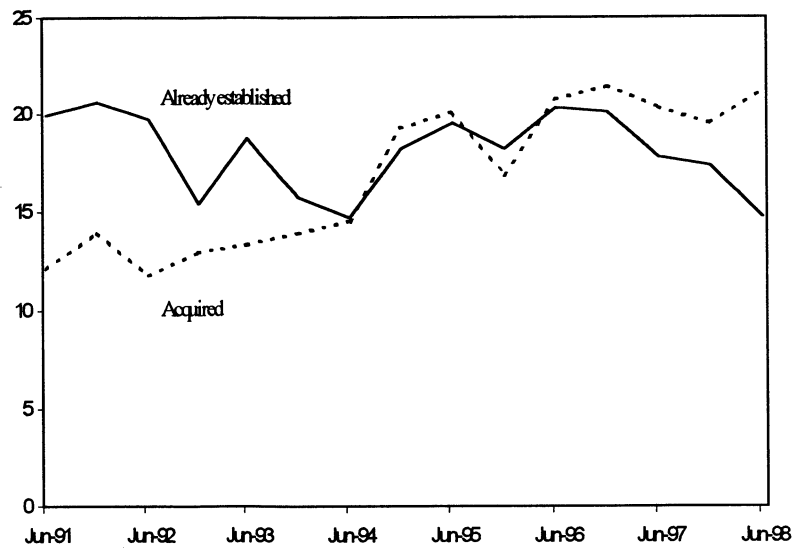


Figure 6
Foreign-owned banks: acquired and already established (1991-1998)

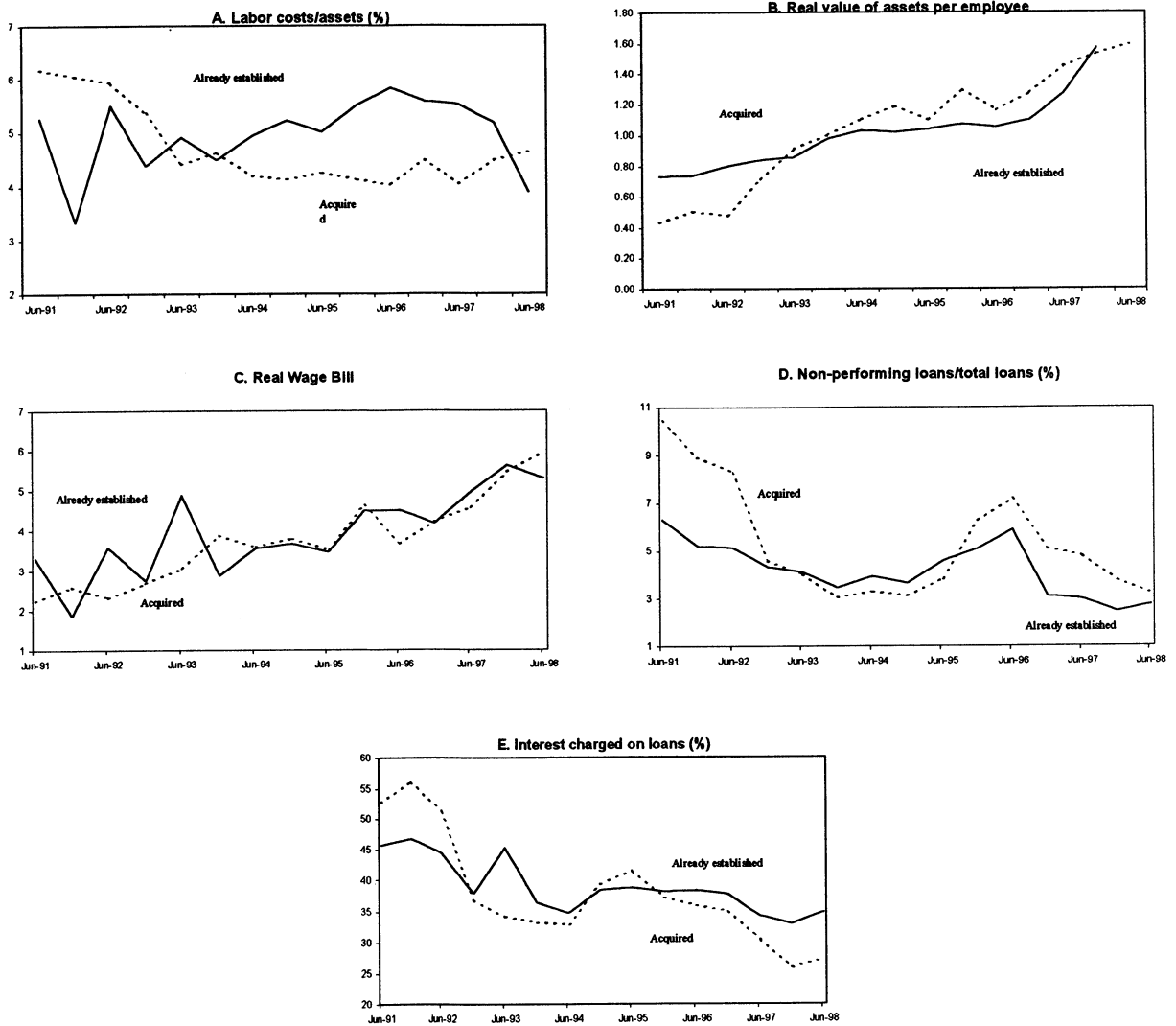
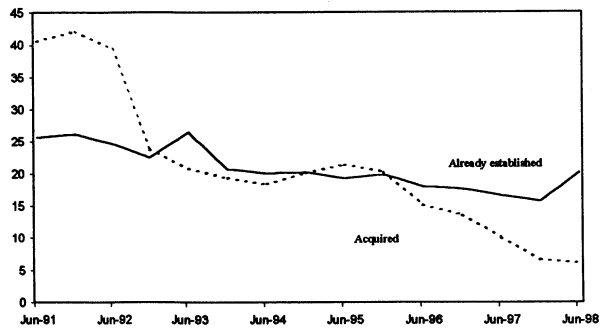


Figure 7
Intermediation Spreads (1991-1998)
Foreign-owned banks: acquired and already established (percentage)



IV. ECONOMETRIC ANALYSIS OF FOREIGN ENTRY IN COLOMBIA'S BANKING SYSTEM

In this section we analyze differences across types of banks and the possible impact of foreign entry on three aspects of bank performance: pricing (interest spreads), loan quality, and operative and/or administrative efficiency. Since the major regulatory changes allowing foreign entry in the early 1990s coincided with greater domestic financial liberalization, we also seek to control for these domestic effects. In particular, the 1990s also witnessed a substantial entry of new *domestic* banks into the Colombian financial system, privatization of several banks, and two major mergers of private banks²⁴.

A. Panel Data Used

We used semi—annual balance sheet and profit/loss statement data for 32 banks during the 1985(1)–1998(1) period to construct both bank—specific and sector—wide indicators. These banks constitute virtually the entire banking system, with two exceptions: (1) Two new banks, one domestic (Davivienda) and one foreign—owned (Amro) were not included since they entered too late into the sample and only 2 semi—annual observations were available. However, their information was used to compute sector—wide indicators. (2) One foreign bank (Extebandes) was excluded from the 1991–98 period due to unresolved problems with its profit/loss statement information, although its balance sheet data was also incorporated in the sector—wide indicators.

Of the 32 banks, 21 remained domestically—owned throughout the sample, and the remaining 11 were foreign (joint—ownership before 1990 and/or completely foreign—owned from 1990 onward) at one time or another. Of the 21 domestic banks, three large ones were state—owned throughout the sample, and the rest were private, of which 6 were new banks created in the 1990s. Among the 11 foreign—owned banks, 2 were the acquired banks described in the previous section, 2 were newly created, and the remaining 7 were the previous joint—ownership banks re—acquired by foreign investors.

The Table 4 describes the ownership of foreign banks and how foreign entry evolved in the Colombian banking system, for the 11 banks considered as foreign in our econometric analysis plus three newer foreign entrants. Entry is characterized as being through reacquisition (purchase of banks that had been foreign—owned before the entry restrictions were applied), acquisition, and new entry. Furthermore, three banks (Real de Colombia, Andino, and Bank of America) had benefited from an exemption to Decision 24, thus allowing foreign participation to exceed 49% prior to 1991. By the end of 1997, foreign participation approached 100% in all but two of the foreign banks.

²⁴ One of these mergers, between Banco Santander and Banco Comercial Antioqueño, took place within our sample period, and is reflected in our data set by showing one bank (Santander) to disappear while the other experiences a discrete increase in size.

Table 4
Evolution of Foreign Bank Entry

Bank	Foreign Owner	Type of Entry	1991	1992	1993	1994	1995	1996	1997
(Percent of foreign ownership)									
<i>Banks Classified as Foreign in the Econometric Analysis</i>									
Real de Colombia	Real do Brasil	Exemption	95.8	96.2	96.2	96.7	96.7	97.0	97.1
Citibank	Citicorp	Reacq.	97.6	97.9	99.9	99.9	99.9	99.9	85.0
Anglo Americano	Lloyds Bank	Reacq.	49.0	49.0	49.0	49.0	49.0	49.0	61.0
Sudameris	Banca Comerciale Italiana	Reacq.	56.6	56.7	56.7	57.6	61.7	63.1	63.4
Andino	BCC	Exemption	99.8			100.0	100.0	100.0	99.6
Extelbandes	Banco Exterior	Reacq.	94.8	94.8	94.8	94.8	94.8	94.8	100.0
Bank of America Mercantil	Bank of America	Exemption	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Banco Mercantil de Venezuela	Acq.	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Tequendama	Banco Construcción	Acq.	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Pacífico	Banco Latino								
	Banco del Pacífico	New Entry		100.0	100.0	100.0	100.0	100.0	100.0
Bank Boston	Bank Boston	New Entry					100.0	100.0	100.0
<i>Newer Foreign Banks</i>									
Amro	Amro	New Entry							100.0
Ganadero	Banco Bilbao Vizcaya	Acq.							100.0
Comercial Antioqueño	Banco Santander	Acq.							85.9

Source: Own calculations based on Asociación Bancaria and Superintendencia Bancaria

i) Bank—specific indicators

For each bank i , we constructed the following indicators of bank pricing, administrative/operational efficiency, loan quality, and market share. For simplicity, the sub—index i is dropped except when necessary to distinguish a bank—specific from a sector—wide variable.

i_l = average lending interest rate interest and commissions received²⁵/
average performing loans

i_d = average deposit interest rate interest paid/average deposits

s = intermediation spread $i_l - i_d$

rr = average required reserves average reserves/average deposits

²⁵ Since it was impossible to disaggregate strictly loan—related commissions in the 1985–1990 information, all commissions received were used. Therefore this definition differs slightly from that used in the previous section.

nfc = nonfinancial costs	administrative costs/average assets
npl = nonperforming loans	nonperforming loans/average gross loans
lc = labor costs	
$empl$ = number of employees	
rw = real wages	$rw = \frac{lc}{empl \cdot cpi}$
ms_i = market share of bank i	$\frac{A_i}{A}$, where A = assets

ii) *Banking sector dummies and structure*

We also created several variables for type of banks and constructed a market structure/concentration index using individual bank data:

$STATE$ = state bank dummy
 FOR_t = foreign bank dummy, is equal to 1 if the given bank is foreign—owned at time t . Therefore, it has both a time and a cross section dimension, capturing differences across banks as well as differences in time as a result of changes in ownership.

Finally, we constructed the banking system Herfindahl concentration index (H), defined as the sum over all banks of the squares of the market shares.

iii) *Liberalization and entry indicators*

We constructed several indicators that captured different aspects of the liberalization undertaken in the early 90s: foreign entry, domestic entry, private capital inflows, and a liberalization dummy variable.

Following Claessens, et.al. (1998), we used two different types of foreign entry variables, one expressing the number share of foreign banks (NF) and one expressing the market share of foreign banks (MF), in order to test whether the actual market penetration or the mere presence of foreign banks would be relevant to changes in bank performance. It must be noted that, given the legal restrictions in place throughout the 1980s, we define foreign entry as occurring only after 1990; both measures begin the 1990s at zero and increase as banks are acquired by foreign investors and new foreign banks are established.

NF = number share of foreign	Number of foreign banks/Total number of banks
MF = market share of foreign	Assets of foreign banks/Total assets in the banking sector

Similarly, in order to account for a loosening of restrictions on the entry of domestic banks, we defined corresponding domestic entry variables, which also began the decade at value zero and increased as new domestically owned banks were created.

ND = number share, new domestic:	Number of new domestic banks/Total number of banks
MD = market share, new domestic:	Assets of new domestic banks/Total assets in the banking sector

The opening of the external capital account in the early 90s led to a substantial inflow of private capital, which may have had an impact on bank performance as domestic borrowers gained access to alternative sources of finance. We used balance of payments information to obtain a capital inflow variable ($KINF$) indicating (semi—annual) net private loans from abroad. These flows increased from -US\$ 20 million in 1985 to a peak of over US\$ 830 million in 1994, then falling to -US\$ 480 million by mid-1995.

Finally, remaining effects of the liberalization measures were captured by a liberalization dummy.

LIB = liberalization dummy	$\begin{cases} 0 & 1985(1) - 1990(1) \\ 1 & 1990(2) - 1998(1) \end{cases}$
------------------------------	--

The evolution of the Colombian banking system throughout our sample period can be seen from an overview of the main sector—wide indicators, in Table 5. After suffering from the final crisis years in the 1980s, the system experienced a recovery in the 1990s, with growth in assets accelerating from 2 ½ to over 9%, and profitability also increasing from under 1% to 2-3%. Overall concentration has diminished—the Herfindahl index declined from 0.088 in 1990 to 0.070 in 1998—undoubtedly as a result of increased entry of both domestic and foreign banks. By June 1998, newly created domestic banks had captured a market share of over 15%, and foreign—owned banks accounted for over 31% of all assets.

Table 5
Colombian Banking System: Aggregate Indicators

	Period Averages		
	1985-1990	1991-1995	1996-1998
Annual Growth of Assets	2.5%	9.2%	9.4%
Return on Assets	0.7%	3.4%	1.9%
Private banks	0.7%	3.9%	2.2%
State-owned banks	0.9%	1.7%	0.7%
Concentration: Herfindahl Index (<i>H</i>)	0.088	0.081	0.070
	End of Period Figures		
	1990	1995	June 1998
Domestic Entry			
Number entry (<i>ND</i>)	0.0%	20.0%	21.9%
Market share entry (<i>MD</i>)	0.0%	5.9%	15.5%
Foreign Entry			
Number entry (<i>NF</i>)	0.0%	36.7%	43.8%
Market share entry (<i>MF</i>)	0.0%	12.1%	31.5%

Source: Own calculations based on Asociación Bancaria, Superintendencia Bancaria.

B. Results

We estimated panel data regressions for the intermediation spread (*s*), the ratio of nonfinancial costs to assets (*nfc*), and the ratio of nonperforming to total loans (*npl*). We used three different panels: all 32 banks, foreign banks (those that had been either joint—ownership or fully foreign—owned at some time during the sample), and domestic banks (those that remained domestically—owned throughout the sample period). In all cases we tested whether explanatory power was enhanced by incorporating bankspecific intercepts, and once this was verified, whether random effects (*RE*) or fixed effects (*FE*) estimation would yield greater efficiency (i.e., the Hausman test). We also included in all regressions a set of macroeconomic variables similar to that used by Claessens, et. al.(1998) in their cross—country regressions: annual real growth rate of GDP (*rgdp*), the 12—month inflation rate (*INF*), and the real deposit interest rate (*rint*).

The specification of our estimation equations can be summarized as:

$$x = f(BS, BSD, LIBENT, MACRO),$$

where *x* is the dependent variable, *BS* is a vector of bank—specific (or microeconomic) indicators, *BSD* is a vector of banking sector dummies and structure variables (*STATE*, *FOR*, and *H*), *LIBENT* is a vector of liberalization and entry variables (*LIB*, *NF*, *ND*, *MF*, *MD*, and *KINF*), and *MACRO* is the set of macroeconomic variables (*DGDP*, *INF*, and *RINT*).

(i) Preliminary assessment of the impact of foreign entry

Our first set of regressions followed the approach used in recent studies of foreign entry into the banking system in other countries (Denizer (1999), Claessens, et.al. (1998), among others), where foreign entry serves as the sole liberalization/entry variable affecting bank behavior. As Table 6 shows, the results give overwhelming evidence of a beneficial impact of foreign entry. Whether market or number penetration indicators (*NF* and *MF*, respectively) are used, foreign entry appears to have a significant effect in lowering spreads, reducing nonfinancial costs, and improving loan quality (reducing the percentage of nonperforming loans) in the banking system. In addition, the coefficients on bank—specific variables are significant and of the expected sign, and significant differences in behavior arise across types of banks.

However, the Colombian experience suggested that other liberalization effects may have been present during the period in which foreign entry occurred, and thus controlling for these effects would be warranted. In the following three sections we examine more closely regressions in which these other liberalization effects are accounted for, and the two disaggregated panels (foreign and domestic banks) are considered.

(ii) Intermediation spreads (*s*)

Following the bank profit maximization model used in Barajas, et. al. (1999), the bank—specific variables were included in the spread regressions to reflect marginal costs of intermediation. Namely, we expected intermediation spreads to be positively related to the level of taxation of financial intermediation (*rr*), the level of nonfinancial costs (*nfc*), and credit risk (i.e., deteriorations in loan quality, *npl*). We also allowed for the possibility that spreads could differ from marginal costs to the extent that some banks might possess market power or price—setting capability. Therefore, variation in spreads could also result from changes in market power (or competitiveness) brought on by the remaining explanatory variables: bank market share, ownership characteristics, the effects of liberalization and entry, and changes in the macroeconomic variables. Therefore, the spread equation is:

$$s = s(rr, nfc, npl, LIB * npl, ms, BSD, LIBENT, MACRO)$$

Among the bank—specific variables, marginal cost effects prove to be significant in explaining intermediation spreads, as Table 7 shows. As the relative size of financial taxation, nonfinancial costs, and nonperforming loans increased, spreads tended to increase, both over time and across banks. Furthermore, sensitivity of spreads to changes in loan quality appeared to increase after 1990, as the interaction term between *LIB* and *npl* is positive and significant. This constitutes direct evidence of a finding of which the earlier

Table 6
Panel Data Regression Results: Effects of Foreign Entry Before Controlling for other Liberalization Variables
 Semi-annual data: 1985(1)-1998(1), all banks

<i>Estimation method:</i>	<u>Intermediation Spreads</u>		<u>Nonperforming Loans</u>			<u>Nonfinancial Costs</u>	
	FE	FE	FE	FE	FE	RE	RE
<i>Bank-specific indicators</i>							
<i>rr</i>	0.1693 (6.65) *	0.1534 (5.95) *					
<i>nfc</i>	0.6392 (5.71) *	0.6558 (5.75) *					
<i>npl</i>	0.1458 (5.70) *	0.1961 (8.00) *					
<i>rw</i>						0.0054 (5.34) *	0.0056 (5.57) *
<i>il</i>			0.2462 (4.43) *	0.3797 (6.64) *	0.3732 (6.42) *		
<i>ms</i>	-0.7392 (3.38) *	-0.8995 (4.08) *	1.2987 (4.01) *	1.1326 (3.37) *	1.2288 (3.60) *	-0.1764 (3.34) *	-0.1726 (3.27) *
<i>Banking sector dummies and structure</i>							
<i>STATE</i>	0.0304 (2.31) *	0.0352 (2.64) *	0.1141 (6.06) *	0.1276 (6.54) *	0.1375 (6.97) *	0.0112 (2.57) *	0.0107 (2.45) *
<i>FOREIGN</i>	0.0179 (1.48)	0.0268 * (2.17)	-0.0547 (3.00) *	-0.0514 (2.70) *	-0.0466 (2.41) *	-0.0115 (2.91) *	-0.0118 (3.00) *
<i>H</i>	1.0164 (1.84) **	1.5735 (2.69) *	0.2923 (0.38)	4.0099 (4.82) *		-1.2656 (5.74) *	-1.4592 (6.22) *
<i>Foreign entry indicators</i>							
<i>NF</i>	-0.1394 (7.03) *		-0.2164 (7.27) *			-0.0321 (4.05) *	
<i>MF</i>		-0.2131 (5.04) *		-0.0209 (0.31)	-0.2606 (5.48) *		-0.1282 (4.68) *
<i>Macroeconomic Variables</i>							
<i>DGDP</i>	-0.0313 (0.24)	-0.4545 (3.18) *	0.2459 (1.25)	-0.0032 (0.01)	-0.0562 (0.25)	0.1953 (3.62) *	0.1849 (3.54) *
<i>INF</i>	0.0131 (0.18)	0.0087 (0.12)	-0.8016 (8.05) *	-0.6927 (6.42) *	-0.6378 (5.85) *	0.1352 (5.09) *	0.1269 (4.77) *
<i>RINT</i>	-0.1437 * (2.56)	-0.0972 ** (1.72)	-0.2152 (2.55) *	-0.0080 (0.92)	-0.0644 (0.73)	-0.4983 (1.87) **	-0.0563 (2.17) *
<i>Hypothesis tests</i>							
Bank-specific effects	896.88	858.81	519.69	452.76	418.08	499.56	508.79
p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hausman test	15.54	20.04	26.22	22.97	25.48	10.57	10.24
p-value	0.16	0.04	0.00	0.01	0.00	0.31	0.33
Number of obs.	691	691	691	691	691	572	572
R2	0.7198	0.7099	0.6254	0.5950	0.5805	0.1356	0.1423

t-ratios shown in parentheses; (*) significant at 5%, (**) significant at 10%.

Table 7
Panel Data Regression Results: Intermediation Spreads

<i>Estimation method:</i>	<u>All Banks</u>		<u>Foreign Banks</u>		<u>Domestic Banks</u>	
	RE	RE	RE	RE	RE	RE
<i>Bank-specific indicators</i>						
<i>rr</i>	0.1663 (6.75) *	0.1742 (7.14) *	0.2003 (5.67) *	0.2065 (5.83) *	0.0900 (2.27) *	0.0999 (2.58) *
<i>nfc</i>	0.5564 (5.20) *	0.5582 (5.24) *	0.7634 (4.19) *	0.7550 (4.13) *	0.3509 (2.64) *	0.3708 (2.804) *
<i>npl</i>	0.1085 (4.11) *	0.1109 (4.48) *	0.0791 (1.83) **	0.1260 (3.10) *	0.1400 (4.81) *	0.1410 (5.02) *
<i>LIB*npl</i>	0.3161 (3.66) *	0.3166 (3.70) *			0.4804 (4.95) *	0.4950 (5.12) *
<i>ms</i>	-0.2835 (1.81) **	-0.2868 (1.82) **	-0.0343 (0.03)	-0.4029 (0.30)	-0.2643 (1.57)	-0.2532 (0.13)
<i>Banking sector dummies and structure</i>						
<i>STATE</i>	0.0257 (2.21) *	0.0238 (2.04) *			0.0115 (0.93)	0.0079 (0.52)
<i>FOREIGN</i>	0.0026 (0.26)	0.0043 (0.43)	-0.0172 (1.17)	-0.0107 (0.73)		
<i>H</i>	-0.1553 (0.16)	-0.0241 (0.03)	-1.6658 (0.13)	0.0821 (0.67)	-0.2984 (0.34)	0.0461 (0.95)
<i>Liberalization and entry indicators</i>						
<i>LIB</i>	-0.0458 (3.70) *	-0.0564 (6.80) *			-0.0666 (4.89) *	-0.0768 (8.11) *
<i>NF</i>	0.0509 (1.33)		0.0370 (0.64)		0.0405 (0.91)	
<i>ND</i>	-0.3827 (3.91) *		-0.5587 (3.26) *		-0.2999 (2.77) *	
<i>MF</i>		-0.0209 (0.44)		-0.1334 (1.65) **		-0.1176 (0.23)
<i>MD</i>		-0.4481 (3.33) *		-0.7016 (2.85) *		-0.3043 (2.07) *
<i>KINF</i>	0.0041 (0.80)	-0.0099 (1.77) **	0.0021 (0.22)	-0.0274 (2.83) **	0.0060 (1.09)	-0.0038 (0.53)
<i>Macroeconomic Variables</i>						
<i>DGDP</i>	-0.1291 (0.99)	-0.4031 (2.76) *	-0.1408 (0.61)	-0.7037 (2.70) *	-0.0484 (0.33)	-0.2366 (0.15)
<i>Hypothesis tests</i>						
<i>Bank-specific effects</i>	973.70	968.77	165.53	163.53	804.40	799.50
<i>p-value</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Hausman test</i>	13.52	13.06			11.20	11.45
<i>p-value</i>	0.41	0.44			0.51	0.49
<i>Number of observations</i>	691	691	286	286	405	405
<i>R2</i>	0.5128	0.5113	0.5468	0.5344	0.4535	0.4552
<i>OLS regression results: Comparison across types of banks</i>						
<i>FOREIGN</i>			-0.0142 (1.21)	-0.0096 (0.83)		
<i>NEW</i>			-0.0456 (2.85) *	-0.0496 (3.12) *	-0.0219 (2.27) *	-0.0235 (2.44) *

t-ratios shown in parentheses; (*) significant at 5%, (**) significant at 10%.

Barajas, et. al (1999) aggregate estimation only obtained indirect evidence²⁶, thereby supporting the hypothesis that changes in bank reporting and supervision undertaken in the early 1990s led banks to transfer a greater portion of the cost of increased credit risk to their customers. Market share, although moderately significant in the full panel regression, does not appear to explain the banks' ability to increase spreads once the disaggregated panels are used.

The spread equations also include two bank—specific dummy variables, *STATE* and *FOREIGN*. In the full panel regressions state—owned banks appear to be able to charge slightly higher spreads, by about 250 basis points, possibly by virtue of the fact that they handle a large quantity of non—remunerated demand deposits for the public sector. However, this effect disappears once the sub—sample of domestic banks is taken. Foreign banks, on the other hand, do not appear to have price—setting advantages over domestic banks.

Financial liberalization and entry appear to have lowered intermediation spreads by increasing competition in the banking sector, although the results were not homogeneous for all variables across all groups of banks. With regard to entry, while foreign entry appears to have enhanced competition among foreign banks, domestic entry appears to have had an even stronger impact on competition, with both measures significantly related to a lowering of spreads in the full panel as well as the two disaggregated panels. The opening of the capital account and the subsequent private flows into Colombia appear to have lowered spreads among foreign banks, as the significant negative coefficient on *KINF* indicates.

Finally, financial liberalization had additional effects beyond those captured by entry variables and capital inflows, as the liberalization dummy variable was negative and significant in all regressions.²⁷ In short, the results provide additional and direct evidence to the Barajas, et. al (1999) finding that market power had fallen significantly in the banking sector after liberalization.²⁸

²⁶ In Barajas, et. al (1999), aggregate banking sector estimations for two separate time periods, pre and post—liberalization, showed an increase in the value of the coefficient on *npl*. However, there was no direct test of structural change in the parameter, due to the fact that the two data sets had not been joined.

²⁷ This variable was not included in the foreign bank panel, as it was highly correlated with *FOR*; many banks became foreign—owned at the same time that liberalization took place.

²⁸ Using the two distinct sample periods, Barajas, et. al. (1999) found the market power parameter (i.e., the degree of divergence of spreads from marginal costs) for the banking system as a whole to be significant in the pre—liberalization period, and to be non—significant in the post—liberalization period.

Market concentration, as measured by the Herfindahl index, on the other hand, appears not to have had a significant impact on intermediation spreads, and among the macroeconomic variables, only the growth rate of GDP was shown to have a significant effect on spreads.²⁹ Particularly among foreign banks, spreads appeared to narrow with accelerations in the level of economic activity.

We also conducted several OLS estimations where the intercept was permitted to vary only by group of banks rather than by individual bank, in order to test whether new banks behaved differently from established banks. The results of these tests are summarized in the bottom portion of Table 6,³⁰ which shows that new banks, both foreign and domestic, were setting lower spreads than their established counterparts possibly in an effort to gain market share.³¹

(iii) Nonfinancial costs (*nfc*)

Our regressions for the ratio of nonfinancial costs to total assets included the real wage rate and market share as bank specific effects. Therefore, the specification was the following:

$$nfc = nfc(rw, ms, BSD, LIBENT, MACRO)$$

As illustrated in Table 8, nonfinancial costs were positively related to the real wage, and, supporting earlier aggregate findings (Barajas, et. al., 1999³²; Suescún & Misas, 1996), market share appeared to have a significant negative effect, thus indicating the existence of economies of scale in the Colombian banking system. Furthermore, market concentration

²⁹ Here we report the regressions that only included *DGDP* among the macro variables, since *INF* and *RINT* were not significant predictors in all six of the spread regressions, and *KINF* performed slightly better when these two variables were excluded.

³⁰ For simplicity, the full set of estimated parameters for these regressions is not shown. Since the results are very similar to those obtained in the RE estimations shown, we only report the results of the group dummy variables themselves. This procedure was also followed in Tables 7 and 8.

³¹ It has been shown that, in some cases, easing of entry restrictions was followed by a battle for market share that resulted in a “supracompetitive solution”, whereby banks priced their spreads temporarily *below* marginal costs (see Gruben & McComb (1996) for an illustration of this phenomenon in the Mexican case). However, as Barajas, et. al. (1998) showed, this did not seem to be the case for Colombia in the 1990s.

³² In the Barajas, et. al. (1999) study, the spread equation included a scale variable which was significant and also supported the existence of economies of scale. The descriptive section of the study also showed how state banks had consistently higher nonfinancial costs throughout the sample period.

tended to lower nonfinancial costs and state-owned banks exhibited significantly higher nonfinancial costs than private banks. Foreign banks, on the other hand, tended to have lower

Table 8
Panel Data Regression Results: Administrative Costs

Semi-annual data: 1985(1)-1997(1)						
	All Banks		Foreign Banks		Domestic Banks	
<i>Estimation method:</i>	RE	RE	RE	RE	RE	RE
<i>Bank-specific indicators</i>						
<i>rw</i>	0.0058 (5.76) *	0.0060 (6.10) *	0.0029 (1.82) **	0.0030 (1.93) **	0.0107 (7.43) *	0.0110 (8.01) *
<i>ms</i>	-0.1919 (3.50) *	-0.1953 (3.60) *	-1.7518 (3.83) *	-1.7389 (3.85) *	-0.1807 (2.85) *	-0.1766 (2.88) *
<i>Banking sector dummies and structure</i>						
<i>STATE</i>	0.0109 (2.47) *	0.0105 (2.41) *			0.0118 (2.22) *	0.0105 (2.04) *
<i>FOREIGN</i>	-0.1182 (2.94) *	-0.0120 (3.03) *	-0.0138 (3.07) *	-0.0137 (3.08) *		
<i>H</i>	-2.4064 (8.31) *	-3.4701 (10.47) *	-2.0334 (4.45) *	-2.8423 (5.24) *	-2.2709 (7.24) *	-3.3718 (9.31) *
<i>Liberalization and entry indicators</i>						
<i>LIB</i>	0.0130 (3.28) *	0.0157 (4.07) *			0.0105 (2.42) *	0.0131 (3.17) *
<i>NF</i>	-0.0084 (0.45)		0.0028 (1.08)		0.0030 (0.15)	
<i>ND</i>	-0.2041 (5.32) *		0.1871 (2.73) *		-0.2008 (4.86) *	
<i>MF</i>		-0.2023 (3.70) *		-0.0272 (0.49)		-0.1776 (3.04) *
<i>MD</i>		-0.6266 (6.94) *		-0.5899 (3.61) *		-0.6428 (6.70) *
<i>KINF</i>	-0.0027 (1.30)	-0.0010 (0.47)	-0.0024 (0.64)	-0.0012 (0.32)	-0.0042 (1.90) **	-0.0025 (1.16)
<i>Macroeconomic Variables</i>						
<i>DGDP</i>	0.1889 (3.20) *	0.0495 (0.42)	0.0824 (0.85)	-0.0486 (0.46)	0.1764 (2.77) *	0.0350 (0.54)
<i>INF</i>	0.1295 * (5.00)	0.1160 (4.54) *	0.1373 (2.96) *	0.1289 (2.80) *	0.1433 (5.09) *	0.1300 (4.78) *
<i>RINT</i>	-0.0170 (0.56)	-0.0039 (0.14)	0.0189 (0.37)	0.0343 (0.68)	-0.0115 (0.71)	0.0037 (0.13)
<i>Hypothesis tests</i>						
Bank-specific effects	555.45	605.14	138.99	147.46	526.28	587.48
p-value	0.00	0.00	0.00	0.00	0.00	0.00
Hausman test	12.74	12.96				
p-value	0.39	0.37				
Number of observations	572	572	249	249	323	323
R2	0.1585	0.1819			0.2142	0.2512
<i>OLS regression results: Comparison across types of banks</i>						
<i>FOREIGN</i>			-0.0138 (3.77) *	-0.0014 (3.81) *		
<i>NEW</i>			0.0066 (0.87)	0.0067 (0.26)	0.0080 (2.45) *	0.0086 (2.71) *

t-ratios shown in parentheses; (*) significant at 5%, (**) significant at 10%.

nonfinancial costs, thus indicating a certain degree of administrative efficiency with respect to domestic banks.

Liberalization appeared to reduce nonfinancial costs through increased entry and capital flows. Both domestic and foreign entry appeared to have positive efficiency effects on the banking system by reducing nonfinancial costs,³³ and these effects appeared to be strongest on domestic banks, thus suggesting a type of market segmentation or specialization, whereby foreign banks are relatively efficient (as the significant negative coefficient on *FOREIGN* would indicate) and therefore less affected by entry, and may also have had technological advantages in the provision of banking services.³⁴ Capital inflows also appeared to induce cost reductions in domestic banks.

However, the positive and significant coefficient of *LIB* in all regressions suggested that components of the liberalization reforms unrelated to entry or increased capital flows had a cost—*increasing* effect on domestic banks. Thus, after controlling for entry and capital flows, *LIB* may have captured the possible increase in intermediation costs brought on by the stricter provisioning and reporting requirements that came into effect in the early 90s, key elements of the liberalization process.

With respect to the macro variables, inflation accelerations tended to increase nonfinancial costs throughout the banking system. Among groups of banks, the OLS results showed that new foreign banks behaved no differently from their established counterparts, but new domestic banks tended to have slightly higher nonfinancial costs than established domestic banks, possibly as a result of significant startup costs. Finally, the significant negative sign on the coefficient for *FOR* in the foreign bank regression indicated that acquisition by foreign investors tended to bring about a slight cost reduction.

(iv) Loan quality (npl)

Our regressions for the loan quality variable included the bank—specific lending interest rate as an explanatory variable in order to capture possible adverse selection effects whereby the quality of the loan applicant pool would deteriorate as a result of an increase in the lending rate. The specification was the following:

$$npl = npl(il, ms, BSD, LIBENT, MACRO)$$

³³ With the exception of the domestic entry variable (*ND*) having a significant positive coefficient in the equation for foreign banks.

³⁴ One indication of a technological advantage is that over the 1991–98 period, the ratio of computer—based assets to total assets tended to be greater for foreign banks (37% vs. 33%) and technology—intensive assets per branch were over 70% greater for foreign banks.

As Table 9 shows, the lending rate had a positive and significant effect on loan quality throughout the banking system, although this effect appears to be greater for domestic banks, thus suggesting that they were subject to greater adverse selection.

Table 9
Panel Data Regression Results: Loan Quality

Semi-annual data: 1985(1)-1998(1)						
	All Banks		Foreign Banks		Domestic Banks	
<i>Estimation method:</i>	FE	FE	FE	FE	FE	FE
<i>Bank-specific indicators</i>						
<i>il</i>	0.2193 (4.01) *	0.2676 (4.83) *	0.0033 (0.43)	0.1464 (1.74) **	0.4788 (5.88) *	0.5325 (6.51) *
<i>ms</i>	1.4683 (4.64) *	1.4751 (4.69) *	-0.2264 (0.13)	-0.8873 (0.47)	1.8525 (5.87) *	1.8072 (5.79) *
<i>Banking sector dummies and structure</i>						
<i>STATE</i>	0.1082 (5.89) *	0.1049 (5.74) *			0.0382 (1.85) **	0.0406 (1.99) *
<i>FOREIGN</i>	-0.0624 (3.51) *	-0.0655 (3.69) *	-0.1686 (9.78) *	-0.1766 (9.67) *		
<i>H</i>	1.6548 (1.46)	4.3187 (4.37) *	-1.6097 (0.97)	5.2104 (3.07) *	2.9548 (2.07) *	5.4058 (4.34) *
<i>Liberalization and entry indicators</i>						
<i>LIB</i>	-0.0938 (5.91) *	-0.0836 (9.29) *			-0.0876 (4.32) *	-0.0634 (5.40) *
<i>NF</i>	0.1205 (1.78) **		-0.1724 (1.88) **		0.1542 (1.82) **	
<i>ND</i>	-0.1761 (1.08)		-0.4567 (1.73) **		-0.0905 (0.45)	
<i>MF</i>		0.0255 (0.307)		-0.3559 (2.53) *		0.0488 (0.48)
<i>MD</i>		0.6002 (2.60) *		0.5342 (1.30)		0.7161 (2.51) *
<i>KINF</i>	-0.0016 (0.20)	0.0118 (1.40)	0.0049 (0.39)	-0.0207 (1.44)	-0.0073 (0.76)	0.0107 (1.03)
<i>Macroeconomic Variables</i>						
<i>DGDP</i>	-0.0964 (0.47)	0.4516 (1.94) **	0.2499 (0.75)	0.2401 (0.58)	-0.0599 (0.23)	0.6067 (2.12) *
<i>INF</i>	-0.7931 (8.07) *	-0.7802 (7.68) *	-0.9214 (5.75) *	-0.8417 (4.75) *	-0.7349 (5.98) *	-0.7232 (5.71) *
<i>RINT</i>	-0.0989 (1.10)	-0.2387 (2.54) *	-0.1547 (1.06)	-0.1344 (0.81)	-0.1224 (1.09)	-0.2793 (2.39) *
<i>Hypothesis tests</i>						
Bank-specific effects	575.40	583.00	304.54	243.65	412.14	425.70
p-value	0.00	0.00	0.00	0.00	0.00	0.00
Hausman test	35.73	35.81			16.84	16.26
p-value	0.00	0.00			0.11	0.13
Number of observations	691	691	286	286	405	405
R2	0.6473	0.6519	0.6712	0.6272	0.6374	0.6452
<i>OLS regression results: Comparison across types of banks</i>						
<i>FOREIGN</i>			-0.1436 (10.30) *	-0.1473 (10.15) *		
<i>NEW</i>			-0.0013 (0.06)	-0.0070 (0.30)	0.0404 (3.05) *	0.0397 (3.04) *

t-ratios shown in parentheses; (*) significant at 5%, (**) significant at 10%.

The econometric results confirmed stylized facts observed in previous descriptive analysis. State—owned banks tended to exhibit lower loan quality (higher *npl*) and foreign banks tended to show higher loan quality.

Two results pointed to a worsening of loan quality, particularly among domestic banks, from increases in average bank size. Each bank would tend to have a worse loan quality the larger its market share, and its loan quality would also deteriorate as a result of an increase in overall concentration in the banking system (*H*).

Entry tended to worsen the loan quality of domestic banks, which is consistent with the previous result that these banks were more susceptible to competition—and reduction in intermediation spreads—from both foreign and domestic entry, and with the hypothesis that greater competition leads to increased risk as a result of a loss of bank franchise value (Hellman, Murdock and Stiglitz, 1998). In addition, the fact that foreign entry in particular tended to produce a worsening in loan quality among domestic banks may also reflect a flight of higher quality borrowers to the foreign banks. Capital inflows, on the other hand, did not appear to influence loan quality. Finally, the consistently significant negative coefficient on *LIB* indicated that liberalization measures unrelated to increased entry or capital inflows, namely the tightening of prudential regulations and the strengthening of supervision, tended to improve loan quality.³⁵

The results show some significant differences among types of banks as well. In the full panel regression, foreign banks appeared to have higher loan quality, and state banks tend to have lower loan quality. New domestic banks tended to have lower loan quality than their established counterparts, but new foreign banks did not differ significantly from established foreign banks. In the full panel regression, foreign banks appeared to have higher loan quality, and state banks tend to have lower loan quality. New domestic banks tended to have lower loan quality than their established counterparts, but new foreign banks did not differ significantly from established foreign banks.

V. CONCLUSIONS

In our descriptive analysis, we showed how the policy stance towards DFIFS in Colombia had changed over time, becoming increasingly restrictive up until new foreign investment was banned outright in 1975. As a result, foreign investment flows effectively stalled throughout the late 1970s and 1980s, and individual banks were forced to transform

³⁵ In order to ensure that this effect was not merely brought about by bad loan write—offs in the early 90s, we reran the above regressions excluding four banks (three foreign, one domestic) which exhibited sharp step declines in their nonperforming loan ratio around the time of liberalization. The results were roughly the same for the full panel and for domestic banks, with *LIB* continuing to be significant although its coefficient decreased by about 0.03 (in absolute value). However, when we conducted a similar exercise on the foreign bank panel, we found that the significance of *FOR* no longer held, thus indicating that this variable had been picking up the effect of the write—offs for one foreign bank.

themselves into joint—ownership banks with at least 51% domestic ownership. However, these joint—ownership banks tended to behave differently from domestic banks. They operated with higher levels of capitalization and better overall loan quality, and tended to be more profitable over time, weathering better the widespread banking crisis of the early 1980s.

As we discussed earlier, the financial liberalization measures implemented in the early 1990s included a relaxation of entry restrictions which contributed to a flurry of new activity in the sector. In particular, the renewed opening of the market to foreign investment resulted in joint ownership banks quickly becoming acquired fully by foreign investors, new foreign banks established in Colombia, and some domestic banks also acquired by foreign investors. In addition, several new domestic banks were also created, quickly capturing market share.

The econometric results provide evidence that foreign banks (both joint—ownership banks in the pre—liberalization period and fully foreign—owned banks in the post—liberalization) have behaved differently from domestic banks in Colombia. Foreign banks tended to have lower administrative costs and higher loan quality, which resulted in their ability to charge slightly lower intermediation spreads. Furthermore, for the two relevant domestic banks, foreign acquisition appears to have been beneficial, as significant improvements came about in administrative costs.

The econometric analysis also shows evidence of benefits from increased entry of both domestic and foreign banks in the Colombian banking system. The preliminary regressions—similar to those specified in studies of other countries—tended to overstate the importance of foreign entry by not controlling for other crucial elements of the liberalization process: increased domestic entry, capital inflows, and other aspects such as the strengthening of banking regulations and supervision. However, once these elements were incorporated foreign entry continued to play an important role, particularly in the behavior of domestic banks, where it tended to increase competition, reducing the excess charged over marginal cost in intermediation spreads. Domestic entry appeared to have an even greater impact, lowering nonfinancial costs in addition to intermediation spreads charged by both domestic and foreign banks.

In addition to increased entry, other elements of liberalization also had significant effects on bank behavior. The opening of the capital account and the resulting ability of domestic agents to borrow abroad led to greater competition, particularly among foreign banks, who responded by reducing their intermediation spreads. The effects of the liberalization dummy variable indicate that after 1990 competition was enhanced, possibly as a result of the *announcement* of the opening of the market to new entrants, and that nonfinancial costs were increased and loan quality was improved, possibly as a result of the improvements in banking regulation and supervision.

Furthermore, foreign banks were shown to benefit the most from entry; increased competition tended to drive their spreads and administrative costs down, and entry tended to

improve their loan quality. These results suggest that these institutions were in a stronger position to compete in the new environment.

One area in which entry appeared to have negative effects was loan quality, particularly of domestic banks. This result could be interpreted as a by-product of increased competition (i.e., loss of bank franchise value), and it could also reflect a flight of higher quality borrowers to the foreign banks either newly created or newly acquired. In either case, this result stands in contrast with those of the “uncontrolled” regressions (Table 5) in which foreign entry was found to be unambiguously beneficial for loan quality as well as for competition and operative efficiency.

As for differences within groups of banks, newly created banks appeared to be at a market disadvantage with respect to their established counterparts (both domestic and foreign), and thus were forced to charge lower spreads in order to gain market share. Furthermore, loan quality tended to be worse for newly created domestic banks, and their administrative costs higher than for their established counterparts. Finally, as foreign investors acquired domestic banks, they tended to lower the administrative costs of the acquired banks.

Three additional findings regarding the effects of the liberalization measures are worth mentioning. First, confirming the results of Barajas, et. al.(1999), liberalization appeared to have a positive impact on competition as shown in the intermediation spread equations, over and above the effect of entry per se. Second, also consistent with the above study, spreads became more sensitive to changes in loan quality, possibly an indication of greater prudence on the part of domestic banks. Third, bank size was seen to have a mixed impact on performance. Although there was evidence of economies of scale, loan quality was also seen to deteriorate as individual market share increased, and as the overall concentration of the market increased.

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