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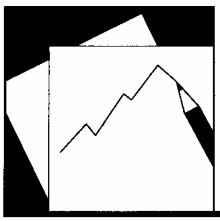

IMF Working Paper

Foreign Banks in Poor Countries: Theory and Evidence

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Foreign Banks in Poor Countries: Theory and Evidence

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Abstract

We study how foreign bank penetration affects financial sector development in poor countries. A theoretical model shows that when foreign banks are better at monitoring high-end customers than domestic banks, their entry benefits those customers but may hurt other customers and worsen welfare. The model also predicts that credit to the private sector should be lower in countries with more foreign bank penetration. In the empirical section, we show that, in poor countries, a stronger foreign bank presence is robustly associated with less credit to the private sector both in cross-sectional and panel tests. In addition, in countries with more foreign bank penetration, credit growth is slower and there is less access to credit. We find no adverse effects of foreign bank presence in more advanced countries.

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Contents Page

I. INTRODUCTION

A large theoretical and empirical literature argues that finance is good for growth (Levine, 1997; and Beck and Levine, 2003). An implication of this work is that fostering the development of financial markets should help less developed countries lift themselves out of poverty. Indeed, estimates by Bekaert, Campbell and Lundblad (forthcoming) indicate that financial liberalization, identified as opening up the stock market to foreign investors, can increase the growth rate by as much as 1 percent per year. Recent work also suggests that financial development reduces inequality and poverty by disproportionately boosting the income of the poor (Beck, Demirgüç-Kunt, and Levine, 2004).

Perhaps heeding the advice of economists, in recent years many poor countries have been a laboratory of financial sector reform. A rigorous evaluation of these efforts is still a work in progress, but available accounts suggest that key deficiencies have been difficult to remove.[2] This paper studies how one aspect of financial sector reform, the entry of foreign banks, affects financial sector development in poor countries.

Whether foreign bank entry is a help or a hindrance is the object of some contention among policymakers and academics.[3] Proponents of foreign banks claim that these banks can achieve better economies of scale and risk diversification than domestic banks, introduce more advanced technology (especially risk management), import better supervision and regulation, and increase competition. Because they are backed by their parent banks, foreign affiliates of international banks may also be perceived as safer than private domestic banks, especially in times of economic difficulties. Last but not least, foreign banks may be less susceptible to political pressures and less inclined to lend to connected parties. These forces imply a positive relationship between foreign bank presence and indicators of financial sector performance.

Despite these advantages, critics point out that an important part of a bank's business, namely lending to informationally opaque firms, is inherently local in nature, and is not easily carried out by large organizations managed from far away. In fact, evidence from bank consolidation in advanced countries suggests that large banks are less prone than small banks to lend to informationally difficult firms, such as small firms, because there is a greater distance between loan officers and management (Berger and others, 2005). In the case of foreign banks operating in poor countries, the distance (both geographic and cultural) between headquarters and local subsidiaries is likely to be especially large. In addition, many, if not most, potential borrowers lack usable collateral and reliable accounting information and are

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[2] Comprehensive descriptions of financial sector structure, performance, and soundness for several poor countries are provided in the Financial Sector Stability Assessments (FSSAs), jointly carried out by the World Bank and the IMF. Most of these reports are available at www.imf.org.

[3] For a summary of the issues, see, among others, International Monetary Fund (2000) and Agénor (2001). A more detailed literature review is in Section II of this paper.

therefore informationally difficult. Thus, the problems highlighted by studies of bank consolidation in advanced countries may be compounded when foreign banks operate in poor countries. Consistent with this view, several studies find that foreign banks in lower-income countries (LICs) lend predominantly to the safer and more transparent customers, such as multinational corporations, large domestic firms, or the government.[4]

Even when foreign banks enter by purchasing local banks, local market knowledge and relationships with customers may be lost, as distant managers need to impose formal accountability to monitor local loan officers. In fact, evidence from advanced countries indicates that, when a bank is acquired by another bank, the bank-firm relationships of the target bank are disrupted (Sapienza, 2002; Carow, Kane and Narayanan, 2004; Karceski, Ongena, and Smith, 2004; Degryse, Masschelein, and Mitchell, 2004).

From a public policy perspective, however, it is not clear that foreign banks' focus on high-end customers should be a concern. As long as domestic banks continue to lend to more opaque but profitable customers, there should be no welfare loss, and foreign bank entry may simply result in a welfare-improving segmentation of the market. On the other hand, if foreign bank entry forces domestic banks out of the market, then more opaque firms may become credit constrained, aggregate credit may decline, and profitable investment opportunities may be lost. In this paper, we explore these questions both theoretically and empirically.

In our theoretical model, foreign banks are better than domestic banks at monitoring "hard" information, such as accounting information or collateral values, but not at monitoring "soft" information, such as the borrower's entrepreneurial ability or trustworthiness. In this setup, in some parameter configurations foreign bank entry increases cost-efficiency and welfare, while in others it leads to a reduction in overall lending, cost efficiency, and welfare. The intuition for the latter—more surprising—result is that foreign bank entry causes "cream-skimming," whereby hard-information borrowers are no longer pooled with other borrowers. This has two consequences: first, soft-information borrowers find themselves in a worse pool (because the "cream" has been "skimmed"), and have to pay such high interest rates that they may no longer want to borrow. Second, monitoring costs are paid in equilibrium, which increases operating costs. Welfare may increase or decrease depending on the parameters, but soft-information borrowers are never better off and sometimes they are worse off. The model also implies that countries with a larger foreign bank presence should make less credit available to the private sector.

In the second part of the paper, we turn to the data and find that a larger foreign bank presence is associated with shallower credit markets in poor countries, consistent with the model. This effect is large, robust to the choice of specification, and holds both in a cross-sectional and dynamic panel specification. In addition, credit growth is slower in countries

[4] See Bonin and Wachtel (2003) on Eastern Europe, Brownbridge and Harvey (1998) on Anglophone Africa, Mian (forthcoming) for Pakistan, Haber and Musacchio (2005) for Mexico, Clarke and others (2005) for Latin America, and Gormley (2005) for India.

with a larger initial foreign bank presence. The relationship also holds when we instrument the foreign share to control for endogeneity (using population size and religious affiliation—a measure of cultural proximity—as instruments). Finally, foreign bank presence is negatively associated with indicators of access to financial services, such as branch penetration and number of deposits per capita. We interpret these results as supporting the view that the entry of foreign banks in poor countries leads to "cream skimming" and a decline in credit to opaque firms.

The empirical relationship between foreign bank presence and financial performance becomes statistically insignificant when we include higher-income countries in the sample. This is consistent with the theoretical model, because differences in monitoring abilities between foreign and domestic banks are likely to be less marked and opaque firms less important in these countries. This finding underscores the need to allow for heterogeneity among groups of countries of different income level when studying the effects of financial reforms.

The paper is organized as follows: The next section reviews the empirical literature on foreign banks in poor countries. Section III presents the theoretical model. Section IV discusses the empirical methodology and data. Section V presents the results of the empirical tests. Section VI concludes.

II. Empirical Evidence on Foreign Banks in Poor Countries

A number of empirical studies have investigated various implications of the increased globalization of banking in general, and of growing foreign bank presence in developing countries in particular. The evidence is drawn both from cross-country samples and individual country studies.

Based on cross-country studies, foreign-owned banks have been found to have lower operating costs and higher profitability than private domestic banks, while state-owned banks have higher costs and lower profitability than the other two categories (Mian, 2003; Micco, Panizza, and Yañez, 2004). Foreign bank entry in developing countries also appears to lower interest margins and profitability, suggesting an increase in competition (Claessens, Demirgüç-Kunt, and Huizinga, 2001; Gelos and Roldós, 2004; Micco, Panizza and Yañez, 2004; Martinez Peria and Mody, 2004). A recent study of eight Latin American countries, however, finds the opposite to be true (Levy-Yeyati and Micco, 2003).

Turning to the effects of foreign bank entry on access to credit, surveys of entrepreneurs indicate that firms are less credit-constrained in countries with more foreign bank participation (Clarke and others, 2004). On the other hand, a study of lending behavior in four Latin American countries concludes that foreign banks lend less to SMEs than domestic banks on average, although this is not true for foreign banks that have a large presence in the country (Clarke and others, 2005). In Eastern Europe, Giannetti and Ongena (2005) find that foreign bank presence benefits all firms, though the effects are more pronounced for large firms and firms less likely to be involved in connected lending.

Additional evidence on foreign and domestic bank behavior in LICs comes from individual country studies. Haber and Musacchio (2005) analyze Mexico's experience in the 1990s. After a mismanaged bank privatization led to a financial crisis in 1994-95, the Mexican government introduced several reforms, including liberalization of foreign bank entry. As the presence of foreign banks grew, bank capitalization improved and non-performing loans (NPLs) and operational expenses declined, but lending, particularly to the private sector, declined. The fall in private lending was more pronounced in foreign than in domestic banks. Thus, while the Mexican banking system has become more stable and profitable, it seems to have retreated from the business of lending to the private sector. Haber and Musacchio's view is that deep reforms to improve the enforcement of property rights are necessary to enable financial intermediation, and especially lending by foreign banks, to reach risky borrowers in Mexico.

Drawing on an exceptionally rich dataset of 80,000 business loans in Pakistan, Mian (forthcoming) finds that private domestic banks lend more to informationally opaque businesses than foreign banks, and that they are more successful at recovering defaulted debt. The interpretation of these results is that distance constraints (both cultural and geographic) between top management and loan officers force foreign banks to curtail discretion in lending decisions, resulting in less lending to informationally opaque smaller businesses, as in the theoretical model of Stein (2002). Distance also appears to impair the recovery of defaulted loans.

In a third country study on India, Gormley (2005) compares borrowing behavior of firms located in districts with and without foreign bank entry. He concludes that the top 10 percent of most profitable firms benefited from foreign bank entry through an increase in loan size, while other firms experienced a 7.6 percent drop in their likelihood of having a loan. This result is driven by a decrease in domestic bank loans to group-affiliated firms. The result holds after instrumentation of foreign bank location.[5]

In the next section, we develop a simple theoretical model to explore how entry by banks more skilled at lending to high-quality, less opaque customers may affect the credit market equilibrium and welfare.

III. Cream-Skimming Effects of Foreign Bank Entry: Theory

In a world of perfectly competitive markets and full information, foreign bank entry in poor countries should undoubtedly be welfare improving. With access to better technology, more opportunities to diversify risk, and, possibly, better corporate governance, these banks should be able to offer more attractive interest rates and increase the volume of credit. When information about borrower quality is imperfect, on the other hand, banks have to screen and

[5] Gormley (2005) also presents a theoretical model in which foreign banks have higher monitoring costs but lower funding costs than domestic banks. In this model, foreign bank entry can result in less credit being made available to creditworthy but lower-quality borrowers.

monitor perspective borrowers. If foreign banks have an advantage only in lending to the less opaque customers, the effects of foreign bank entry on credit availability, efficiency, and welfare are not clear-cut. In this section, we develop a theoretical model to shed light on this issue. The model is a simple variant of the standard credit market model with adverse selection.

A. The Model with Only Domestic Banks

There are two categories of agents, banks and entrepreneurs, and two time periods. Banks are perfectly competitive. They have access to a perfectly elastic supply of funds, and their cost of funds is normalized to one. Entrepreneurs are risk-neutral and are one of three types $\theta \in \{H, S, B\}$ randomly assigned in the first period. The proportion of each type of entrepreneurs is given by $\mu \in \{\mu_H, \mu_S, \mu_B\}$, where $\mu_H + \mu_S + \mu_B = 1$. Each entrepreneur knows his type, but other market participants do not; he has no private resources and must obtain financing from a bank.[6] Banks can raise unlimited funds. Individuals of type B (the bad borrowers) have access to a risky project which requires an initial investment of one unit and returns $R > 1$ units with probability p in period two. The project is assumed to have negative net present value, i.e. $pR < 1$, but limited liability makes it an attractive "gamble," so if B types receive financing they invest. Entrepreneurs of type H and S have access to an identical, safe, socially efficient project requiring an initial investment of size $I = 1$ and returning $R > 1$ in period two with probability one.

Two monitoring technologies allow banks to identify the type of an agent ex ante. Through the first technology, which costs c_H per project, banks monitor hard information, such as balance sheets prepared according to transparent accounting standards or assets that can be used as collateral. Based on this information, banks can perfectly identify agents of type H, but cannot separate out type S entrepreneurs from types B. To identify type S entrepreneurs, banks must monitor soft information, such as the person's entrepreneurial skills and honesty. The soft information technology costs c_S per project. We assume that monitoring soft information is more costly than monitoring hard information ($c_S > c_H$).

At the beginning of the first period, banks offer potential customers a menu of contracts consisting of one or more interest rate/monitoring strategy combination. For instance, a bank may offer an interest rate with no monitoring, another interest rate with monitoring of the applicant's hard information, and a third interest rate with monitoring of the applicant's soft information. Perspective borrowers choose one of the contracts on offer or decline to borrow.

In this setup, there are four possible equilibrium outcomes. Consider first the pooling outcome (equilibrium A), in which banks offer a contract involving no monitoring and all

[6] The model could easily be enriched by adding moral hazard and collateral constraints. The main conclusions would hold or even be reinforced.

firms accept it. For banks to break even under pooling, they must charge an interest factor r_P such that:

$$r_P = \frac{1}{\mu_H + \mu_S + p\mu_B} = \frac{1}{p + (1-p)(\mu_H + \mu_S)}.$$

For all entrepreneurs to accept the pooling contract, the return from the project must be large enough to cover the pooling rate (R> r_P) and there must not be a more attractive interest rate on offer.[7] Since monitoring hard information is cheaper than monitoring soft information, a sufficient condition is that the break-even interest factor r_H that a bank has to charge when monitoring hard information exceed the pooling rate, i.e.:

$$r_H = 1 + c_H > r_P.$$

This condition holds if the cost of monitoring hard information is large relative to the potential loss from lending to bad borrowers.

Suppose this condition fails to hold so pooling is not an equilibrium outcome. Then banks can attract type H agents by offering to monitor hard information and charging the interest factor r_H. If H types sort themselves out, banks can either monitor soft information and lend to agents of type S (equilibrium B) or they can choose not to monitor and pool S and B types together (equilibrium C). A third possible outcome occurs if the return on the project R is not sufficient to cover the cost of monitoring soft information or the cost of adverse selection (i.e., the cost to S types of pooling with B types). In this case, only H types receive credit (equilibrium D).

Monitoring soft information strictly dominates pooling S types and B types together if and only if $r_S = 1 + c_S < \hat{r}_P$, where $\hat{r}_P$ is the break-even interest factor when the S and B types are pooled together, i.e.:

$$\hat{r}_P = \frac{1}{\frac{\mu_S}{\mu_S + \mu_H} + p\frac{\mu_B}{\mu_S + \mu_H}} = \frac{1}{p + (1-p)\frac{\mu_S}{(1-\mu_H)}}.$$

Note that r_P, the pooling interest factor, is always lower than $\hat{r}_P$, because when H types are monitored and drop out of the pool, banks face a worse pool of borrowers.[8] With these results in hand, it is straightforward to derive the following proposition:

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[7] We are assuming that banks can commit to monitor even when they know that only a certain type of borrower will approach them in equilibrium, and hence monitoring is not necessary ex post.

[8] To show that $\hat{r}_P > r_P$ it is sufficient to show that $\mu_H + \mu_S > \frac{\mu_S}{1-\mu_H}$, which is always the case since 1- $\mu_S - \mu_H < 1$.

Proposition 1:
(A) (pooling equilibrium): If $R > r_P$ *and* $r_H > r_P$, *then the equilibrium is pooling. All projects are funded, and no monitoring costs are paid.*
(B) (separating equilibrium): If $r_H < r_P$, $r_S < \hat{r}_P$, *and* $r_S < R$, *then the equilibrium is separating. Banks monitor both hard information and soft information and lend to H types and S types. B types do not receive any credit.*
(C) (semi-pooling equilibrium): If $r_H < r_P$, $r_S > \hat{r}_P$, *and* $r_S < R$, *then the equilibrium is semi-pooling. Banks monitor hard information only. H types borrow at interest factor* r_H; *S and B types are pooled together and borrow at interest factor* $\hat{r}_P$.
(D) (credit-constrained equilibrium): If $r_H < r_P$, $R > r_H$, *and* $R < \min[r_S, \hat{r}^p]$, *then in equilibrium banks monitor hard information and lend to H types, while S and B types do not receive any credit.*

B. The Model with Both Domestic and Foreign Banks

Consider now a model in which both domestic and foreign banks compete. Foreign banks are assumed to have a lower cost of monitoring hard information but a higher cost of monitoring soft information than domestic banks. Let $c_H - \Delta$ and $c_s + \Delta'$ denote monitoring costs for foreign banks, with $\Delta > 0$ and $\Delta' > 0$. To keep things simple, we will assume that, when indifferent, borrowers choose to borrow from domestic banks.[9]

It is straightforward to see that the results of Proposition 1 continue to hold, except that in the definition of r_H, the interest factor bank offer when monitoring hard information c_H should be replaced by $c_H - \Delta$, the lowest cost of monitoring hard information available on the market. Accordingly, other things being equal, the pooling equilibrium becomes less likely when foreign banks are present, as hard-information firms are more likely to want to sort themselves out. If the equilibrium with domestic banks only is not pooling, the regions of the parameters in which the other three outcomes arise do not change, because they do not depend on c_H.

Let us consider the allocation of lending between domestic and foreign banks. If the equilibrium continues to be pooling, no monitoring takes place and the better monitoring skills of foreign banks are immaterial. Accordingly, firms borrow only from domestic banks. In the other equilibria, on the other hand, hard-information firms borrow only from foreign banks, since they can receive better loan terms, while other firms borrow only from domestic banks. So foreign bank lending is equal to μ_H, the proportion of hard-information borrowers. Aggregate credit may be 1 (in the partially pooling equilibrium), $\mu_H + \mu_S$ (in the separating

[9] This assumption can be rationalized by the presence of small entry costs for foreign banks.

equilibrium), or μ_H (in the credit constrained equilibrium). To summarize, total credit and the share of foreign banks in total lending in the four possible equilibria are as follows:

	Pooling	Partially pooling	Separating	Credit-constrained
Total credit	1	1	$\mu_H + \mu_S$	μ_H
Foreign bank share	0	μ_H	$\frac{\mu_H}{\mu_H + \mu_S}$	1

Notice that equilibria with more foreign bank penetration are also equilibria with less total lending. Consider a sample of countries which differ from one another because they have different (unobservable) monitoring costs or project return.[10] These countries are in one of the four different equilibria depending on their monitoring costs, and countries with less private credit are countries in which foreign bank penetration is larger.

Proposition 2. *In a sample of countries heterogeneous with respect to foreign bank monitoring costs, private credit is declining with the degree of foreign bank penetration*.

In the second part of the paper we will test this prediction using aggregate data from LICs. We now turn to the welfare effects of foreign bank entry.

C. Welfare Effects of Foreign Bank Entry

Because of adverse selection, the equilibrium is never first best optimal. Does foreign bank entry reduce the distortion and improve welfare? Not necessarily. For some parameter values it does, but for others welfare declines. In addition, soft-information firms are never better off and are sometimes worse off if foreign banks are allowed to enter the market.

Our definition of welfare is aggregate output net of investment and monitoring costs. Consider first the case in which the initial equilibrium is one of the outcomes in which banks monitor hard information, i.e., one of the non-pooling outcomes. With foreign bank entry, the cost of monitoring hard information falls, making pooling even less attractive for H types. So the equilibrium continues to be non-pooling. Can the equilibrium type change (for instance from separating to semi-pooling)? The answer is no. Once pooling is ruled out, the nature of the equilibrium does not depend on the parameter c_H, so if the initial equilibrium is separating it will continue to be separating, and similarly for the other possible outcomes (see Proposition 1). The equilibrium payoff to B and S types is unchanged, while H types are better off because they pay lower interest rates. So, if the parameters are such that the initial

[10] Heteregeneity with respect to the proportions of H and S borrowers is more complicated. It can be shown that countries with a larger proportion of S types and less B types have a smaller foreign bank presence and more private credit. The case of heterogeneity with respect of μ_H yields ambiguous results.

equilibrium is not pooling, foreign bank entry is welfare increasing, but all the gains are appropriated by the less opaque borrowers on the market.

Consider now the case in which the initial equilibrium is pooling. If the cost of monitoring H is much lower, then pooling no longer is an equilibrium after foreign bank entry. When the cost of monitoring soft information is relatively low, entry by foreign banks causes the economy to move to the separating equilibrium B. This is depicted in the first panel of Figure 1. As a result, type *B* agents no longer get credit and aggregate lending falls. The overall welfare impact, however, is ambiguous (see Appendix I), because while it is efficient not to lend to type *B* individuals, this comes at the cost of monitoring the other types. The reason why a decline in welfare is possible is that type *H* agents choose to be monitored whenever monitoring costs are less than the subsidy to type B agents that they pay via a higher cost of capital. But the social cost of switching away from the pooling to the separating equilibrium also includes the cost of monitoring S types and the rents earned by B types when their project succeeds. Thus, the transition from equilibrium A to equilibrium B that occurs for $c_H = r_P - 1$ is socially optimal only for some parameter values, specifically for a large enough decline in the cost of monitoring hard information.

If the cost of monitoring soft information is relatively large while the cost of adverse selection is small, then the economy moves to the semi-pooling equilibrium C, in which it is not profitable for banks to separate between type B and type S agents. In this case, all agents continue to receive credit, so aggregate credit does *not* change. However, it is easy to see that welfare unambiguously declines, because the inefficient investment projects of type B agents are still financed while additional resources are spent on monitoring costs (see second panel in Figure 1).

Finally, if the cost of monitoring soft information and the cost of adverse selection are both large relative to the return from the project, the economy moves to the credit-constrained equilibrium D, in which total lending falls because both *S* and *B* types are unable to borrow. The welfare impact is again ambiguous, as the benefit of not financing *B* types has to be set against the increased cost of monitoring *H* types and the cost of losing the project of the *S* types. Again, one can show that the transition between the pooling equilibrium A and the credit-constrained equilibrium D will occur at a monitoring cost c_H that is too high from the point of view of social efficiency, and welfare may decrease (shaded area of Figure 1).

D. Foreign Banks and Cost Efficiency

A second set of implications of the theoretical model concerns the effect of foreign banks on cost efficiency. A common approach in the empirical banking literature is to regress indicators of cost efficiency, such as overhead costs (OH), on indicators of foreign banks penetration (see Section II). Our theoretical model indicates that this test may not be as useful to evaluate whether foreign bank entry is welfare-enhancing or not. If monitoring costs are reflected in OH, as part of the costs of services provided by banks, this measure of cost efficiency will increase whenever the amount of monitoring performed in the economy increases. In particular, if foreign bank entry causes the economy to move from the pooling

equilibrium to one of the monitoring equilibria, then OH will increase, but this is not necessarily welfare-worsening.

Concerning the relationship between cost efficiency and foreign bank penetration, the implications of the model are ambiguous. The table below reports monitoring costs per unit lent and foreign bank penetration in the four possible types of equilibrium.

	Pooling	Partially pooling	Separating	Credit-constrained
Monitoring costs/total credit	0	$\mu_H (c_H - \Delta)$	$\frac{\mu_H (c_H - \Delta) + \mu_S c_S}{\mu_H + \mu_S}$	$c_H - \Delta$
Foreign bank share	Indeterminate	μ_H	$\frac{\mu_H}{\mu_H + \mu_S}$	1

Monitoring costs rise with foreign bank penetration as we move from a partially pooling to a separating equilibrium, but they decline as foreign penetration continues to rise in the movement from the separating to the credit-constrained equilibrium. Accordingly, in a sample of countries at different types of equilibrium we would not expect to find a robust correlation between cost efficiency and foreign bank penetration.

E. Relationship with the Theoretical Literature

The result that costly screening or signaling can lead to welfare losses is not new. In many situations screening does not have any social returns and is simply a costly device to *redistribute output across agents*. For instance, Arrow (1973) argued that high education can help identify more productive individuals, but can decrease welfare if it does not improve the productivity of workers.

Cream-skimming is a well-known problem in insurance markets. For example, Lewis and Sappington (1995) show that if some agents are well informed about their risk characteristics, there is less insurance available in the market. More specifically, in their model some agents have perfect information about their final wealth, and the optimal insurance policy against wealth shocks provides full insurance for the smallest and the largest wealth realizations, but no insurance for a range of intermediate wealth realizations.

Another channel through which foreign bank entry may affect aggregate credit, which we do not explore in this paper, is through its effects on relationship banking. In relationship banking, banks learn agents' type through repeated interactions. However, relationships are more likely to be sustained in markets in which competition is relatively limited, so that banks can enjoy ex-post rents. Consistent with this argument, Petersen and Rajan (1994) find that the availability of credit to small businesses increases as competition in the banking

sector declines. Similarly, increased competition from foreign bank entry may erode incentives to establish long-term relationships, reducing aggregate lending. [11]

IV. The Empirical Test: Methodology and Data

A. Sample

Since our focus is on poor countries, we restrict our analysis to the countries defined by the World Bank as low income and lower middle income (Table A1).[12] This group is large and heterogeneous, both geographically and in terms of income per capita. It includes the poorest countries in the world as well as a few relatively sophisticated emerging markets, such as Russia and Brazil. The total number of countries is 89, but the sample used in the regressions is smaller and varies somewhat across specifications depending on data availability. Four countries (China P.R., Jordan, Eritrea, and Thailand) are excluded from the regressions because they are outliers with respect to private credit. We also consider alternative samples including higher-income countries.

B. Dependent Variables

The main dependent variable is the volume of credit, measured as the ratio of commercial bank credit to the private sector to GDP from the International Financial Statistics of the IMF. [13] We also present results for cost efficiency, measured as the average ratio of overhead costs to total assets in the banking system, which measures all costs incurred by banks except for the interest paid on liabilities. These ratios are computed using bank-level data from Fitch's Bankscope database. Since we are interested in the efficiency of the financial sector as a whole, the ratios are constructed using country aggregates over all commercial banks available in the sample. Of course, we have to assume that the Bankscope sample is representative of the universe of banks. Country coverage is quite good.[14] To smooth out

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[11] Dell'Ariccia and Marquez (2004), however, reach the opposite conclusion in a theoretical model in which, when faced with greater competition from new lenders with access to cheaper funds, domestic banks respond by reallocating credit toward more "captured" borrowers, i.e., borrowers with whom they have a long-term relationship. In this model, all borrowers benefit from foreign bank entry.

[12] As customary, we exclude very small countries, defined as countries with a population of less than one million.

[13] We only use private credit data for deposit money banks (IFS line 22d) rather than the sum of lines 22d and 42d (which refers to other financial institutions), as is done in other studies. Line 42d is available only for a subset of countries, and setting it equal to zero for missing countries obviously misstates cross-country differences in depth.

[14] The results on efficiency are robust to excluding from the sample countries with less than five banks in the Bankscope database.

business cycle effects, both private credit and cost efficiency are computed as an average of the last three years of data available (1999-2002).

A third group of dependent variables are indicators of access to financial services, which we obtain from Beck, Demirgüç-Kunt, and Martinez Peria (2005). They include, among others, the extent of the branch and automated teller machine (ATM) networks, measuring the outreach of financial services, and the number of loans and deposit accounts, measuring actual usage of such services. Country coverage is uneven, especially for LICs, and for some indicators our sample becomes quite small. The information refers to the years 2003-04.

C. Measuring Foreign Bank Presence

To measure the presence of foreign banks in the domestic credit market we use data constructed by Micco, Panizza, and Yañez (2004) from the Bankscope database for the period 1995-2002. Bankscope contains an ownership code that classifies banks as state-owned, private domestic, and foreign, but the code is available only for a subset of banks and it refers only to the last year in the database. Bankscope also provides some historical information about banks, including changes in ownership, but the information is not exhaustive. Micco, Panizza, and Yañez have constructed a time-series of bank ownership combining Bankscope information with individual bank information from outside sources for the years 1995 to 2002. A bank is classified as foreign if at least 50 percent of its capital is in the hands of nonresidents. The share of foreign bank assets to total bank assets in each country is computed aggregating individual bank information. A limitation of our data is that coverage of Bankscope changes over time, so it is possible that changes in measured foreign bank penetration are just the effect of changes in coverage.

To limit joint endogeneity concerns, in the cross-sectional regressions we measure foreign bank presence at the earliest possible date. The dataset starts in 1995 for most countries, but for some we only have data for later years. To maximize sample size, we include also countries for which foreign bank presence is available in 1996, 1997, or 1998. An alternative measure of foreign bank presence drawn from a survey of bank supervisors is available from Barth, Caprio, and Levine (2001). However, this variable refers to the period 1998-99, and so we use this measure for robustness tests rather than in the main specification.

D. The Control Variables

Economic theory and existing empirical research point to a very broad set of potential determinants of financial sector performance, and so selecting a benchmark specification is difficult. Our approach is to include variables that capture several basic country characteristics and then to conduct extensive sensitivity analysis to verify the robustness of the coefficient of the foreign bank to the set of included controls.

The first control variable is the overall level of development in the country, measured by GDP per capita.[15] A dummy for countries that made the transition to a market economy is also introduced as a control, as these countries encountered unique obstacles in creating a market-based financial system after decades of central planning.[16] Inflation has also been found to be negatively associated with measures of financial depth in broad samples of countries (Boyd, Levine, and Smith, 2001), and so we use it as a control variable.

An unstable and corrupt political system is also likely to be a deterrent to financial development. Political instability may bring macroeconomic instability and a deterioration in business conditions. Civil strife and outright war can destroy capital and infrastructure. Expropriation may follow revolutions or coups d'état. In addition, corruption may increase the cost of doing business and create uncertainty about property rights. We experimented with various measures of political stability, internal conflict, military control of the government, and freedom from corruption, and found the latter to be most strongly correlated with financial performance. We include freedom from corruption as a regressor in the benchmark specification.[17]

It is widely acknowledged that "market infrastructure" is important to financial sector performance. The Doing Business database by the World Bank provides a comprehensive new set of measures of administrative and regulatory obstacles to business activity for a large group of countries. One advantage of these indicators is that they directly measure quantifiable aspects of the business environment, rather than reflecting broad judgments by market participants. Some of the indicators are directly related to banking, as they measure aspects such as the cost of establishing collateral and recovering defaulted loans, and the availability of information on potential borrowers (through credit registries and other sources). Among these indicators, the more robust correlates of private credit are an index of the availability of information to creditors and the time it takes to enforce contracts.[18] We use these two variables as controls in the benchmark regression.

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[15] The empirical relationship between financial depth and the level of development was first documented by Goldsmith (1969).

[16] Some of the more advanced transition countries which were not LICs are not included in our sample because they are not LICs. For an overview of financial sector issues in transition economies, see Bonin and Wachtel (2003) and De Nicolò, Geadah, and Rozhkov (2003).

[17] It might be argued that more corruption might result in more lending if loans are used as instruments to allocate favors to connected parties. Even though our sample of countries has a fairly high average level of corruption, we find that more corruption is associated with less, not more, private credit.

[18] Contract enforcement is likely to be more important than the legal rights of creditors in LICs, where laws are often not effectively enforced. In fact, Djankov, McLiesh, and Shleifer (2004) finds that measures of creditor rights do not significantly affect private credit in LICs.

E. The Empirical Model

We estimate several versions of the following basic cross-sectional equation:

$$y_i = \alpha + \beta f_i + \boldsymbol{\gamma}\mathbf{X_i} + u_i$$

where y_i is the performance indicator for country i, f_i is the share of bank assets held by foreign banks, $\mathbf{X_i}$ is a matrix of control variables, u_i is the error term, and α, β, and $\boldsymbol{\gamma}$ are parameters to be estimated. The parameter of interest is β, the coefficient of the foreign bank share. We replicate this regression varying the set of control variables to examine the sensitivity of the coefficient of interest. To reduce joint endogeneity problems, whenever possible we measure right-hand-side variables at dates earlier than the dependent variable. Also, to reduce measurement error we average the control variables over 1991-98 whenever the data is available. Sources and definitions for the data are in Appendix II.

An obvious problem with the cross-sectional regressions is that the market share of foreign banks is likely to be endogenous. A priori, it is not clear how endogeneity might bias the coefficient: foreign banks may be more prone to enter countries where, for exogenous reasons, financial development is particularly low, as in these markets growth prospects may be stronger. In this case, the OLS coefficient would be biased downwards. Conversely, business prospects for foreign banks may be poor in countries with little financial development to begin with, so foreign banks may be more prone to enter the more financially developed among low income countries. In this case, the OLS coefficient might be biased upwards.

To get around the endogeneity problem, in a second set of regressions we test whether foreign bank presence in year t can explain *changes* in banking sector performance in subsequent years. In this regression, the endogeneity bias should be upwards, as foreign banks presumably would not want to enter countries where financial performance is expected to worsen for exogenous reasons. In addition, in these regressions we control for performance in the initial year (as well as for other factors), and so omitted country characteristics or shocks that affect financial performance contemporaneously should not alter the coefficient of foreign bank share, because they should be already captured by the initial value of the performance indicator. This reduces concerns of joint endogeneity. Accordingly, the second set of regressions is estimated as follows:

$$\Delta \ln y_i = \alpha + \beta f_i + \delta y_{i0} + \boldsymbol{\gamma}\mathbf{X_i} + u_i$$

where y_{io} is the performance indicator in an initial year, f_i is the foreign bank share, X_i is a vector of other controls, and u_i is the error term.

Another approach to address potential endogeneity as well as possible omitted country-specific effects is panel estimation. The advantage of a panel is to allow to control for unobserved, country-specific, fixed characteristics that might affect private credit, and rely on the within-country dimension to identify the parameters of interest. We are restricted by the availability of data to an average of 5 years of observation per country. As a result, we

can use the panel at an annual frequency only, and cannot smooth out noise in the data by averaging over several years.[19] We estimate the panel model first with OLS with country- and time-fixed effects and then with a system GMM estimator (Arellano and Bover, 2005), as is described in more detail in Section V. The set of regressions we estimate can be summarized as follows:

$$\ln y_{i,t} = \alpha + \mu \ln y_{i,t-1} + \beta f_{i,t} + \gamma \mathbf{X}_{\mathbf{i},t} + \delta_i + u_{i,t}$$

where the variables are defined as above, and δ_i is a country-fixed effect.

A third strategy to deal with endogeneity is to rely on instrumental variable estimation. We discuss instrumental variables regressions in Section V.

F. An Overview of the Data

Summary statistics for the dependent variables are in Table 1. Private credit and overhead costs are significantly and negatively correlated, suggesting that more efficient banking systems are also better at intermediating funds to the private sector. The correlation, however, is not very strong, and so it is important to distinguish between these two dimensions.

There are also interesting regional differences in financial sector performance (Figures 1-2). Although differences within each region are substantial, on average banking systems in Asia and the Middle East and North Africa (MENA) are deeper and more efficient. At the other extreme, financial development remains limited in most LICs in Eastern Europe and Central Asia and in sub-Saharan Africa, while Latin America is somewhere in the middle. Large cross-country differences are also in evidence concerning bank ownership (Figure 3). Foreign bank presence is especially pronounced in sub-Saharan Africa, while it is most limited in the Middle East and North Africa and in Eastern Europe and Central Asia.[20]

Turning to bivariate correlations among the variables, private credit is positively and significantly correlated with GDP per capita, lack of corruption, and creditor information, and significantly negatively correlated with inflation, as expected. The bivariate correlations with the foreign share and with the contract enforcement variable are negative but not significant. Overhead costs are higher in countries with higher inflation and more corruption. The correlation with the foreign share is positive but not significant.

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[19] For example, annual data on foreign bank penetration from Bankscope are likely to be subject to measurement error, as the number of reporting banks may vary each year within a country. As a result, the variable measuring foreign bank may unduly fluctuate from one year to the next.

[20] This would not be the case if we included upper-middle income countries in Eastern Europe, where foreign bank entry has been particularly strong.

Figure 4 shows a scatter plot of foreign bank penetration and private credit, indicating that countries with a larger foreign bank presence tend to have shallower credit markets. Figure 5 shows that countries where foreign penetration increased tended to experience less financial deepening.

V. Results from the Empirical Tests

A. Private Credit—OLS Regressions

Table 2 presents various versions of the ordinary least squares (OLS) regression of private credit on foreign share and other control variables. When we control for GDP per capita only, the coefficient of foreign share is negative but not significant. However, if we allow transition countries to have a different intercept, then the coefficient doubles in size, and becomes significant at the 5 percent confidence level. This suggests that omitting the transition dummy biases the foreign share coefficient upward. Adding inflation to the set of controls results in a further increase in the foreign share coefficient. As we introduce corruption and the business environment indicators, the fit of the regression improves and the coefficient of the foreign share and its standard error remain broadly unchanged. All the controls have the signs predicted by the theory and have significant coefficients. Additional controls, such as the share of bank assets in state owned banks, the concentration of the banking sector, and a variable proxying the size of government debt are not significant, do not change the foreign share coefficient much, and do not improve the fit of the model. These variables are therefore omitted from the benchmark specification.[21] Similar results obtain if financial development is measured using the ratio of deposits to GDP.

The magnitude of the effect of foreign bank presence on private credit is not trivial: an increase in the foreign share by one standard deviation leads to a decline in private credit of about 6 percentage points of GDP. This is about a third of the average ratio of private credit to GDP in our sample.

Table 3 contains further robustness tests. The coefficient of the foreign share changes little when we use an alternative measure of foreign bank presence derived from a survey of supervisors rather than from Bankscope. Another concern is the endogeneity of GDP per capita, which might bias coefficients. If we omit GDP per capita or control for the level of development using GDP in 1980—a more exogenous measure than the average GDP per capita over 1991-98 the relationship between foreign bank presence and financial depth does not change. Similar results obtain using GDP in 1970.

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[21] The same is true if we use indices of political stability, internal conflict, and military in power, rather than lack of corruption. Additional country characteristics, such as latitude, the density of the rural population, the fraction of the population speaking European languages, and the extent of controls on the powers of the executive are not significant and do not change the coefficient of the foreign share.

In an additional robustness test, we replace the institutional control variables with variables measuring the "deep determinants" of institutions, namely legal origin and settlers' mortality. According to the law and finance literature (La Porta and others, 1998; Beck and Levine, 2003), the French legal tradition is less conducive to financial development than the English legal tradition, as it provides less creditor protection and is less adaptable to new economic circumstances.[22] A second proxy for institutions is settlers' mortality. Acemoglu, Johnson, and Robinson (2001) claim that in countries with adverse geographic conditions, European colonizers created institutions less conducive to business and financial development than in settlement colonies.[23] According to Acemoglu and Johnson (2005), legal origin is the deep determinant of contracting institutions, while settlers' mortality explains "property rights" institutions. Our specification amounts to estimating a reduced form equation in which institutional determinants of financial development are instrumented by their deep determinants. As it turns out, legal origin is not significantly correlated with financial development in our sample, while settlers' mortality is.[24] More importantly, the coefficient of foreign ownership does not change much when we control for the deep determinants of institutions.

The results are robust to controlling for the occurrence of banking crises in the years before the foreign share is measured and in the years after the foreign share is measured. A banking crisis may cause both a reduction in private credit and an increase in the foreign share, and so omitting this variable may bias the results. As it turns out, however, the negative relationship between foreign share and private credit becomes stronger after controlling for crises. Finally, the results are also robust to controlling for regional effects for sub-Saharan Africa and the share of production in agriculture.

We have also explored possible threshold effects by interacting foreign bank entry with various measures of institutional quality, to test whether the negative effects of foreign bank presence are more muted or reversed in countries with more advanced institutions. We do not find clear evidence of threshold effects of this sort, however. One explanation could be that

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[22] In the sample including settlers' mortality there are no countries of German or Scandinavian legal origin nor any transition countries. Accordingly, to control for legal origin it is sufficient to introduce a dummy variable for French legal origin, with English legal origin being the residual category.

[23] Beck, Demirgüç-Kunt, and Levine (2003) find empirical evidence that settlers' mortality is negatively correlated with financial development. Ethnic fractionalization may also be a proxy for the exogenous determinants of institutions, under the theory that in more ethnically diverse countries consensus to support the provision of public goods, such as institutions, is difficult to achieve (Easterly and Levine, 1997). This variable, however, is not significantly correlated with financial performance in our sample.

[24] Introducing settlers' mortality in the regression reduces the sample size to 46 countries, compared to 59 in the baseline. To preserve sample size this variable is not used in the baseline specification.

threshold effects appear at a level of development beyond the one of countries included in our sample. We take up this issue at the end of this section.

To summarize, the OLS cross-sectional regressions indicate that there is a negative, significant, and robust correlation between the penetration of foreign banks in poor countries and the depth of the private credit market. In addition, the economic magnitude of the effect is quite substantial.

B. Foreign Bank Presence and Credit Growth

If a larger foreign presence is detrimental to financial development, then we should observe a negative correlation between foreign presence and subsequent credit growth. In this regression, controlling for the initial level of financial development should ensure that the results are not driven by the fact that foreign banks may choose to enter in more underbanked countries.

Table 4 presents these regression results. The dependent variable is computed as the log difference of the private credit-to-GDP ratio in 1999-2001 and in 1994-96. The basic specification includes as controls inflation and the share of state banks, both of which have a negative and significant effect on credit growth, and lack of corruption, which has a positive effect. GDP per capita and the transition dummy were not significant and have been omitted, though including these variables does not change the results. In this basic specification, a larger presence of foreign banks is associated with lower subsequent growth in credit to the private sector. The result holds also in a number of alternative specifications. Controlling for the occurrence of banking crises and a dummy for sub-Saharan Africa does not change the results, and the same is true when we control for hyperinflation or changes in adult mortality rates, capturing the possible effects of the AIDS epidemics on growth.

Turning to the magnitude of the effect, based on the regression in column 3, an increase in the foreign share of one standard deviation would lead to a decline in the growth rate of credit of about 20 percent, a sizable decline.

C. Panel Regressions

Panel A of Table 5 reports fixed effects OLS regressions of log of private credit to GDP on foreign bank presence. Given the persistence in the level of private credit, the lagged dependent variable is introduced in the regression as an additional control. Other control variables include inflation, which is significantly and negatively associated with private credit *within* a country, GDP per capita, which is positively albeit weakly associated with private credit, and the share of state banks, which is not significant. In these fixed effect regressions, the share of foreign banks is significantly and negatively associated with private credit to GDP in most specifications.

It is well known that fixed-effect regressions of dynamic panels yield significantly biased coefficient on all variables (Nickell, 1981), and that the size of the bias is larger the shorter the time dimension of the panel. Moreover, our RHS variables are also potentially endogenous, which would further bias the results. To address these issues, we estimate the

model using the system GMM estimator developed by Arellano and Bover (1995).[25] The system GMM estimator combines the use of lagged *levels* of the series as instruments for the pre-determined and endogenous variables in the equations in *first difference*s, and the use of lagged *differences* of the dependent variable as instruments for equations in *levels*. To check the validity of the instruments, we report a test of over identifying restrictions (Sargan test), and tests of serial correlations for the error terms of the differenced equation. These tests support the validity of the instruments. Our key instrumentation strategy of foreign bank presence is that *past* foreign bank market share affects *current* credit to the private sector *only through* the *current* foreign bank market share.

Panel B of Table 5 presents various GMM regressions. The coefficient on the lagged dependent variable is close to one, which confirms that it is highly serially correlated and justifies the use of the system GMM. Among the control variables considered, inflation is robustly and negatively associated with private credit, even after instrumentation. State banks also has a negative and significant coefficient, while GDP per capita is not significant. In all specifications, the presence of foreign banks is significantly and negatively associated with private credit, confirming the results derived with alternative testing strategies.

D. Private Credit-Instrumental Variable Regressions

An alternative approach to deal with endogeneity concerns is instrumental variable estimation. The challenge, as usual, is to find instruments that are correlated with foreign bank presence but not with financial performance (after controlling for other factors). We will use two sets of instruments: the size of the population and religion. The theory behind the first instrument is that global banks operating in many markets can better diversify country-specific risk than domestic banks, a benefit particularly valuable in smaller countries. In addition, in smaller countries a relatively small initial investment is likely to give a foreign bank sufficient size to achieve a dominant position in the market. To be a valid instrument, population size should not affect private credit through other channels. It may be argued that in larger countries it is easier for banks to achieve economies of scale, thereby reducing unit cost. Lower unit cost, in turn, would lead to lower interest rates and more lending. In the cost-efficiency regressions presented below, however, we will show that population size is not a significant determinant of bank operating costs, suggesting that this channel is not operative in our sample.

The second group of instruments captures the diffusion of major religions in the host country. The hypothesis is that religion shapes many aspects of a country's culture, and the closer the cultural ties between host and sending country, the more likely are foreign banks to enter and the more willing is the host country to permit entry. To identify the predominant culture in sending countries, we examine the country of origin of major international banks. As it turns

[25] An alternative GMM estimator is the difference GMM estimator developed by Arellano and Bond (1991). However, it is well known that this estimator performs poorly for highly autoregressive panel series in finite samples (Blundell, Bond and Windmeijer, 2000), because lagged levels are poor instruments for the variables in differences.

out, these banks are primarily based in countries where the dominant religions are Protestant or Catholic, with a smaller number based in the Far East, where Buddhism is the main religion.[26] Accordingly, we conjecture that foreign bank presence is smaller the larger the share of the population practices Islam, Buddhism, and Greek Orthodox Christianity.[27] The data on religious affiliation come from the CIA Factbook.

Our identification strategy relies upon the hypothesis that financial development is not directly affected by the major religious composition of the population after controlling for other determinants of financial development. Stulz and Williamson (2001) argue that differences in creditor rights, which may affect private credit, can be traced back to whether the country is Catholic or Protestant, but do not find significant differences between Christianity and other religions in how creditors are protected by law. We do not distinguish between these two versions of Christianity in our regressions. Furthermore, Djankov, McLiesh, and Shleifer (2004) show that creditor rights do not explain differences in private credit in LICs. Thus, the validity of our instruments should not be affected by the effect of religion on creditor rights, if any. Moreover, Levine (2005) does not find any statistically significant association between religious composition and an indicator of property rights.

A related concern is that religion proxies for differences in broader institutions rather than cultural ties. When we examine whether the correlation of religion and the foreign bank share is sensitive to controlling for broad institutions through settlers' mortality, however, we find that this is not the case. The broad cultural environment, including religion, could also affect specific institutions of contract enforcement. However, our results hold when controlling for the time to enforce contract and legal origin, which is seen as a deep determinant of contract laws.

In the first stage regression, the instruments are highly significant and the partial R-squared is above 20 percent (Table 6). Depending on the specification, the F-test on the joint significance of the instruments is above or close to the threshold of 10 recommended by Staiger and Stock (1997) to avoid the weak instrument problem, under the criterion that the bias of the IV regression is less than 10 percent of the bias of the OLS regression.[28] In the

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[26] More specifically, of the top 100 banks in the world by asset size in 2002, 83 were headquartered in a Western country (i.e., the United States and countries in Western Europe) or in Australia, while the remaining 17 were headquartered in Japan, China, South Korea, or India. The first group of banks were also more international than the second, operating in 16.9 different countries on average, as opposed to 8.4 countries on average for the Asian banks. The data are from Cerutti, Dell'Ariccia, and Martinez Peria (2005), who construct them from Bankscope.

[27] The share of Hindu population was included initially, but turned out not to be significant.

[28] However, the F-test remains below the threshold level of 25 (for 4 instruments) if the criterion is that the true significance level is 10 percent when the nominal level is 5 percent (Stock and Yogo, 2005). For this reason, we also report second stage confidence intervals for

(continued…)

second stage regression, we do not reject the null hypothesis of no overidentifying restrictions. In addition, the coefficient of foreign share not only continues to be negative and significant (although it less precisely estimated), but becomes larger in size. This is the opposite of what should happen under the hypothesis that low financial development causes more foreign bank entry. In fact, these results suggest that instrumental variable estimation might be removing attenuation bias caused by measurement error, so that the true effect is larger than what is implied by the OLS estimates. Altering the specification by changing the set of included controls does not change the coefficient estimate much.

While there are always questions about the suitability of instruments, we take these results as further evidence that a larger foreign bank presence might indeed be detrimental to the development of a private credit market in LICs. In the next section we turn to the question of whether a more extensive foreign bank presence might have benefits in terms of efficiency.

E. Overhead Costs

Cost efficiency is another important dimension of banking sector performance. In the theoretical model, if foreign bank entry results in a switch away from pooling, monitoring costs are paid in the new equilibrium which were not paid before, resulting in an increase in overhead costs (other things being equal). To test this prediction of the model, we examine whether there is a robust correlation between the presence of foreign banks and the cost efficiency of the banking sector (Table 7). To keep the exposition simple, we present the same set of specifications used to study the correlation between foreign bank presence and private credit.

The fit of the model, measured by the R-squared, is not as good as for private credit, as the regressors explain at most 34 percent of the variation. Among the regressors, inflation is robustly and positive correlated with overhead costs, suggesting that lower inflation allows banks to improve efficiency. In addition, better availability of information about debtors tends to reduce overhead costs. Therefore, banking sector performance in terms of both credit to the private sector and cost efficiency is associated with lower inflation and better creditor information. On the other hand, GDP per capita and the transition dummy do not seem to affect cost efficiency, although they were robustly correlated with depth. Lack of corruption has the expected negative sign but is significant only in some specifications. The concentration of the banking system and the size of the country do not have any explanatory power. Surprisingly, LICs with a larger presence of state-owned banks have more cost-efficient banking systems. This contrasts with studies of cost efficiency in individual banks, which tend to find state banks to be less cost-efficient (Micco and Panizza, 2004).[29]

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the foreign ownership variable that are robust to weak instrument bias (see Moreira, 2003; Andrews, Moreira, and Stock, 2005)

[29] Part of the explanation is that state banks are larger on average than other banks, and bank size is an important determinant of cost efficiency. Studies using individual bank data control for bank size when testing for differences in efficiency across banks of different ownership.

Turning to the variable of interest, the share of foreign banks, the coefficient has a positive sign and is significant in a number of specifications, but loses significance when we control for the presence of state-owned banks, which, somewhat surprisingly, is associated with lower operating costs. The same result obtains when controlling for deep institutions through settlers' mortality and legal origin and when using an alternative measure of foreign ownership. Finally, using changes in cost efficiency as the dependent variable yields a poor fit and no robust relationship with foreign bank presence.

F. Foreign Banks and Access to Banking Services

We have interpreted the negative association between private sector credit and the presence of foreign banks in poor countries as the result of cream-skimming by these banks, in accordance with our theoretical model. To further bolster our interpretation, in this section we show that foreign bank presence in poor countries is associated with less access to financial services, as measured by the size of the branch network, number of loans, and number of deposits. While endogeneity issues are difficult to sort out given the small sample size, this is consistent with the hypothesis that it is the smaller, more opaque bank customers, possibly located in more remote regions, who suffer when foreign banks enter the market.

Table 8 shows bivariate correlations between financial access indicators, private credit, and the foreign share, as well as cross-correlations among the indicators themselves. Three observations emerge: access indicators are not strongly correlated with private credit in our sample, suggesting that these measures capture a separate dimension of financial development; some indicators are strongly correlated with one another (for example, demographic branch and ATM penetration); and, finally, all the indicators are negatively correlated with the foreign share, and most correlations are large and statistically significant. The negative correlation between access and foreign bank presence remains after controlling for GDP per capita, population density, inflation, and corruption (Table 9). Hence, financial access indicators tend to be worse in countries that had a large foreign bank presence in the mid-1990s, after controlling for the level of development or the institutional quality.

G. Extending the Sample to Higher-Income Countries

An interesting question is whether the relationships identified also hold when we extend the sample to include more advanced countries. Table 10 shows the baseline regressions for private credit and overhead costs for a sample including all 102 countries for which we have data. Regressions including only high-income and upper-middle-income countries are also presented. In the regressions for private credit, when we utilize the full sample the coefficient of foreign banks becomes much smaller and is no longer significant, although it is still negative. This is because a larger foreign bank presence is associated with more rather than less private credit in high-income countries (the coefficient is not significant, however). Foreign bank presence seems to have a different effect in poor countries than in advanced countries, which is consistent with the view that the ability to develop local knowledge and relationships is more important in poor countries, where a larger share of potential borrower can be identified only on the basis of soft information.

Also for cost efficiency there is no significant relationship with foreign bank presence as the sample is extended to include more advanced countries.

VI. CONCLUSIONS

A number of empirical studies find that, in poor countries, foreign banks tend to lend mainly to large firms (domestic or multinationals) and to the government rather than to smaller businesses for which local knowledge is necessary. In this paper, we have developed a theoretical model to study the effects of foreign bank entry when foreign banks have a cost advantage in lending to larger, more transparent firms but not in lending to smaller, more opaque customers. We find that while total lending, cost efficiency, and welfare may improve with foreign bank entry, this is not warranted. For some parameter configurations, a perverse effect may arise, whereby entry by foreign banks results in cream-skimming which hurts the more opaque businesses, increases overall operating costs, and lowers aggregate welfare.

In the empirical part of the paper, we have examined the relationship between foreign bank presence and banking sector aggregate performance. In our sample of poor countries, those with more foreign bank penetration have a shallower banking sector and experience slower credit growth. These relationships are economically and statistically significant and robust. The negative association between foreign bank presence and private credit emerges also in panel estimation, where we can control for country fixed effects and use system GMM to deal with joint endogeneity of the foreign penetration variable. Instrumental variable estimation in the cross-section yields similar results. No robust relationships are identified for cost efficiency. These results are consistent with theories of cream-skimming by foreign banks in poor countries.

These findings are clearly at odds with hopes that foreign banks might replace inefficient and corrupt state and domestic banks and boost financial development in poor countries. On the other hand, they should not come as a surprise in light of recent research on banking, suggesting that lending to opaque businesses—which, arguably, constitute a large fraction of the economy in poor countries—is not something large banks are particularly good at. Indeed, the recent trend towards greater consolidation in the banking business in advanced countries has raised concerns about the loss of "relationship capital" and the availability of credit to small and medium-sized enterprises (SMEs) (Berger and others, 2005). Such concerns can only be heightened in the case of large international banks operating in poor countries, where cultural and geographic distance between loan officers and management is maximal.

Table 1. Sample Summary Statistics

This table provides summary statistics for all the variable used in the benchmark cross-sectional regressions. The sample consists of 62 low-income and lower-middle-income countries. Financial sector performance indicators are the ratio of bank credit to the private sector to GDP and the ratio of overhead costs to assets (computed aggregating individual bank data). Foreign ownership is the ratio of bank assets in banks controlled by foreigners to total bank assets in the country. GDP per capita is GDP in U.S. dollars divided by population. Inflation is the log difference in the consumer price index. Lack of corruption is an index measuring the freedom from corruption. Creditor information measures the cost to banks of obtaining information about borrowers. Enforcement speed is the inverse of the number of days it takes to enforce a basic business contract.

	Private Credit	Overhead costs
Number of observations	85	82
Mean	18.09	4.87
Standard deviation	15.71	2.80
Minimum	0.86	1.00
Maximum	93.26	16.23

Bivariate correlations (p-values in parenthesis)

	Private credit	Overhead costs	Foreign ownership	Inflation	GDP per capita	Lack of corruption	Creditor information	Enforcement speed
Private credit	1							
Overheads	-0.29**	1						
	[0.0083]							
Foreign ownership	-0.1241	0.1848	1					
	[0.3365]	[0.1439]						
Inflation	-0.1926*	0.2472**	-0.2473**	1				
	[0.0831]	[0.0281]	[0.0547]					
GDP per capita	0.468***	-0.1743	-0.0782	0.1208	1			
	[0]	[0.1197]	[0.5458]	[0.2798]				
Lack of corruption	0.4915***	-0.3522***	-0.0197	-0.1923*	0.4089***	1		
	[0]	[0.0012]	[0.8785]	[0.0816]	[0.0001]			
Creditor information	0.4559***	-0.1303	0.0241	0.0584	0.3593***	0.1961*	1	
	[0]	[0.2555]	[0.8538]	[0.614]	[0.0011]	[0.0813]		
Enforcement speed	-0.1644	0.0114	-0.0018	0.1203	-0.055	-0.3532***	0.1697	1
	[0.145]	[0.9208]	[0.9889]	[0.2943]	[0.6279]	[0.0012]	[0.1324]	

Table 2. Financial Depth and Foreign Bank Presence in Poor Countries: OLS Regressions

This table reports the results of cross-sectional OLS regressions for the sample of poor countries. The dependent variable is the ratio of bank credit to the private sector to GDP. GDP per capita is GDP in U.S. dollars divided by population. Foreign ownership is the ratio of bank assets in banks controlled by foreigners to total bank assets in the country. Transition is a dummy variable for formerly centrally planned economies. Inflation is the log difference in the consumer price index. Lack of corruption is an index measuring the freedom from corruption. Creditor information measures the cost to banks of obtaining information about borrowers. Enforcement speed is the inverse of the number of days it takes to enforce a basic business contract. State banks is the share of bank assets in state-owned banks. Concentration is the share of bank assets in the five largest banks. Fiscal is the ratio of interest payments on public debt to the stock of public debt.

	(1)	(2)	(3)	(4)	***(5)***	(6)	(7)	(8)
GDP per capita	7.04	8.16	9.05	6.99	***5.65***	5.17	6.38	6.56
	[3.50]***	[3.94]***	[5.59]***	[4.57]***	***[3.40]******	[3.07]***	[2.84]***	[2.69]**
Foreign ownership	**-6.59**	**-15.3**	**-22.56**	**-19.6**	***-18.88***	**-21.5**	**-23.4**	**-23.78**
	[0.94]	**[2.20]****	**[3.31]*****	**[3.37]*****	***[3.09]******	**[3.35]*****	**[3.42]*****	**[3.48]*****
Transition		-14.33	-8.88	-6.99	***-5.2***	-4.82	-10.02	-8.92
		[3.05]***	[2.31]**	[1.95]*	***[1.34]***	[1.17]	[2.16]**	[1.83]*
Inflation			-7.02	-5.92	***-5.76***	-5.53	-4.3	-4.41
			[4.67]***	[4.30]***	***[4.13]******	[3.79]***	[2.80]***	[2.74]***
Lack of corruption				10.54	***8.45***	9.42	9.84	8.92
				[2.67]**	***[2.00]****	[2.21]**	[1.58]	[1.42]
Creditor information					***1.48***	1.46	0.8	0.84
					[2.34]*	[2.24]**	[1.01]	[1.03]
Enforcement speed					***423.6***	411.41	367.52	392.44
					[2.78]***	[2.70]***	[1.94]*	[2.11]**
State banks						-5.42	-11.64	-12.76
						[0.99]	[1.39]	[1.57]
Concentration							-7.27	-5
							[0.99]	[0.57]
Fiscal								0.73
								[1.23]
Observations	62	62	61	61	***59***	59	45	45
R-squared	0.21	0.34	0.56	0.61	***0.63***	0.64	0.66	0.67

Robust t statistics in brackets.

* significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 3. Financial Depth and Foreign Banks in Poor Countries: Robustness Tests

This table reports the results of cross-sectional OLS regressions for the sample of poor countries. The dependent variable is the ratio of bank credit to the private sector to GDP. GDP per capita is GDP in U.S. dollars divided by population. Foreign ownership is the ratio of bank assets in banks controlled by foreigners to total bank assets in the country. Transition is a dummy variable for formerly centrally planned economies. Inflation is the log difference in the consumer price index. Lack of corruption is an index measuring the freedom from corruption. Creditor information measures the cost to banks of obtaining information about borrowers. Enforcement speed is the inverse of the number of days it takes to enforce a basic business contract. Settler's mortality is the mortality rate of settlers who colonized the country (Acemoglu, Johnson, and Robinson, 2001). French legal origin is a dummy variable for countries where the legal system is derived from the French Civil Code. Banking crises are dummies for the occurrence of a systemic banking crisis in the period indicated (constructed from Demirgüç-Kunt, and Detragiache, 2005). Africa is a dummy for countries in sub-Saharan Africa. Agriculture share is the share of GDP in agriculture.

	Benchmark	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	5.65	6.35			8.21	5.18	4.87	3.52
	[3.40]***	[2.54]**			[4.18]***	[2.84]***	[1.73]*	[1.69]
Foreign ownership	**-18.88**		**-16.17**	**-18.26**	**-19.62**	**-21.66**	**-20.63**	**-18.53**
	[3.09]* **		**[2.49]** **	**[2.73]*** **	**[2.40]** **	**[3.27]*** **	**[2.20]** **	**[2.84]*** **
Foreign banks (Barth and others)		**-13.49**						
		[2.76]* **						
Transition	-5.2	-4.06	-0.82	-12.35		-4.98	-5.22	-9.19
	[1.34]	[1.11]	[0.28]	[3.55]***		[1.56]	[1.57]	[3.87]***
Inflation	-5.76	-5.02	-4.58	-5.81	-7.3	-6.07	-5.96	-6.51
	[4.13]***	[3.57]***	[4.04]***	[3.28]***	[3.84]***	[4.71]***	[4.16]***	[3.54]***
Lack of corruption	8.45	4.4	13.64	10.58		9.09	9.44	7.24
	[2.00]*	[0.76]	[2.92]***	[2.34]**		[2.13]**	[2.18]**	[1.55]
Enforcement speed	1.48	580.33	547.14	396.5		396.56	391.48	380.36
	[2.34]**	[3.32]***	[3.79]***	[2.26]**		[2.38]**	[2.34]**	[2.31]**
Creditor information	423.6	2.54	2.63	1.55		1.41	1.39	1.59
	[2.78]***	[2.58]**	[3.92]***	[2.10]**		[2.28]**	[2.16]**	[2.25]**
GDP per capita 1980				5.4				
				[2.51]**				
Settlers' mortality					-4.59			
					[2.24]**			
French legal origin					-0.46			
					[0.14]			
Banking crisis 1990-93						-4.82	-4.7	
						[1.66]	[1.55]	
Banking crisis 1994-2002						3.38	3.29	
						[0.97]	[0.96]	
Africa							-1.06	
							[0.19]	
Share of agriculture								-7.29
								[1.92]*
Observations	59	54	59	48	41	59	59	46
R-squared	0.63	0.65	0.56	0.61	0.63	0.66	0.66	0.65

Table 4. Foreign Bank Presence and Changes in Financial Depth in Poor Countries

This table reports the results of cross-sectional OLS regressions for the sample of poor countries. The dependent variable is the log difference in the ratio of bank credit to the private sector to GDP between 1995-98 and 1999-2002. Initial depth is the ratio of bank credit to the private sector measured in 1995-98. Foreign ownership is the ratio of bank assets in banks controlled by foreigners to total bank assets in the country. Inflation is the log difference in the consumer price index. Lack of corruption is an index measuring the freedom from corruption. Banking crises are dummies for the occurrence of a systemic banking crisis in the period indicated (constructed from Demirgüç-Kunt, and Detragiache, 2005). Africa is a dummy for countries in sub-Saharan Africa. Change in mortality is the change in the mortality rate of the population between 2002 and 1995. Hyperinflation is a dummy variable for countries that experienced a hyperinflation during 1995-2002.

	(1)	(2)	(3)	(4)	(5)	(6)
Initial depth	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02
	[3.38]***	[4.57]***	[4.83]***	[5.12]***	[3.84]***	[4.49]***
Foreign ownership	**-0.55**	**-0.56**	**-0.68**	**-0.52**	**-0.58**	**-0.54**
	[2.29]**	**[2.42]****	**[2.77]*****	**[2.05]****	**[2.12]****	**[2.33]****
Inflation	-0.09	-0.08	-0.1	-0.11	-0.08	-0.12
	[2.13]**	[1.98]*	[2.68]***	[2.87]***	[1.84]*	[2.42]**
State banks	-0.35	-0.4	-0.38	-0.37	-0.37	-0.43
	[1.73]*	[2.05]**	[1.85]*	[1.80]*	[1.62]	[2.26]**
Lack of corruption		0.3	0.33	0.34	0.32	0.29
		[2.44]**	[2.69]***	[2.87]***	[2.01]*	[2.37]**
Banking crisis 1990-93			-0.16	-0.15		
			[1.16]	[1.07]		
Banking crisis 1994-2002			0.16	0.13		
			[2.01]**	[1.52]		
Africa				-0.2		
				[1.76]*		
Change in mortality					-0.01	
					[0.06]	
Hyperinflation						0.2
						[0.88]
Observations	59	59	59	59	50	59
R-squared	0.23	0.29	0.34	0.38	0.29	0.3

Robust t statistics in brackets

* significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 5. Financial Depth and Foreign Bank Presence in Poor Countries: Panel Estimation

This table reports the results of panel regressions for the sample of poor countries. The dependent variable is the ratio of bank credit to the private sector to GDP. GDP per capita is GDP in U.S. dollars divided by population. Foreign ownership is the ratio of bank assets in banks controlled by foreigners to total bank assets in the country. Inflation is the log difference in the consumer price index. State banks is the share of bank assets in state-owned banks. Panel A presents regression results using OLS with country- and time-fixed effects. Panel B presents results of estimation using two-step system GMM with finite sample correction to the covariance matrix (Windmeijer, 2005), with up to three lags for instruments.

Panel A: Fixed effects regressions

	(1)	(2)	(3)	(4)	(5)
Lagged dependent variable		0.47	0.53	0.5	0.48
		[9.90]***	[10.26]***	[9.22]***	[8.72]***
Foreign Ownership	-0.68	-0.3	-0.38	-0.42	-0.3
	[3.55]***	[1.78]*	[2.15]**	[2.35]**	[1.43]
Log(inflation)			-0.1	-0.1	-0.09
			[5.44]***	[4.84]***	[4.79]***
GDP per capita				0.44	0.48
				[1.69]*	[1.82]*
State Banks					0.21
					[1.17]
Observations	422	419	392	392	392
Country fixed effects	yes	Yes	Yes	yes	Yes
Year fixed effects	yes	Yes	Yes	yes	Yes
R-squared	0.92	0.94	0.94	0.94	0.94
Serial correlation test (p value)					
order 1	0.000	0.02	0.44	0.46	0.38

Panel B: System GMM regressions

	(1)	(2)	(3)
Lagged dependent variable	0.87	0.88	0.87
	[32.09]***	[29.68]***	[23.69]***
Foreign Ownership	-0.44	-0.24	-0.39
	[2.04]**	[1.64]*	[1.67]*
Log(inflation)	-0.13	-0.12	-0.14
	[4.10]***	[3.71]***	[4.46]***
GDP per capita		0.05	0.06
		[1.31]	[1.70]*
State Banks			-0.24
			[1.99]*
Observations	392	392	392
Country fixed effects	yes	yes	yes
Year fixed effects	yes	yes	yes
Sargan test (p value)	0.341	0.836	0.991
Serial correlation test (p value)			
order 1	0.039	0.047	0.042
order 2	0.616	0.665	0.75

t statistics in brackets.

* significant at 10 per cent; ** significant at 5 percent; *** significant at 1 percent.

Table 6. Financial Depth and Foreign Bank Presence in Poor Countries: Instrumental Variables Estimation

This table reports the results of 2SLS estimation of the relationship between financial depth and foreign bank presence. The dependent variable is the ratio of bank credit to the private sector to GDP. GDP per capita is GDP in U.S. dollars divided by population. Foreign ownership is the ratio of bank assets in banks controlled by foreigners to total bank assets in the country. Transition is a dummy variable for formerly centrally planned economies. Inflation is the log difference in the consumer price index. Lack of corruption is an index measuring freedom from corruption. Creditor information measures the cost to banks of obtaining information about borrowers. Enforcement speed is the inverse of the number of days it takes to enforce a basic business contract. The instruments are the log of population, the share of the population that is Muslim, the share of the population that is Buddhist, and the share of the population that is Christian Orthodox.

Second stage	(1)	(2)	(3)	(4)	(5)
Foreign ownership	**-21.37**	**-20.89**	**-24.79**	**-21.57**	**-28.54**
	[1.80]*	**[1.73]***	**[1.87]***	**[1.80]***	**[1.71]***
Transition	-5.56	-6.85	-8.18	-6.66	
	[1.54]	[2.06]**	[2.31]**	[1.98]**	
GDP per capita	5.17	6.64	8.09	6.59	5.48
	[3.24]***	[4.62]***	[6.00]***	[4.69]***	[2.28]**
Inflation	-5.79	-5.94	-6.76	-5.93	-6.7
	[4.30]***	[4.27]***	[4.50]***	[4.23]***	[2.91]***
Lack of corruption	5.36	7.88		7.83	
	[1.64]	[2.38]**		[2.34]**	
Enforcement speed	504.43				521.34
	[3.68]***				[3.32]***
Creditor information	1.45				1.34
	[2.25]**				[1.96]*
settler mortality (log)					-3.14
					[1.50]
French legal origin				0.46	
				[0.20]	
Observations	57	59	59	59	39
R-squared	0.58	0.55	0.51	0.55	0.58
Hansen J stat	4.29	2.31	1.71	2.35	1.29
P-val	0.23	0.51	0.64	0.5	0.52
90 percent confidence interval [1/] (Conditional Likelihood Ratio)	[-25.3 , -21.1]	[-23.7 , -19.7]	[-27.6 , -23.7]	[-24.5 , -20.6]	[-33.3, -28.0]

First stage	(1)	(2)	(3)	(4)	(5)
log population	-0.048	-0.047	-0.047	-0.048	-0.024
	[-3.25]***	[-3.59]***	[-3.61]***	[-3.43]***	[-1.32]
muslim	-0.001	-0.002	-0.002	-0.001	-0.002
	[-2.46]**	[-2.78]***	[-2.79]***	[-2.53]**	[-2.52]**
buddhist	-0.003	-0.003	-0.004	-0.004	-0.004
	[-3.34]***	[-4.53]***	[-5.23]***	[-4.24]***	[-4.59]***
orthodox	-0.002	-0.002	-0.002	-0.002	
	[-2.31]**	[-2.09]**	[-2.41]**	[-2.04]**	
Partial R-squared	0.25	0.26	0.27	0.27	0.24
F statistic	9.26	13.56	11.85	13.31	7.92
p-value of F test	0.0000	0.0000	0.0000	0.0000	0.0005

Robust z statistics in brackets.

* significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

[1/] Confidence interval robust to weak instruments (Moreira, 2003).

Table 7. Bank Cost Efficiency and Foreign Bank Presence in Poor Countries

This table reports the results of cross-sectional OLS regressions for the sample of poor countries. The dependent variable is the ratio of bank operating costs to assets computed aggregating bank level data. Foreign ownership is the ratio of bank assets in banks controlled by foreigners to total bank assets in the country. Transition is a dummy variable for formerly centrally planned economies. Inflation is the log difference in the consumer price index. Lack of corruption is an index measuring the freedom from corruption. Creditor information measures the cost to banks of obtaining information about borrowers. Enforcement speed is the inverse of the number of days it takes to enforce a basic business contract. State banks is the share of bank assets in state-owned banks. Concentration is the share of bank assets in the five largest banks. Country size is the log of population.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	-0.002	-0.009	-0.012	0.007	0.024	0.01	0.007	0.006
	[0.07]	[0.40]	[0.57]	[0.29]	[0.93]	[0.39]	[0.21]	[0.18]
Foreign ownership	**0.02**	**0.027***	**0.032****	**0.029***	**0.024***	**0.01**	**0.015**	**0.013**
	[1.34]	**[1.71]**	**[2.21]**	**[1.89]**	**[1.76]**	**[0.72]**	**[0.89]**	**[0.70]**
Transition		0.013*	-0.003	-0.005	-0.016	-0.017	-0.015	-0.016
		[1.75]	[0.23]	[0.45]	[1.18]	[1.39]	[1.11]	[1.19]
Inflation			0.007***	0.006**	0.007**	0.008***	0.008***	0.008***
			[2.69]	[2.26]	[2.59]	[3.03]	[3.00]	[2.96]
Lack of corruption				-0.016**	-0.016*	-0.011	-0.009	-0.009
				[2.01]	[1.79]	[1.55]	[0.98]	[0.97]
Enforcement speed					-0.12	-0.194	-0.235	-0.323
					[0.44]	[0.74]	[0.86]	[1.04]
Creditor information					-0.003*	-0.004*	-0.004**	-0.004**
					[1.76]	[1.99]	[2.07]	[2.14]
State banks						-0.028**	-0.025**	-0.022
						[2.58]	[2.18]	[1.61]
Concentration							-0.007	-0.012
							[0.35]	[0.55]
Country size (pop.)								-0.002
								[0.39]
Constant	0.047	0.058	0.042	0.002	-0.022	0.016	0.025	0.058
	[1.07]	[1.29]	[1.01]	[0.03]	[0.46]	[0.32]	[0.34]	[0.48]
Observations	63	63	62	62	60	60	58	58
R-squared	0.03	0.07	0.17	0.21	0.26	0.34	0.34	0.34

Robust t statistics in brackets.

* significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 8. Access to Financial Services and Foreign Bank Presence in Poor Countries: Bivariate Correlations

This table reports bivariate correlations between the indicators of access to financial services of Beck, Demirgüç-Kunt, and Martinez Peria (2005), foreign bank penetration, and credit to the private sector. Foreign ownership is the ratio of bank assets in banks controlled by foreigners to total bank assets in the country. Private credit is the ratio of bank credit to the private sector to GDP. Demographic branch penetration is the number of bank branches divided by population. Geographic branch (ATM) penetration is the number of bank branches (ATM machines) divided by the area of the country (in square miles). Loan accounts per capita is the number of bank accounts in the country divided by population.

	Foreign Ownership	Private Credit	Demographic branch penetration	Geographic branch penetration	Demographic ATM penetration	Geographic ATM penetration	Loan accounts per capita	Deposit accounts per capita
Demographic branch penetration	**-0.3969**	0.0866	1					
P-value	0.0124	0.5854						
Geographic branch penetration	**-0.413**	0.1302	**0.3592**	1				
P-value	0.009	0.4111	0.0195					
Demographic ATM penetration	-0.2868	0.2032	**0.6962**	0.0655	1			
P-value	0.1001	0.2346	0	0.7086				
Geographic ATM penetration	**-0.3777**	0.1598	**0.4592**	**0.3643**	**0.6651**	1		
P-value	0.0277	0.3518	0.0055	0.0314	0			
Loans per capita	-0.3607	0.2207	0.285	0.1035	**0.4222**	**0.4077**	1	
P-value	0.1414	0.3498	0.2232	0.664	0.0637	0.0744		
Deposits per capita	**-0.4642**	-0.1782	**0.474**	-0.0032	**0.383**	0.1896	0.281	1
P-value	0.0223	0.3836	0.0144	0.9877	0.0588	0.364	0.23	

Table 9. Access to Financial Services and Foreign Bank Presence in Poor Countries: Cross-Sectional OLS Regressions

This table reports OLS cross-sectional regression results on the relationship between foreign bank presence and access to finance. The dependent variables are five alternative indicators of access to financial services from Beck, Demirgüç-Kunt, and Martinez Peria (2005). Demographic branch penetration is the number of bank branches divided by population. Geographic branch (ATM) penetration is the number of bank branches (ATM machines) divided by the area of the country (in square miles). Loan accounts per capita is the number of bank accounts in the country divided by population. foreign bank penetration, and credit to the private sector. GDP per capita is GDP in U.S. dollars divided by population. Population density is population per square mile. Foreign ownership is the ratio of bank assets in banks controlled by foreigners to total bank assets in the country. Inflation is the log change in the consumer price index. Lack of corruption is an index of freedom from corruption.

	Demographic branch penetration	Demographic branch penetration	Demographic branch penetration	Geographic branch penetration	Geographic branch penetration	Geographic branch penetration
GDP per capita	2.33	2.13	-1.28	-0.77	-0.17	-1.28
	[4.72]***	[4.89]***	[0.70]	[0.52]	[0.13]	[0.70]
Population density	0	0	0.02	0.02	0.02	0.02
	[1.45]	[1.92]*	[1.22]	[1.22]	[1.08]	[1.22]
Foreign ownership	**-5.34**	**-4.6**	**-13.34**	**-12.99**	**-15.14**	**-13.34**
	[3.10]* **	**[2.92]*** **	**[2.38]** **	**[2.50]** **	**[2.52]** **	**[2.38]** **
Inflation		0.67			-1.95	
		[1.16]			[1.73]*	
Lack of corruption			2.88			2.88
			[1.13]			[1.13]
Observations	39	39	39	39	39	39
R-squared	0.47	0.49	0.44	0.42	0.46	0.44
	Loan accounts per capita	Loan accounts per capita	Loan accounts per capita	Deposit accounts per capita	Deposit accounts per capita	Deposit accounts per capita
GDP per capita	30.42	18.33	28.08	337.85	252.12	359.53
	[1.91]*	[1.43]	[2.00]*	[4.06]***	[2.96]***	[3.01]***
Population density	0.02	0	0.03	-0.24	0	-0.24
	[0.59]	[0.06]	[0.90]	[1.38]	[0.02]	[1.35]
Foreign ownership	**-91.42**	**-143.35**	**-77.83**	**-926.77**	**-601**	**-892.7**
	[1.42]	**[1.68]**	**[1.38]**	**[3.12]*** **	**[2.52]** **	**[3.23]*** **
Inflation			7.56		193.54	
			[0.52]		[2.35]**	
Corruption		57.67				-106.8
		[1.44]				[0.41]
Observations	18	18	18	24	24	24
R-squared	0.32	0.41	0.33	0.58	0.68	0.58

Robust t statistics in brackets.

* significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 10. Financial Depth, Cost Efficiency, and Foreign Bank Presence: OLS Regressions Including All Countries

This table reports the results of cross-sectional OLS regressions for all the countries for which data are available. The dependent variables are the ratio of bank credit to the private sector to GDP and the ratio of bank overhead costs to total bank assets. GDP per capita is GDP in U.S. dollars divided by population. Foreign ownership is the ratio of bank assets in banks controlled by foreigners to total bank assets in the country. Transition is a dummy variable for formerly centrally planned economies. Inflation is the log difference in the consumer price index. Lack of corruption is an index measuring the freedom from corruption. Creditor information measures the cost to banks of obtaining information about borrowers. Enforcement speed is the inverse of the number of days it takes to enforce a basic business contract. State banks is the share of bank assets in state-owned banks.

	Private Credit			**Overhead Costs**		
	Low-Income and Lower-Middle-Income	All Countries	High-Income and Upper-Middle-Income	Low-Income and Lower-Middle-Income	All Countries	High-Income and UpperMiddle-Income
GDP per capita	5.65	5.84	22.33	0.003	0.003	-0.003
	[3.40]***	[2.32]**	[1.49]	[1.17]	[0.79]	[0.58]
Foreign ownership	**-18.88**	**-3.98**	**24.46**	**0.007**	**0.017**	**-0.003**
	[3.09]* **	**[0.32]**	**[0.76]**	**[0.77]**	**[1.46]**	**[0.29]**
Transition	-5.2	-4.8	1.65	-0.007	-0.012	0
	[1.34]	[1.04]	[0.14]	[1.32]	[1.41]	[0]
Inflation	-5.76	-5.56	-3.94	0.012***	0.015***	0.006
	[4.13]***	[2.30]**	[0.57]	[5.20]	[5.00]	[1.37]
Lack of corruption	8.45	12.23	5.45	-0.006	-0.009	-0.002
	[2.00]*	[2.50]**	[0.60]	[1.59]	[1.31]	[0.30]
Creditor information	1.48	1.96	3.79	-0.003***	-0.005***	0.002
	[2.34]**	[1.58]	[1.14]	[2.78]	[3.29]	[1.25]
Enforcement speed	423.6	724.48	351.28	-0.381*	-0.372	-0.206
	[2.78]***	[1.65]	[0.31]	[1.79]	[1.59]	[0.49]
State banks				-0.015*	-0.023**	0.016
				[1.79]	[2.33]	[0.84]
Observations	59	102	43	101	57	44
R-squared	0.63	0.71	0.55	0.5	0.52	0.44

Figure 1. Impact of Foreign Bank Entry on Welfare and Aggregate Lending

This figure describes how aggregate welfare evolves as a function of the monitoring cost c_H, and summarizes the effect on aggregate lending of a switch away from the pooling equilibrium. In the pooling equilibrium, welfare does not depend on c_H since all agents are pooled together and no monitoring costs are paid. In the other equilibria, the welfare function increases linearly with c_H.

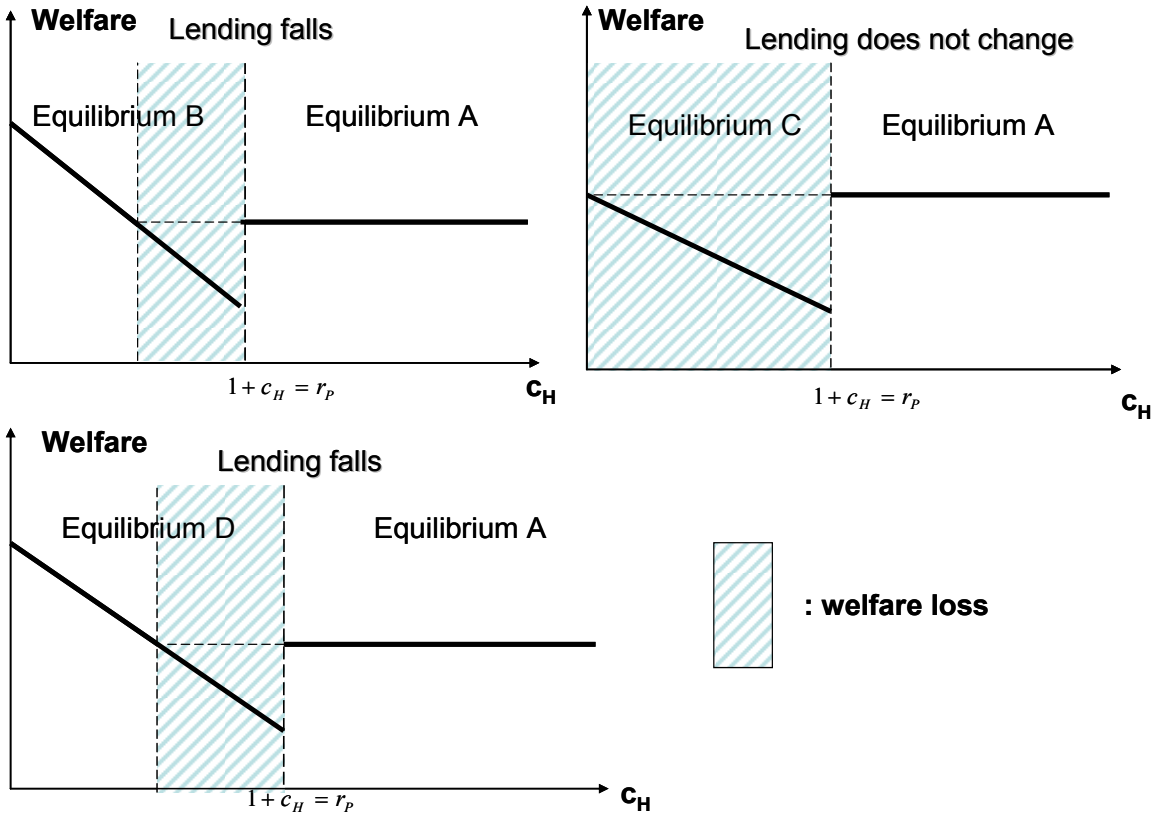
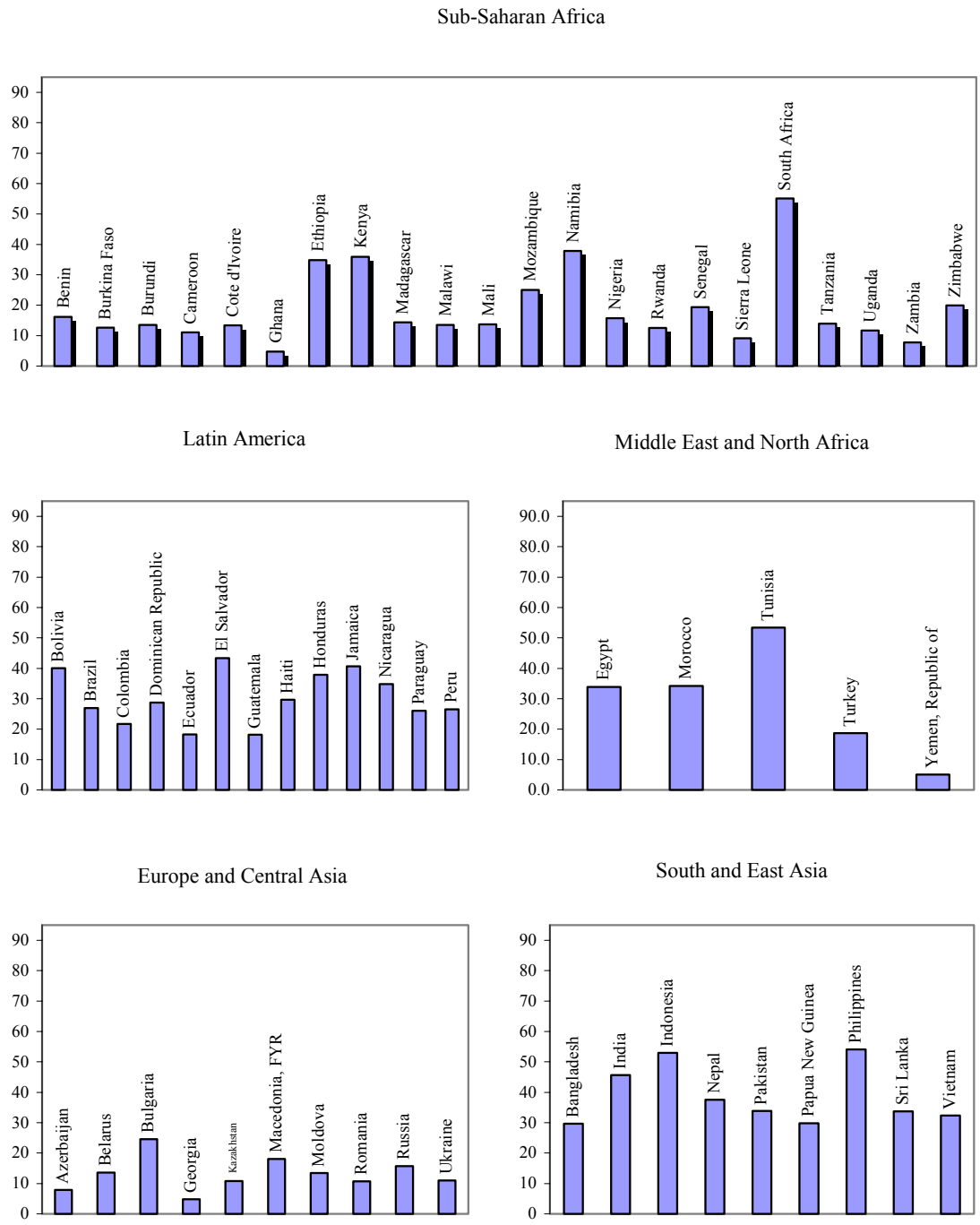
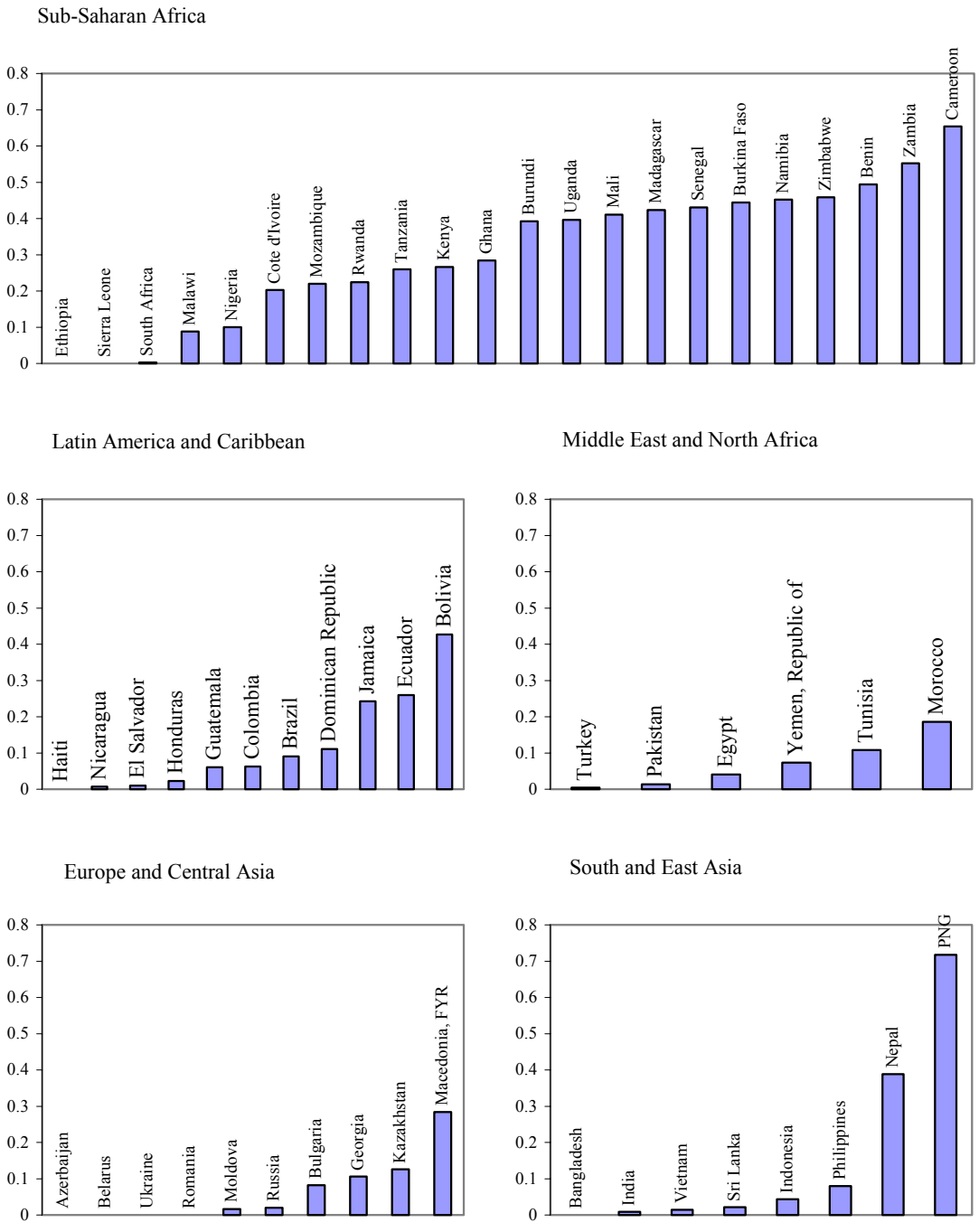


Figure 2. Bank Credit to the Private Sector in Lower-Income Countries by Region (Percent of GDP)



Source: IMF, International Financial Statistics.

Figure 3. Foreign Bank Presence by Region in Selected Lower-Income Countries



Source: Micco, Panizza, and Yanez (2004).

Figure 4. Private Credit to GDP and Foreign Bank Presence

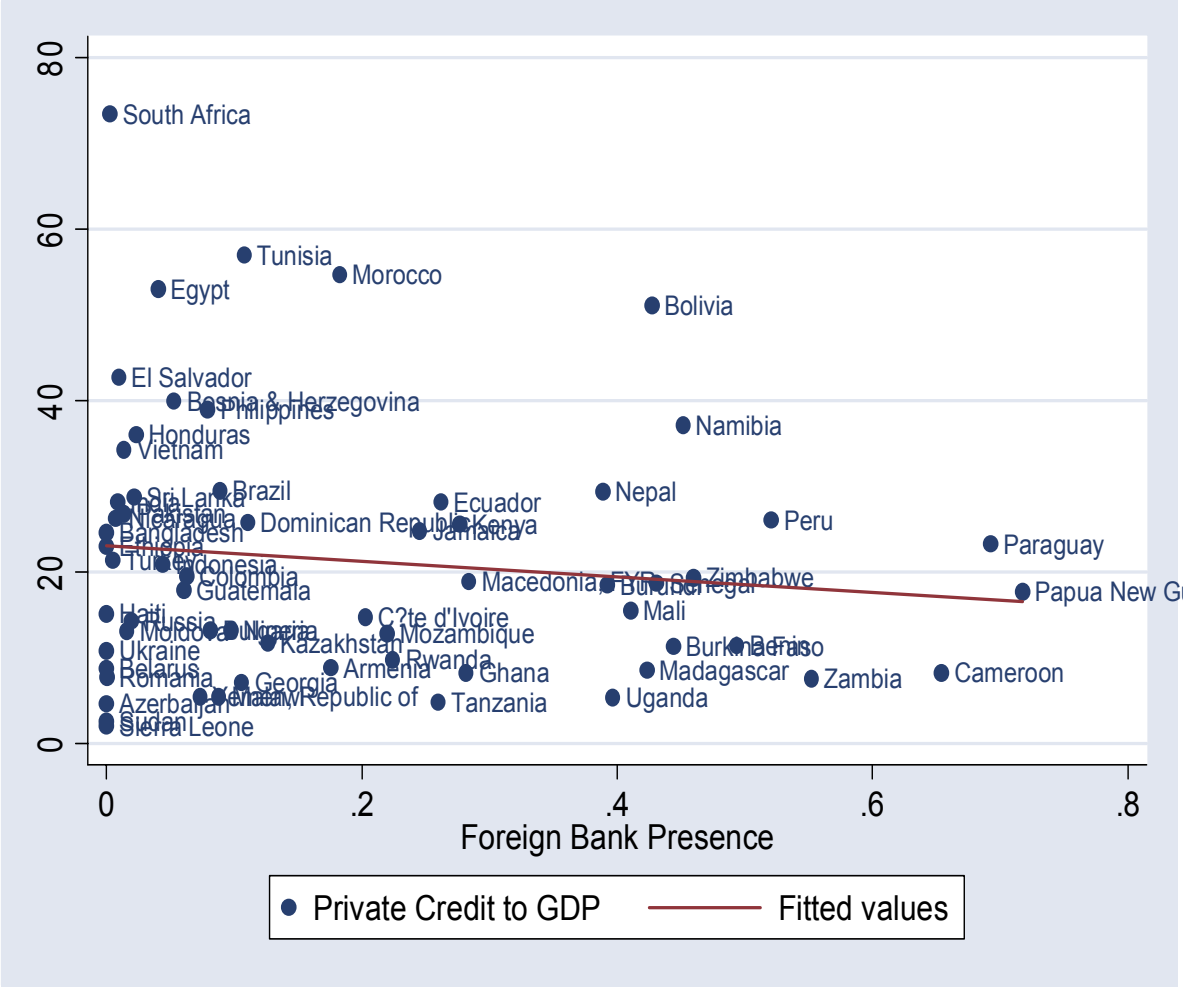
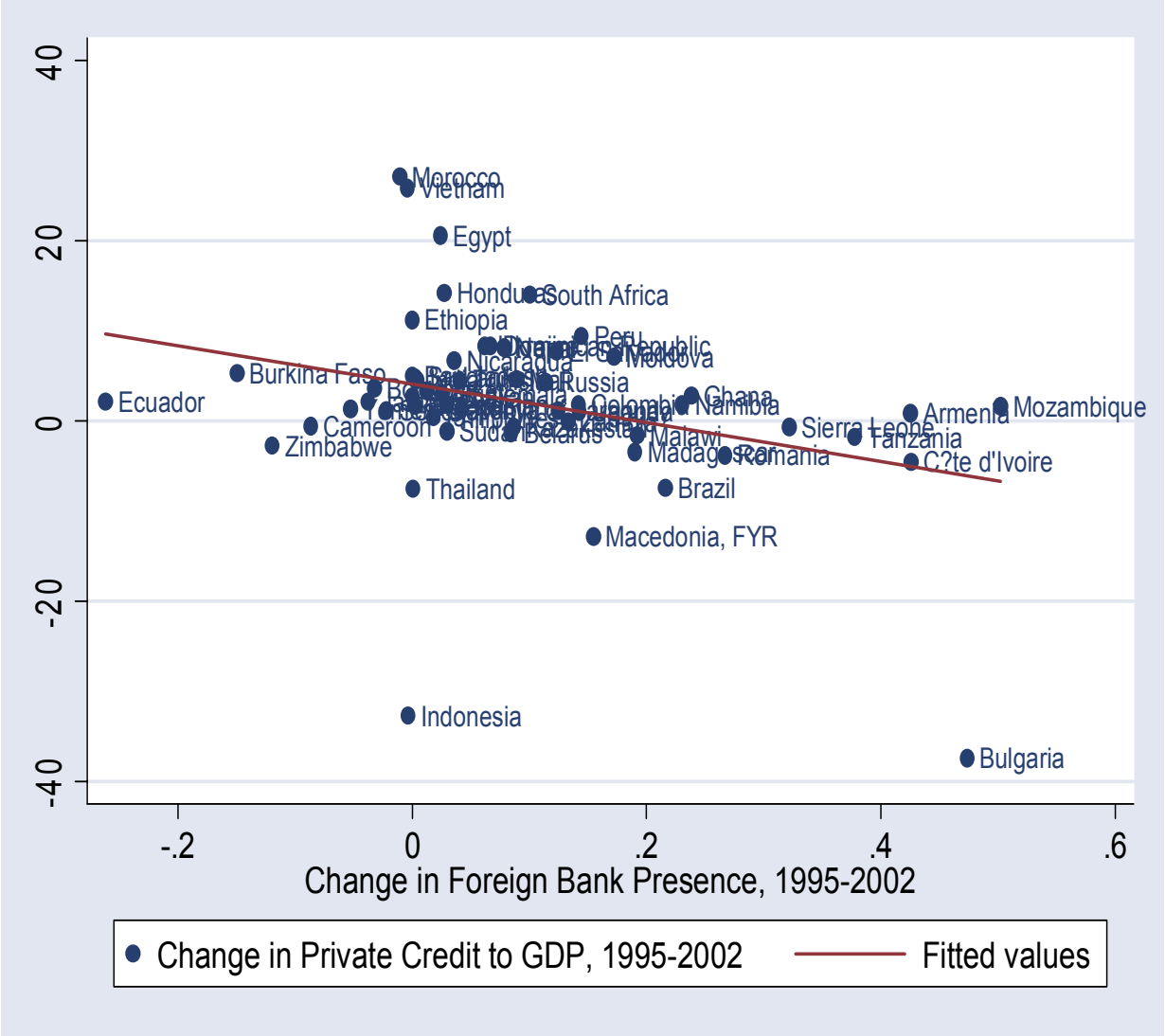


Figure 5. Change in Private Credit to GDP and Change in Foreign Bank Presence (1995-2002)



Appendix I. Welfare Comparison under Alternative Equilibria

The welfare attained in each of the possible equilibria is the following:

1. Pooling equilibrium (A): $S_{(A)} = (\mu_H + \mu_S + p\mu_B)\cdot R - 1$
2. Separating equilibrium (B): $S_{(B)} = (\mu_H + \mu_S)\cdot R - \mu_H \cdot (1 + c_H) - \mu_S \cdot (1 + c_S)$
3. semi-separating equilibrium (C):
$S_{(C)} = (\mu_H + \mu_S + p\mu_B)\cdot R - 1 - c_H \mu_H$
4. Credit-constrained equilibrium (D): $S_{(D)} = \mu_H \cdot (R - (1 + c_H))$

Comparison of welfare in equilibria (A) and (B):
The difference between expected net output in the separating and pooling equilibrium is $S_{(B)} - S_{(A)} = \underbrace{\mu_B \cdot (1 - pR)}_{>0} \underbrace{- \mu_H c_H - \mu_S c_S}_{<0}$. The first term is the welfare gain from not financing type B anymore; the second term is the welfare cost of monitoring soft and hard information. The overall effect is ambiguous. Notice, however, that when $c_H + 1 = r_P$, the welfare in the separating equilibrium is unambiguously lower (see also Figure 1, panel 1):

$$S_{(B)}\big|_{1+c_H = r_P} - S_{(A)} = \Delta S_{(B)} = \underbrace{\frac{p\mu_B}{\mu_H + \mu_S + p\mu_B} - p\mu_B \cdot R}_{<0} \underbrace{- \mu_S (c_S - c_H)}_{<0}$$

Where the first term is negative because $R > r_P = \dfrac{1}{\mu_H + \mu_S + p\mu_B}$.

Comparison of welfare in equilibria (A) and (C): The comparison is straightforward: $S_{(C)} - S_{(A)} = \Delta S_{(C)} = -\mu_H c_H \le 0$: welfare falls because all projects are financed, but monitoring costs are paid in equilibrium.

Comparison of welfare in equilibria (A) and (D): One can show that, for $c_H + 1 = r_P : S_{(D)}\big|_{c_H + 1 = r_P} - S_{(A)} = \Delta S_{(D)} = -(\mu_S + p\mu_B)\cdot (R - r_P) < S_{(A)}$
And for $c_H = 0$, $S_{(D)}\big|_{c_H = 0} = S_{(A)} - (\mu_S + p\mu_B)\cdot (R - \hat{r}_P) > S_{(A)}$ where $\hat{r}_P$ is the interest rate charged by banks pooling type S and type B together, because in this case the interest rate pooling types (B) and (A) is too high to sustain such as pooling equilibrium ($\hat{r}_P > R$).

Comparison of welfare in equilibria (B) and (C):
This comparison shows that welfare in the separating equilibrium is always higher than welfare in the semi-pooling equilibrium whenever the separating equilibrium is feasible. $S_{(B)} - S_{(C)} = -p\mu_B R - \mu_S \cdot (1 + c_S) + (\mu_S + \mu_B)$, hence:

$$S_{(B)} - S_{(C)} > 0 \Leftrightarrow 1 + c_S < \frac{\mu_S + \mu_B (1 - pR)}{\mu_S}$$

As shown in the comparison between $S_{(B)}$ and $S_{(A)}$, this always holds.

Appendix II. Data Definitions, Sources, and Summary Statistics for Lower-Income Countries

Variable	Time period	Data sources
GDP per capita (logs)	Average 1991-98	World Bank, World Development Indicators (WDI)
Inflation (in logs)	Average 1991-98	IMF-International Financial Statistics (IFS)
Lack of corruption		Kaufmann, Kraay, and Mastruzzi (2003)
Foreign Bank Assets	Average 1995-98	Micco and others (2004)
Days to enforce a contract	2004	World Bank; Doing Business database
Credit information index	2004	World Bank; Doing Business database
State-Owned Bank Assets	Average 1995-98	Micco and others (2004)
Interest on public debt (percent of GDP)	Average 1991-98	IMF-IFS
Concentration	1998-99	World Bank, Financial Structure Database; Barth, Caprio, Levine (2001) and FSAPs
English legal origin (dummy)		La Porta and others (2002)
French legal origin (dummy)		La Porta and others (2002)
Settlers' mortality		Acemoglu, Johnson, and Robinson (2001)
Log of agriculture (share of GDP)	1980	World Bank-WDI
Log of exports (share of GDP)	1980	World Bank-WDI
Religious composition of the population	2005	CIA Factbook
Banking crises	1980-2002	Demirgüç-Kunt and Detragiache (2005)
Mortality rate	1990-2002	World Bank-WDI
Population	Average 1995-98	World Bank-WDI

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