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Further Evidence on the Link between Finance and Growth

An International Analysis of Community Banking and Economic Performance

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Abstract

Berger, Hasan, and Klapper contribute to both the finance-growth literature and the community banking literature by testing the effects of the relative health of community banks on economic growth, and investigating potential transmission mechanisms for these effects using data from 1993–2000 on 49 nations. Data from both industrial and developing nations suggest that greater market shares and efficiency ranks of small, private, domestically-owned banks are associated with better economic performance, and that the marginal benefits of higher shares are greater when the banks are more efficient. Only mixed support is found for hypothesized transmission mechanisms through improved financing for small and medium enterprises or greater overall bank credit flows. Data from developing nations are also consistent with favorable economic effects of foreign-owned banks, but unfavorable effects from state-owned banks.

This paper—a product of Finance, Development Research Group—is part of a larger effort in the group to study international banking. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-446, telephone 202-473-1823, fax 202-522-1155, email address ayaptenco@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at aberger@frb.gov, hasan@rpi.edu, or lklapper@worldbank.org. August 2003. (38 pages)

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Further Evidence on the Link between Finance and Growth:
An International Analysis of Community Banking and Economic Performance

An important research development of the last decade has been the affirmation of a strong link between the financial system of a nation and the performance of that nation's economy. Starting with King and Levine (1993), the research has generally found that countries with "better" financial systems tend to have faster economic growth. However, this research has not come to consensus regarding exactly which dimensions of the financial system matter most – the size, efficiency, competitiveness, and regulation of banks; the roles of nonbank financial institutions, such as finance companies, buyout funds, venture capital funds, and insurance companies; the scale and liquidity of public debt and equity markets; the legal rights of shareholders and creditors; and so forth. As well, the exact transmission mechanism from the financial system to real activity is less than perfectly transparent from the research results. It is not completely clear the extent to which a better financial system improves economic growth primarily through higher levels of investment, or primarily through targeting investments to more productive uses.[1]

We try to contribute to the finance-growth literature by focusing on one dimension of the financial system and how its effects may be transmitted into economic growth. Specifically, we test hypotheses about how the health of community banks relative to other banks affects a nation's economy. We hypothesize that relatively large market shares and relatively high efficiency for community banks may promote economic growth. One transmission mechanism may be through improved financing opportunities for small and medium enterprises (SMEs). Community banks may provide more credit to SMEs and may target their credit toward more productive SMEs, given the advantages that community banks may have this type of lending. A stronger SME sector may, in turn, be an engine of economic growth through enhanced entrepreneurship and risk-taking, increased private ownership of businesses, potentially high productivity of these firms, and/or increased competition that reduces the market power of entrenched large firms and stimulates their productivity. A second mode of transmission may be through greater overall flows of bank credit. Healthier community banks may not only have provide greater credit flows from their own portfolios, but might also compete more effectively with the rest of the banking industry and reduce the market power of other banks, encouraging them to reduce prices and expand lending.

We test the hypotheses using data on 49 nations from 1993-2000, representing a rich mixture of economic conditions, market structures, and degrees of development. Our key exogenous variables measuring the relative

[1] In the interest of brevity, we will not review the finance-growth literature here. See Wachtel (2003) for a recent review.

health of community banks are the total market shares of community banks (defined in various ways), and their weighted-average efficiency ranks estimated using cost and profit functions for the banks in each nation in each year. Importantly, these variables measure the health of community banks relative to other banks within the same nation, rather than comparisons of individual banks across nations that operate under very different conditions. As a consequence, these relative health variables are reasonably comparable across nations.

We run three sets of tests separately for 21 developed nations and for the 28 developing nations. First, we run reduced-form regressions of gross domestic product (GDP) growth on the relative health of community banks, controlling for other dimensions of the financial system (public debt and equity markets, regulation, legal rights, bank competition) identified in the finance-growth literature. This allows us to test whether the relative health of community banks affects economic growth.

Second, we try adding measures of the SME employment share and the ratio of overall bank lending to GDP as additional regressors to these GDP growth equations to test the transmission mechanisms. In a recursive model of the transmission mechanisms, community bank health would directly affect one or both of these intermediate variables and then these variables would directly affect economic growth. Thus, to the extent that improved SME financing is an important mechanism through which relatively strong community banks improve economic growth, then we may expect a positive measured effect of the SME employment share on GDP growth, and a substantial diminishment of the measured effects of community bank health on GDP growth when the SME employment share is controlled for in the regressions. Similarly, if greater overall flows of bank credit is a key transmission mechanism, then we may expect a positive measured effect of the overall-bank-lending-to-GDP ratio and substantial diminishment of the measured effects of the relative health of community banks on GDP growth when the overall bank lending variable is included in the regressions.

Third, we regress the SME employment share and bank lending to GDP ratio on the relative health of community banks and the control variables. We test whether community bank health has positive effects on the SME sector and on overall bank lending, as predicted by the two transmission mechanisms.

In addition to trying to contribute to the finance-growth literature, we try to add to the community banking literature in several ways. First, we examine the effects of community banks on overall economic performance. Community banking studies often focus on flows of credit to SMEs, but generally do not examine the

consequences of this flow for the national economy.[2] Even if healthy community banks tend to channel more credit to SMEs, this may not translate into higher economic growth if the credit flows to SMEs are ineffective, or if there are significant adverse consequences of the relatively poor health of other (non-community) banks.[3]

Second, our international orientation and application to many developed and developing nations differs from the traditional focus of community banking studies on a single developed nation. We acknowledge that as in any study involving international comparisons, some rather heroic assumptions are needed, because one cannot control for the many differences in culture, markets, regulatory structures, and data collection standards across nations. We try to mitigate these problems through the means noted above – 1) analyzing developed and developing nations separately, 2) using measures of community banking health relative to other banks within the same nation, and 3) including controls for other important national differences.

Third, we allow for different potential definitions of community banks in our empirical analysis, rather than defining them one way. For developed nations, we use the conventional definition – small, private, domestically-owned institutions – based on the research that suggests that these banks have comparative advantages in lending to SMEs, a core function of community banks. For developing nations, we allow for the possibility that state-owned banks and foreign-owned banks may also function as community banks when small, private, domestically-owned banks have difficulty providing sufficient credit. The market penetrations of state-owned and foreign-owned banks are substantial in many countries around the world, and there are often large differences in the shares of these banks across countries within the same region. For example, assets at state-owned banks are 52% of the total in Brazil versus 12% in Chile, whereas foreign-owned banking assets are only 17% of the total in Brazil versus 32% in Chile (Barth, Caprio, and Levine 2001). As discussed below, state-owned and foreign-owned institutions may be able to overcome some of their disadvantages in SME lending by using government subsidies, by organizing in a decentralized fashion, or by using superior technologies.

Finally, we include the average efficiency ranks of community banks as well as the market shares of these institutions. Community banking research often focuses on the share or quantity effect of these banks without

[2] A few studies do directly examine the economic consequences of community banking. One study finds that deregulation of geographic restrictions on intrastate and interstate banking by U.S. states raised the rates of new business incorporations in these states (Black and Strahan 2002). Another study finds that reductions in capital at small banks in U.S. states during the early 1990s credit crunch led to significant reductions in the employment, payroll, and number of small businesses in these states (Hancock and Wilcox 1998).

[3] One study does find positive associations between the SME employment ratio and both economic growth and development (Beck, Demirgüc-Kunt, and Levine 2003a).

considering their efficiency or quality. A relatively high share for community banks may not have favorable economic effects if these banks are poorly managed. It seems more likely that community banks will be effective if these institutions are also relatively efficient. We also include the interaction between market shares and efficiency ranks, with the expectation of a positive interaction effect. That is, we expect the marginal benefit of an increase in market share for community banks to be greater, the more efficient are these banks.

By way of preview, the data from both developed and developing nations are consistent with the hypotheses that greater market shares and higher weighted-average efficiency ranks of small, private, domestically-owned banks are associated with faster GDP growth. The coefficients on the interaction terms between market shares and efficiency ranks are also positive, consistent with the hypothesis that the marginal benefits of higher shares for community banks are greater when these banks are more efficient. The data provide only mixed support for the two hypothesized transmission mechanisms from the relative health of community banks to economic growth through improved financing opportunities for SMEs or through greater overall flows of bank credit. For developing nations, the data are also consistent with favorable economic effects from larger market shares for foreign-owned banks, but the converse holds for larger shares for state-owned banks.

Sections 1 and 2 briefly review the extant literatures on community banking in developed and developing nations, respectively. Section 3 deals with data and efficiency estimation issues. Section 4 shows our empirical models and results, and Section 5 concludes.

1. Brief review of prior findings on community banking in developed nations

We briefly review the extant research on community banking in developed nations, focusing on which categories of banks have comparative advantages in the core function of SME lending. We discuss available information relevant to the advantages and disadvantages of small versus large banks, state-owned banks, and foreign-owned banks. It will become clear why we choose the conventional definition of small, private, domestically-owned institutions as community banks for our analysis of developed nations.

1.1. Small versus large banks in developed nations

There is a significant amount of research on the issue of the advantages related to bank size in engaging in relationship lending to informationally opaque SMEs in developed nations. Under relationship lending, banks accumulate proprietary information through contact over time with the firm, its owner, its suppliers, its customers, and its local community on a variety of dimensions. Some of this relationship-based information is "soft," i.e., not easily quantified or verified, such as information about character and reliability of the firm's owner. Relationship

lending is distinguished from transactions lending, under which due diligence and contract terms are generally based on "hard" information that is quantifiable and verifiable at the time of origination, such as certified audited financial statements, payments histories, collateral that is easy to value and sell, or credit scores.

Large banks are hypothesized to have difficulty in extending relationship loans to informationally opaque SMEs. Large banks may suffer Williamson-type organizational diseconomies of providing relationship lending services along with the transactions lending services and other services to their large corporate customers because of the different technologies employed (Williamson 1967, 1988). It may also be difficult for large banks to transmit the soft information associated with relationship lending through the communication channels of large banking organizations (Stein 2002). As well, the fact that the loan officer is the repository for this information may create agency problems within the banking organization that require a closely-held structure with few managerial layers that large organizations cannot easily accommodate (Berger and Udell 2002). In addition, large banks are on average headquartered at longer distances from potential SME relationship borrowers, making it difficult to process locally-based soft information (Hauswald and Marquez 2002).

The empirical literature using data from developed nations generally supports the hypothesis that large banks are disadvantaged in SME lending. Studies often find that large banks allocate a much lower proportion of their assets to SME loans than do small banks (e.g., Berger, Kashyap, and Scalise 1995) and that the ratio of SME loans to assets declines after large banks are involved in M&As (e.g., Berger, Saunders, Scalise, and Udell 1998, Peek and Rosengren 1998, Strahan and Weston 1998). Some studies also examine the type of SME loans extended by large banks and find that they tend to a) lend to larger, older, more financially secure firms (Haynes, Ou, and Berney 1999), b) charge lower rates, earn lower yields, and require collateral less often on their SME loans (e.g., Hannan 1991, Berger and Udell 1996, Carter, McNulty, and Verbrugge 2004), c) have shorter and less exclusive relationships (Berger, Miller, Petersen, Rajan, and Stein 2002), d) base their lending decisions more on financial ratios rather than prior relationships (Cole, Goldberg, and White 1999, Berger, Miller, Petersen, Rajan, and Stein 2002), and e) lend at greater distances and have less personal contact with borrowers (Berger, Miller, Petersen, Rajan, and Stein 2002), consistent with comparative disadvantages of large banks in extending relationship credit.[4]

[4] Importantly, a significant disadvantage for large banks does not necessarily imply a significant lack of supply of relationship-based credit in their markets because there may be "external effects" in which other existing banks react and increase their own supplies (e.g., Berger, Saunders, Scalise, and Udell 1998, Berger, Goldberg, and White 2001, Avery and Samolyk 2004) or new banks form to help offset the lack of supply (Berger, Bonime, Goldberg, White, forthcoming).

1.2. State-owned banks in developed nations

State-owned banks that lend to SMEs and potentially serve as community banks is less of an issue in developed nations than in developing nations, both because the market presence of state-owned banks is usually much less in developed nations and because these nations typically have well-developed private banking industries that lessen any need for government involvement. Nonetheless, most developed nations do have state-owned banks. A study of 92 developed and developing nations as of 1995 finds only 7 nations with no state ownership of banks – Canada, Cyprus, Hong Kong, New Zealand, South Africa, U.K., and the U.S. (La Porta, Lopez-de-Silanes, and Shleifer 2002).[5] Because of their lesser importance in developed nations, we exclude state-owned banks from consideration from the definition of community banks in these countries.

1.3. Foreign-owned banks in developed nations

Foreign-owned banks may be at significant disadvantages in providing relationship lending services to SMEs in developed nations. Foreign-owned banks are usually large and headquartered far away from local SMEs, and so may suffer size- and distance-related disadvantages similar to those of large domestically-owned banks. In addition, differences in economic conditions, language, culture, and regulatory structure from the bank's home market may compound problems in dealing with soft relationship information.

There is very little direct evidence of the SME lending propensity of foreign-owned banks in developed nations, but several types of indirect evidence reinforce the argument that foreign-owned banks are unlikely to be oriented toward providing relationship-lending services to SMEs in these nations. In some cases, foreign-owned banking organizations engage in the "follow-your-customer" strategy of setting up offices in nations where their large corporate home-nation customers have foreign affiliates, and so are likely to have a wholesale orientation (e.g., Goldberg and Saunders 1981, Grosse and Goldberg 1991). In addition, foreign-owned banking organizations in the U.S. tend to have a wholesale orientation (e.g., DeYoung and Nolle 1996), and to buy domestic banks that already have performance problems and so may find it difficult to extend credit (e.g., Peek, Rosengren, and Kasirye 1999). Most studies of the efficiency of foreign-owned banks in developed nations find these institutions to be less efficient on average than domestically-owned banks, with the possible exception of

[5] Governments of both developed and developing nations may also promote SME financing in other ways. Some governments subsidize SME lending through support for private-sector banks, such as the Sparkassen in Germany. Others use government guarantees for SME loans, such as the Small Business Administration guarantees in the U.S. Some governments also promote access to financing is by organizing public credit information bureaus or by encouraging private-sector information exchanges. These exchanges may collect, summarize, and share data about loan applicants that might reduce lender costs or increase transparency in ways that increase SME credit (see Jappelli and Pagano 2002).

U.S.-owned banks operating abroad (e.g., DeYoung and Nolle 1996, Berger, DeYoung, Genay, and Udell 2000). Based on the evidence given here, we exclude foreign-owned banks from consideration from the definition of community banks in developed nations.

2. Brief review of prior findings on community banking in developing nations

As discussed in Section 1, small, private domestically-owned banks in developed nations may have advantages in lending to informationally opaque SMEs. In developing countries, other types of financial institutions also often make substantial portions of the SME loans, including state-owned banks, foreign-owned banks, and large microlenders. When conventionally-defined community banks have difficulty providing sufficient credit, these alternative types of community banks may be able to overcome some of their disadvantages by using government subsidies, by organizing themselves in a decentralized fashion, or by using better technologies to collect and analyze hard credit information than other banks in these nations.

2.1. State-owned banks in developing nations

State-owned banks include both direct and indirect state ownership (via other state-owned institutions, such as insurance companies), although the government often names the chairman and other board members. These banks may have been established by socialist governments, such as the transition nations in Eastern Europe, or created or nationalized to redirect credit to "underserved" sectors and populations, as India. In other cases, these are former private banks that were nationalized during a distress period, as occurred in East Asia.[6]

State-owned institutions may be directly subsidized by taxpayers or indirectly subsidized through a higher likelihood of government bailout in the event of default than similarly-sized private institutions. These public institutions generally have a stated policy agenda to develop a specific industry, sector, or region, and they often make loans at subsidized (below-market) rates. These goals may include increasing competition and diversification within an industry, assistance to new entrepreneurs, expansion of exports, etc. As discussed further below, efficiency ranks for state-owned banks may not be as relevant for private institutions, since these banks may not try to maximize efficiency.

Some research shows that state-owned banks in very underdeveloped financial systems direct credit

[6] A class of state-owned institutions is development banks, which may operate as fully state-owned government agencies or corporations and may or may not be subject to prudential bank regulation versus independent oversight as a government agency. These banks generally receive most of their funds from the government, as well as bilateral and multinational agencies (such as the World Bank) and may or may not take deposits. We do not include development banks in our analysis because of data limitations.

towards small- and micro-enterprises that would not have received credit otherwise, but that the nonperforming loan rate at many of these institutions is very high (Hanson 2002). Most of the research suggests that large concentrations of state bank ownership have some unfavorable economic consequences, such as reduced overall access to financing, increased likelihood of financial crises, or diminished financial system development (e.g., Barth, Caprio, and Levine 1999, Clarke and Cull 2002, La Porta, Lopez-de-Silanes, and Shleifer 2002). These unfavorable consequences may occur in part because of weak governance, lack of aggressive collection procedures that encourages a poor credit culture, or because some of the resources may be channeled for political purposes (e.g., Sapienza forthcoming). See Appendix 1 for examples of state-owned banks in developing nations.

2.2. Foreign-owned banks in developing nations

Foreign bank participation has increased in emerging markets around the world, in part because of the removal of barriers to direct foreign ownership of financial firms, bank restructurings, financial crises, and state-owned bank privatizations. These banks may be able to overcome any disadvantages to SME lending due to size, distance, and differing home market conditions described above because they often step into markets where the supply of credit to SME from domestic banks may be lacking for various reasons. Whereas the foreign-owned banks may be disadvantaged in relationship lending to informationally opaque SMEs because of difficulties in using soft information, these banks may have advantages in transactions lending to some SMEs because of better access to information technologies for collecting and assessing hard information. For example, Citibank's "Citibusiness" initiative provides SME financing in 18 countries using industry-level data to make credit decisions. Credit is targeted to SMEs in the industrial segments of the nation identified as having growth potential, in some cases without historical credit information on the specific firms.[7]

One study of foreign bank participation in over 80 countries finds that foreign banks have higher profitability in emerging markets, whereas the opposite is true in developed countries (Claessens, Demirgüc-Kunt, and Huizinga 2001). Thus, relative inefficiency of foreign-owned banks in developed nations reported above may be reversed in developing nations in which the competition from domestically-owned banks may not be as strong. Most other studies of lending by foreign-owned banks are also consistent with these banks performing relatively well. One study finds evidence that foreign banks in Argentina and Mexico may provide credit smoothing and

[7] Another example is GE Capital's Budapest Bank, a former state-owned bank that was privatized. GE Capital offers new technology and U.S.-based training for Budapest Bank SME loan officers, consistent with exploitation of advantages in transactions lending.

financial stability during financial crises (Goldberg, Dages, and Kinney 2000). Another study using data for Argentina, Chile, Colombia, and Peru finds that large foreign banks in Chile and Columbia lend slightly more (as share of total lending) to SMEs than large domestic banks, although their findings are not significant for Argentina and Peru (Clarke, Cull, Martinez Peria, and Sanchez 2002). Furthermore, a global survey of firms finds that firms of all sizes are less likely to identify high interest rates and access to long-term loans as obstacles to growth in countries with higher foreign-bank participation (Clarke, Cull, and Martinez Peria 2002). However, foreign-owned banks may concentrate their lending in large loans and to SMEs with favorable hard information available. One study finds that large, foreign-owned banks in Argentina appear to have problems supplying credit to informationally opaque SMEs (Berger, Klapper, and Udell 2001).

2.3. Large microlenders in developing nations

Large microlenders – both private and state-owned – are additional potential providers of community banking services. Microloans are generally defined as very small, unsecured, short-term loans to low-income clients. These clients are often self-employed entrepreneurs in the informal, unregulated sector of the economy, such as individuals that sell without business licenses and may not keep accounting records or pay taxes. Commercial banks may be unwilling to lend to such clients using standard credit practices, but microlenders may be able to provide credit using alternative practices (Armendariz de Aghion and Morduch 2000, Robinson 2001).[8]

We are not able to separately identify the large microlenders in our empirical analysis. In most countries, non-governmental organizations (NGOs) and commercial microlenders are not regulated by the bank regulators (although some may take deposits) and do not have public filing requirements, and so their information is

[8] In recent years, there has been a significant increase in large, profitable lending by microfinance lenders that have operated without government subsidies. The trend from non-profit to for-profit, "commercial" microlending reduces this sector's dependence on government subsidies and outlays, while improving services to the poor. The commercialization of microlenders in Latin America has been shown to not reduce their goal of providing credit to the poorer clients (Peck 2000). It is argued that the majority of successful microfinance institutions are private institutions that lend on market-based principles (CGAP Focus Note 1997). This report also suggests that state-owned microfinance institutions are often subject to political influences and suffer from poor lending practices, such as weak borrower selection criteria and subsidized lending rates. An example is Bank Rakyat Indonesia (BRI), a profitable state-owned bank and microfinance lender. It operates with US$12 billion in assets, a nationwide network of 325 branch offices and 3,595 unit "desas" that provide microfinancial products. Until the 1980s, all lending decisions were made centrally, local units had no financial accountability, and bank arrears rose to over 30%. The key to the bank's turnaround success was the that desa staff were given complete operational autonomy for their unit, without any government mandates on reaching specific "lending targets" for specific population groups. Each unit desa is treated independently, with its own balance sheet and income statements. In addition, the bank requires from each unit clear and transparent financial reporting and imposes local fiscal accountability. Furthermore, unit managers are held accountable for their performance and receive financial incentives. This example highlights the potential benefits from a large organization using decentralization to offset some of its disadvantages in SME lending (Robinson 2001).

generally unavailable. In other cases, microlenders may appear in our data set as subsidiaries or departments of state-owned banks or foreign-owned banks, although we cannot separately identify their microlending activities.[9]

3. Data and efficiency issues

We briefly discuss our data sources, variable definitions, and give some summary statistics. We then briefly outline how the efficiency ranks are computed.

3.1. Data sources, variable definitions, and summary statistics

We employ both bank-specific and national-level variables in our analysis. The bank-specific data are taken from the BankScope database, with information on over 7,500 banks each year. The national-level data are taken from the Office of the Comptroller of the Currency, World Bank and International Monetary Fund (IMF) data on World Development Indicators, IMF International Financial Statistics, Wall Street Journal and Heritage Foundation Governance data, and several other public sources.

Table 1 shows definitions for most of the variables employed in the analysis, and also shows summary statistics for these variables for the developed nations (Panel A) and developing nations (Panel B). The developed nations correspond to the IMF definition for "high-income" countries, and the developing nations correspond to IMF "middle-income" and "low-income" countries. Table 2 shows the names of each of the developed and developing nations and the numbers of banks and potential community banks in each nation in the sample, averaged over the sample period. As discussed, for developed nations, we use the conventional definition of community banks as small, private, domestically-owned institutions (SMALL banks), whereas for developing nations, we include state-owned banks (STATE banks) and foreign-owned banks (FOREIGN banks) as potential community banks as well. STATE and FOREIGN banks are defined as having 50% or more state and foreign ownership, respectively, although government and foreign owners may exert effective control with less than 50% ownership in some cases. One other difference is that for developed nations, SMALL banks include institutions with less than US$1 billion in assets, whereas for developing nations, SMALL banks are truncated below $100 million in assets due to the smaller bank sizes in developing nations.[10] This should not create any difficulties of

[9] For example, Shorebank Advisory Services, a subsidiary of the U.S.-owned Shorebank Corporation has transferred its expertise in providing commercial and housing loans in underserved markets in the U.S. to international development initiatives around the world. It has ownership relationships with institutions in Asia, Eastern Europe, and Latin America that aim to increase financing to SMEs. For instance, Shorebank began operating in Azerbaijan in 1998 to finance new businesses. By 2002, their credit portfolio in Azerbaijan reached US$1 million and loan sizes increased from US$4,000 in 1998 to US$100,000 (Turnag 2003).

[10] The US$1 billion and US$100 million cutoffs for SMALL banks are based on real 1992 dollars using the CPI.

comparability, since the data from developed and developing nations are never mixed.

An important caveat is that we do not have data for all banks in every nation. The BankScope database covers banks in each nation that control at least 85% of the banking assets, which may delete a significant proportion of SMALL banks. As well, STATE banks in some nations may be significantly underrepresented in our data set because some STATE banks do not file the standard accounting forms used in the BankScope data set. In addition, for the earlier years of our sample, FOREIGN bank coverage in BankScope may have been less incomplete. Thus, the STATE and FOREIGN market shares may be smaller than those in studies that use alternative methods of measuring these shares, but we use the shares drawn from BankScope in order to have a time series-cross section of STATE and FOREIGN shares that is consistent with our STATE and FOREIGN bank efficiency measures and the remainder of our data set.[11] While the omission of some potential community banks reduces the informativeness of our analysis, this data limitation does not eliminate the value of the findings. It seems reasonable to assume that the market shares and weighted-average efficiency ranks for the reporting community banks are indicative of the health of community banks as a whole relative to other banks.

The three endogenous variables shown in Table 1 are GDP GROWTH, the annual growth rate of GDP, SME EMP, the employment share held by SMEs, and BKLENDGDP, the ratio of total bank lending to GDP. The summary statistics for these variables are for the years 1994-2000. Data on GDP and total bank lending are taken from the IMF International Financial Statistics (2002). Data on SME EMP data are taken from Ayyagari, Beck, and Demirgüc-Kunt (2002) and Klapper and Sulla (2002). This data is collected from official government sources and includes all businesses with less than 250 employees – including services, manufacturing, trade, agriculture, etc. The data for GDP GROWTH and BKLENDGDP are available for almost every year for every nation, but we have significantly fewer observations for SME EMP.

The key exogenous variables for both developed and developing nations include SMALL SHARE, the total market shares held by SMALL banks, and SMALL COST EFF RANK and SMALL PROFIT EFF RANK, the weighted-averages of cost and profit efficiency ranks for SMALL banks. The summary statistics for the exogenous variables shown are for 1993-1999 because these variables are lagged one year in the empirical analysis to help mitigate potential endogeneity problems. The variables are computed from the BankScope database using information on all the available banks in each nation in each year, and then converted into national

[11] For example, in some cases our STATE shares are significantly less than those reported in Barth, Caprio, and Levine (2001), which is based on a survey of bank regulators and supervisors.

totals or weighted-averages for use in our empirical analysis. Importantly, these are measures of the relative health of SMALL banks – higher market shares for SMALL banks implies lower market shares for other banks, and higher weighted-average efficiency ranks for SMALL banks means lower efficiency ranks for other banks. For the developing nations, we also include STATE SHARE, STATE COST EFF RANK, STATE PROFIT EFF RANK to measure the relative health of state-owned banks, and FOREIGN SHARE, FOREIGN COST EFF RANK, FOREIGN PROFIT EFF RANK to measure the relative health of foreign-owned institutions.

The control variables for the market, regulatory, and legal environments in which the banks compete, which are shown in other research to be important. We include MKTCAPGDP, the market value of all publicly held debt and equity securities relative to GDP, as an indicator of the development of public capital markets, which is compiled primarily from the IMF International Financial Statistics.[12] We include ECON FREEDOM, the Heritage Foundation/World Street Journal Index of Economic Freedom, an index that reflects the extent of government intervention in the economy and monetary policy, banking and financial regulations, relative openness of trade, and related factors. This variable ranges from 1 (most freedom) to 5 (least freedom). We include COMMON LAW, a dummy for whether the justice system is English Common Law, taken from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997). Common law is shown to offer greater creditor rights and be associated with more developed financial systems and improved ownership structures (e.g., La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1997, 1998). We also specify BANK CR3, the three-bank concentration ratio computed from BankScope, to account for differences in market power and access to credit across nations.[13] The structure-conduct-performance hypothesis predicts higher prices and restriction of credit from greater concentration. However, high concentration may encourage banks to invest in lending relationships because the borrowing firms are less likely to find alternative future sources of credit (e.g., Petersen and Rajan 1995). The empirical research

[12] In some cases, missing information was filled in using the Annual Reports of stock exchanges in the individual nations.
[13] The measurement of BANK CR3 may be significantly affected by some of omissions from the BankScope database discussed below.

yields mixed findings.[14] We also include dummies for region and year of the observation (not shown in Table 1)

3.2. Computation of efficiency ranks

Cost and profit efficiency ranks measure how well a bank is predicted to perform relative to other banks in a particular sample or a peer group for producing the same output bundle under the same exogenous conditions. In our case, we estimate efficiency ranks relative to banks in the same nation in the same year.

We specify the commonly-used translog functional form to estimate the cost and profit functions for each nation for each year. For convenience, we show only the cost function:

$$\begin{aligned}\ln(C/w_2z_1) = {} & \delta_0 + \delta_1 \ln(y_1/z_1) + \delta_2 \ln(y_2/z_1) + \delta_3 \ln(y_3/z_1) \\ & + \tfrac{1}{2}\,\delta_{11} \ln(y_1/z_1) \ln(y_1/z_1) + \tfrac{1}{2}\,\delta_{22} \ln(y_2/z_1) \ln(y_2/z_1) + \tfrac{1}{2}\,\delta_{33} \ln(y_3/z_1) \ln(y_3/z_1) \\ & + \tfrac{1}{2}\,\delta_{12} \ln(y_1/z_1) \ln(y_2/z_1) + \tfrac{1}{2}\,\delta_{13} \ln(y_1/z_1) \ln(y_3/z_1) + \tfrac{1}{2}\,\delta_{23} \ln(y_2/z_1) \ln(y_3/z_1) \\ & + \beta_1 \ln(w_1/w_2) + \tfrac{1}{2}\,\beta_{11} \ln(w_1/w_2) \ln(w_1/w_2) \\ & + \theta_1 \ln(y_1/z_1) \ln(w_1/w_2) + \theta_2 \ln(y_2/z_1) \ln(w_1/w_2) + \theta_3 \ln(y_3/z_1) \ln(w_1/w_2) \\ & + \ln u_{it} + \ln v_{it}, \end{aligned} \tag{1}$$

where C represents the bank's total costs. The cost function includes three variable output variables y (total loans, other earning assets, and total deposits), two variable input price variables w (the noninterest expenses to fixed assets, and interest expenses to total deposits), and one fixed input z (financial equity capital). The ln u term is a factor that represents a bank's efficiency and ln$v$ is a random error that incorporates both measurement error and luck. The cost function is estimated using the (ln$u$ + ln$v$) as a composite error term. The normalization by bank equity (z_1) reduces heteroskedasticity, and allows banks of any size to have comparable residual terms from which the efficiency ranks are calculated. The normalization by the last input price (w_2) ensures price homogeneity.

The level of cost efficiency of a bank is determined by comparing its actual costs to the best-practice

[14] For example, many studies find negative effects of bank concentration, such as higher loan rates and less new firm creation and expansion (e.g., Hannan 1991, Black and Strahan 2002, Cetorelli 2002, Cetorelli and Strahan 2002). In contrast, other studies find positive effects of bank concentration, such as higher growth rates in the number of new firms and greater access to financing by consumers, small firms, new manufacturing firms, and mature firms (e.g., Petersen and Rajan 1995, DeYoung, Goldberg, and White 1999, Bonaccorsi di Patti and Dell'Ariccia 2001, Cetorelli 2002). One study of Italian banking finds that concentration has a positive effect on access to financing by SMEs, but a negative effect on large firms (Bonaccorsi di Patti and Gobbi 2001). One study with data on both developed and developing nations finds that firms in nations with greater bank concentration are less able to access bank financing, although the impact of bank concentration decreases with firm size and greater national financial development (Beck, Demirgüc-Kunt, and Levine 2003b). Another study of 41 developed and developing nations finds higher growth in industries in which young firms are especially dependent on external finance in nations with greater bank concentration (Cetorelli and Gambera 2001).

minimum costs to produce the same output under the same conditions using estimates of the efficiency factor ln u, which is disentangled from the estimated cost function residual using some distributional assumptions.[15] For our purposes, we use the efficiency rank, for which we need use only the ordering of the residuals, which are assumed to be in the same order as the ln u. That is, we assume that the bank with the highest cost function residual is the least efficient, the one with the lowest residual is the most efficient, and so forth in between these extremes. We create a rank ordering of the banks in each year within a nation based on the residuals. The ranks are then converted to a uniform scale over [0,1] using the formula $(order_{it} - 1)/(n_t - 1)$, where $order_{it}$ is the place in descending order of the ith bank in the tth year in terms of its residual and n_t is the number of banks in the nation in year t. Thus, the bank i's efficiency rank in year t gives the proportion of the other sample banks in that nation and year with lower efficiency (e.g., a bank in year t with efficiency better than 70% of other banks in the country has a rank of 0.70). The bank with the highest residual has the worst rank of 0 $[(1 - 1)/(n_t - 1)]$, and the bank with the lowest residual has the best rank of 1 $[(n_t - 1)/(n_t - 1)]$.

The use of efficiency ranks is preferred over the efficiency levels because the ranks are more comparable over nations and across time. The ranks for every nation and time period follow the same uniform [0,1] distribution, whereas the distributions of efficiency levels may be very different, depending on conditions in the nation and time period. We wish to abstract from these differences and focus on relative efficiency within a nation and time period. That is, our null and alternative hypotheses are about the health of community banks relative to other banks in the same nation at the same time, and the weighted-average efficiency rank of community banks should mean about the same thing in any nation at any time. For example, a value of 0.50 would mean that community banks are on average equally efficient with other banks in their nation and time period.

Profit efficiency ranks are estimated in a similar fashion. Total profits replace total costs and we add a constant before taking the log to avoid taking a log of negative number. We also rearrange the residuals in ascending order, so that the bank with the highest profit function residual is given the highest rank of 1.[16] The profit efficiency ranks may be considered to be the more accurate indicator of the quality of the management of the institution, at least for private institutions, given that profit efficiency is the more general concept and that the managerial goals are more likely achieved by higher profits than lower costs.

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[15] For a general description and examples of bank efficiency estimation, see Berger and Mester (1997).

[16] The use of output quantities, rather than output prices is necessitated by the lack of accurate data on output prices. Other arguments also favor the use of this alternative profit function (see Berger and Mester 1997).

Some caveats apply to the use of efficiency ranks for STATE banks in developing nations. These banks may have goals other than minimizing costs or maximizing profits (e.g., "directed lending"), which may make their measured efficiency ranks inaccurate indicators of managerial quality. As well, these institutions often have unusual balance sheets. STATE banks in some cases operate with very little equity (their equity is effectively the nation's treasury). Profit efficiency measures for these banks may also be compromised in some cases by understated losses or overstated revenues on problem loans, as STATE banks often rollover or reschedule payments on such loans, rather than classifying them as nonperforming or losses (Hanson 2002).

Similar concerns apply to the measured efficiency ranks of FOREIGN banks in developing nations, as there may be cross-subsidies from the parent banking organization in another nation. As well, FOREIGN banks may be able to operate with very little financial capital, in effect, using the capital of organization as a whole.[17] In some cases, FOREIGN banks may be set up to serve established corporate customers with operations in many nations, so that some of the related costs and revenues may be booked in other nations.

4. Empirical models and results

We first briefly show our empirical models. We then give the empirical results using SMALL banks as our definition of community banks for both developed and developing nations. We also report the findings when we also allow STATE and FOREIGN banks to act as community banks for developing nations. As well, we briefly discuss some of the measured effects of the control variables and report additional robustness checks.

4.1. Empirical models

For our first set of tests of the effects of the relative health of community banks on economic growth for developed nations, we run the reduced-form regressions:

$$\begin{aligned} \text{GDP GROWTH} = {} & \alpha + \beta_1 * \text{SMALL SHARE} + \beta_2 * \text{SMALL EFF RANK} \\ & + \beta_{12} * \text{SMALL SHARE x EFF RANK} \\ & + \gamma_1 * \text{MKTCAPGDP} + \gamma_2 * \text{ECON FREEDOM} \\ & + \gamma_3 * \text{COMMON LAW} + \gamma_4 * \text{BANK CR3} \\ & + \text{Control variables for region and year.} \end{aligned} \quad (2)$$

[17] Our definition of FOREIGN banks includes both subsidiaries and branches of foreign banks, although we do not make a distinction in our empirical analysis. In some nations, subsidiaries and branches are subject to different capital requirements.

The dependent variable is GDP GROWTH. For developed nations, we use the conventional definition of community banks – small, private, domestically-owned institutions with less than US$1 billion – or SMALL banks. The key exogenous variables measuring the relative health of these banks are their total market shares (SMALL SHARE), their weighted-average efficiency ranks (SMALL EFF RANK) measured using either the cost or profit efficiency concept, and the interaction between share and efficiency rank (SMALL SHARE x EFF RANK). We also include the control variables described above (MKTCAPGDP, ECON FREEDOM, COMMON LAW, BANK CR3), and dummies for the region (Asia, Oceania, and Western Europe, with North America excluded as the base case) and for the year of the observation (1994, ... 1999, with year 2000 excluded as the base case). As noted, the exogenous variables (other than the region and time dummies) are lagged one year.

We estimate 6 regressions with various forms of the specification in equation (2) to check the robustness of the findings. Regression 1 includes SMALL SHARE and SMALL EFF RANK using cost efficiency rank, and the regional and time dummies (i.e., excludes the interaction effect of share and efficiency rank and the national-level control variables). Regression 2 is identical to Regression 1 except that it is based on profit efficiency rank, rather than cost efficiency rank. Regressions 3 and 4 add the interaction term SMALL SHARE x EFF RANK to the specifications, and Regressions 5 and 6 also add the national-level control variables, MKTCAPGDP, ECON FREEDOM, COMMON LAW, and BANK CR3.

We acknowledge the possibility of simultaneous-equations bias in equation (2) – that higher GDP growth may affect the health of community banks in ways for which we are unable to control in the regressions. We try to mitigate this potential problem in two ways, although we cannot entirely eliminate it. First, we use measures of the relative health of community banks rather than absolute values, so that any endogeneity is effective only to the extent that higher GDP growth affects community banks more than other banks in the nation. Second, as noted, we also measure our exogenous variables with a one-year lag, which mitigates the potential endogeneity problem because the future cannot cause the past. As discussed below, we also try robustness checks with longer lags.

For our second set of tests for developed nations, we add SME EMP and BKLENDGDP as additional regressors to these GDP GROWTH equations in (2) to test the transmission mechanisms. In a recursive model of the transmission mechanisms, the relative health of community banks would affect one or both of these variables and then these variables would directly affect GDP GROWTH. We test for positive effects of SME EMP and BKLENDGDP on GDP GROWTH to see if these variables directly influence economic growth. We also test for diminishment of the measured effects of community bank health on GDP GROWTH, which is expected to occur

to the extent that the effects of this health on economic growth are transmitted through improved financing opportunities for SMEs or through increased overall flows of bank credit. These regressions are subject to additional potential endogeneity problems to the extent that GDP GROWTH directly increases or decreases the SME employment share or bank lending relative to GDP.

For our third set of tests for developed nations, we regress SME EMP and BKLENDGDP on the measures of the relative health of community banks and the control variables, i.e., using the same specification of the regressors as in equation (2). We test whether relative community bank health has the positive effects that would be predicted by recursive models of the two transmission mechanisms. As above for the GDP GROWTH equation, the SME EMP and BKLENDGDP equations are subject to possible simultaneous-equations bias if higher SME employment or greater overall bank lending affects the relative health of community banks in ways for which we are unable to control. As examples, the bias may occur if a stronger SME sector increases demand for community banking services or if greater overall bank lending increases GDP growth that in turn benefits community banks. We again try to mitigate the potential problem by using relative measures of the health of community banks and by measuring these variables with a one-year lag.

For the developing nations, we first use equation (2) and run the same tests as for the developed nations except for the slightly different definition of small banks (less than US$100 million in assets, rather than less than US$1 billion), and different regional dummies (Asia, Africa, and Transition [formerly Socialist Eastern Europe], with Latin America excluded as the base case).

For the developing nations, we also adjust the model to allow for the possibility that STATE and FOREIGN banks may act as community banks:

$$\begin{aligned}\text{GDP GROWTH} = {} & \alpha + \beta_1 * \text{SMALL SHARE} + \beta_2 * \text{SMALL EFF RANK} \\ & + \beta_{12} * \text{SMALL SHARE x EFF RANK} \\ & + \delta_1 * \text{STATE SHARE} + \delta_2 * \text{STATE EFF RANK} \\ & + \delta_{12} * \text{STATE SHARE x EFF RANK} \\ & + \theta_1 * \text{FOREIGN SHARE} + \theta_2 * \text{FOREIGN EFF RANK} \\ & + \theta_{12} * \text{FOREIGN SHARE x EFF RANK} \\ & + \gamma_1 * \text{MKTCAPGDP} + \gamma_2 * \text{ECON FREEDOM} \\ & + \gamma_3 * \text{COMMON LAW} + \gamma_4 * \text{ BANK CR3}\end{aligned}$$

+ Control variables for region and year. (3)

In equation (3), we add the total market shares, weighted-average efficiency ranks, and interaction terms for both STATE banks and FOREIGN banks and treat all three as potential types of community banks. All of the tests using SME EMP and BKLENDGDP are run analogously.

4.2. Results for developed nations using SMALL banks as community banks

The results for developed nations are shown in Table 3. Panel A reports the results for the 6 specifications of equation (2) for GDP GROWTH for the first set of tests. Panel B, Regressions 7 and 8 show the effects of adding SME EMP and BKLENDGDP as additional regressors to full specifications of the GDP GROWTH equations. Panel B, Regressions 9 to 12 give the findings from specifying SME EMP and BKLENDGDP as the dependent variables for our third set of tests.

In Panel A, the estimated coefficients on SMALL SHARE and SMALL EFF RANK are positive and statistically significant at the 10% level or better in all 6 cases – using both cost and profit efficiency ranks, including or excluding the interaction of share and efficiency rank, and including or excluding the national-level control variables – consistent with the hypothesis that developed nations with relatively healthy community banks have greater GDP growth, all else equal. The estimated coefficients on the interaction term SMALL SHARE x EFF RANK are also positive in all cases in which it appears, and are statistically significant at least the 10% level in the full specifications using both cost and profit efficiency ranks. This is consistent with the hypothesis that the marginal benefit of a higher market share for community banks is greater, the more efficient these banks are.

We evaluate the economic significance of these findings by evaluating the effects of changing the market share of community banks by 10 percentage points, and (separately) changing the weighted-average efficiency rank of community banks by 10 percentage points. We evaluate the effects for a typical nation with a SMALL SHARE of 0.25 and a SMALL SHARE and SMALL EFF RANK of 0.50 using the most complete specifications shown in Regressions 5 and 6.

The marginal effect of an increase in SMALL SHARE is ∂GDP GROWTH/∂SMALL SHARE = $\beta_1 + \beta_{12}$ x SMALL EFF RANK, where β_1 and β_{12} are the coefficients on SMALL SHARE and the interaction term as shown in equation (2). Substituting in the coefficient estimates from Regression 5 in Panel A of Table 3 and a value for SMALL EFF RANK of 0.50 gives 0.034 + 0.026 x 0.50 = 0.047. Using the estimates from Regression 6 gives 0.042 + 0.013 x 0.50 = 0.0485. Thus, an increase in SMALL SHARE of 0.10 is estimated to increase

GDP GROWTH by about 0.005 (i.e., ≈ 0.10 x 0.05) or about ½ of one percentage point, which is economically significant relative to the mean GDP GROWTH of 0.030 or 3.0%.

The marginal effect of an increase in the SMALL EFF RANK is ∂GDP GROWTH/∂SMALL EFF RANK = $\beta_2 + \beta_{12}$ x SMALL SHARE. Using the coefficient estimates from Regressions 5 and 6 in Panel A of Table 3 and a value for SMALL SHARE of 0.25 gives 0.033 + 0.026 x 0.25 = 0.0395 and 0.005 + 0.013 x 0.25 = 0.0083. Thus, an increase in SMALL EFF RANK of 0.10 is estimated to increase GDP GROWTH by about 0.004 (cost) and 0.001 (profit) or about 1 to 4 tenths of one percentage point.

In Panel B of Table 3, we add SME EMP and BKLENDGDP as additional regressors to full specifications of the GDP GROWTH equations using cost and profit efficiency ranks in Regressions 7 and 8, respectively. The estimated coefficients of both SME EMP and BKLENDGDP are positive in all 4 cases, but are statistically significant at the 10% level in just 2 cases. In terms of economic significance, an increase in these variables of 0.10 is estimated to increase GDP GROWTH by about 2 tenths of one percentage point (SME EMP) and less than one tenth (BKLENDGDP) of one percentage point. The measured effects of community bank health on GDP GROWTH do not appear to be substantially diminished by the inclusion of the SME and bank lending variables, which casts some doubt on the strength of the hypothesized transmission mechanisms. As noted, these regressions may be subject to additional endogeneity problems to the extent that GDP GROWTH directly affects SME EMP or BKLENDGDP.

In Regressions 9-12 of Panel B in Table 3, the estimated coefficients on SMALL SHARE, SMALL EFF RANK, and the interaction term SMALL SHARE x EFF RANK are positive and statistically significant at the 10% level or better in all cases for both the SME EMP and BKLENDGDP equations. This is consistent with the two hypothesized transmission mechanisms, although we are mindful of the potential endogeneity problem in which SME EMP or BKLENDGDP may affect the relative health of community banks. In terms of economic significance, an increase in SMALL SHARE of 0.10 is estimated to increase SME EMP by 0.03545 using cost efficiency ranks in Regression 9 and by 0.0785 using profit efficiency ranks in Regression 10, or about 3 to 8 percentage points, which are economically significant relative to the mean SME EMP of 0.600 or 60 percent. An increase in SMALL EFF RANK of 0.10 is estimated to increase SME EMP by 0.01408 (cost) and by 0.05540 (profit) or about 1 to 6 percentage points. In terms of effects on overall bank lending, an increase in SMALL SHARE of 0.10 is estimated to increase BKLENDGDP by 0.0168 (cost) and by 0.02175 (profit) or about 2 percentage points, and an increase in SMALL EFF RANK of 0.10 yields estimated effects on BKLENDGDP of

0.02045 (cost) and 0.01353 (profit) or about 1 to 2 percentage points.

4.3. Results for developing nations using SMALL banks as community banks

Table 4 shows our first set of results for developing nations, which specify only SMALL banks as community banks. In Panel A, the estimated coefficients on SMALL SHARE, SMALL EFF RANK, and the interaction term SMALL SHARE x EFF RANK are positive and statistically significant at at least the 10% level, and are robust across the specifications. Consistent with developed-nations results, the developing-nations data support the hypotheses that relatively healthy SMALL banks are associated with faster economic growth, and that the marginal benefit of a higher market share for these banks is higher when these banks are more efficient.[18]

With respect to economic significance, an increase in SMALL SHARE of 0.10 is predicted to increase GDP GROWTH by 0.00947 (cost) and by 0.01945 (profit) or about 1 to 2 percentage points, which are large in magnitude. An increase in SMALL EFF RANK of 0.10 is estimated to increase GDP GROWTH by 0.0068 (cost) and 0.00538 (profit) or about ½ of one percentage point.

In Regressions 7 and 8 in Panel B of Table 4, the estimated coefficients of SME EMP are positive and statistically significant at the 5% level. An increase in SME EMP of 0.10 is estimated to increase GDP GROWTH by about ½ of one percentage point. The estimated BKLENDGDP coefficients are positive but not statistically significant (and so we do not calculate their economic significance). Again, the measured effects of community bank health on GDP GROWTH do not appear to be substantially diminished by the inclusion of SME EMP and BKLENDGDP.

In Regressions 9-12, the estimated coefficients on SMALL SHARE and SMALL EFF RANK are positive and statistically significant in all cases for both the SME EMP and BKLENDGDP equations, and the interaction term SMALL SHARE x EFF RANK is positive in all cases, and but not always statistically significant. In terms of effects on SME employment, an increase in SMALL SHARE of 0.10 is estimated to increase SME EMP by 0.0091 (cost) and by 0.0266 (profit), or about 1 to 3 percentage points. An increase in SMALL EFF RANK of 0.10 is estimated to increase SME EMP by 0.021 (cost) and by 0.0205 (profit) or about 2 percentage points. In terms of effects on overall bank lending, an increase in SMALL SHARE of 0.10 is estimated to increase BKLENDGDP by 0.0098 (cost) and by 0.03135 (profit) or about 1 to 3 percentage points, and an increase in

[18] A related finance-growth study finds that bank efficiency is positively related to economic growth in four developing Asian nations (Ferrier 2001), but it is focused on the efficiency of all banks, rather than the relative efficiencies of community banks versus other banks.

SMALL EFF RANK of 0.10 yields estimated effects on BKLENDGDP of 0.01865 (cost) and 0.02438 (profit) or about 2 percentage points.

4.4. Results for developing nations using alternative definitions for community banks

Table 5 shows our second set of results for developing nations, which includes relative health of STATE and FOREIGN banks as SMALL banks. In Panel A, the estimated coefficients on SMALL SHARE, SMALL EFF RANK, and the interaction term SMALL SHARE x EFF RANK are positive and statistically significant at least the 10% level in all the specifications. An increase in SMALL SHARE of 0.10 is predicted to increase GDP GROWTH by 0.0120 (cost) and by 0.01335 (profit) or about 1 percentage point, and an increase in SMALL EFF RANK of 0.10 is estimated to increase GDP GROWTH by 0.0085 (cost) and 0.00378 (profit) or about 1/3 to one full percentage point. The data again provide consistent support for the hypotheses that relatively healthy SMALL banks are associated with faster economic growth, with somewhat larger effects for shares than for efficiency. The measured interaction effects again support the hypothesis that the marginal effect of a higher market share for SMALL banks is greater when the banks are more efficient.

The estimated coefficients on STATE SHARE are all negative and statistically significant. This supports the hypothesis that a larger state-owned banking sector is associated with adverse aggregate economic performance, and is consistent with the literature reviewed above. The coefficients on STATE EFF RANK and the interaction term STATE SHARE x EFF RANK are mixed and mostly not statistically significant, consistent with the arguments above that measured efficiency ranks may not be very meaningful for STATE banks. Evaluating the economic significance of the STATE SHARE findings gives somewhat inconsistent results, presumably because of the difficulties with the efficiency effects in the interaction term. We do not evaluate the economic significance of the STATE EFF RANK findings, since they are not statistically significant.

The estimated coefficients on FOREIGN SHARE are all positive and statistically significant. This supports the hypothesis that a larger foreign-owned banking sector is generally positively associated with faster GDP growth in developing nations, and is generally consistent with the literature. Similar to the STATE bank results, the findings for the efficiency ranks of FOREIGN banks and their interaction terms are not entirely consistent, making it difficult to draw strong conclusions from them or from any tests of economic significance based on them. As noted, the efficiency of FOREIGN banks in developing nations may be difficult to measure.

In Regressions 7 and 8 of Panel B in Table 5, the estimated coefficients of SME EMP are positive, but are only statistically significant in one of the two cases at the 10% level. An increase in SME EMP of 0.10 is

estimated to increase GDP GROWTH by about 1/3 of one percentage point. The estimated BKLENDGDP coefficients are positive but not statistically significant. Again, the measured effects of SMALL bank health on GDP GROWTH do not appear to be substantially diminished by the inclusion of SME EMP and BKLENDGDP, although the measured effects of STATE and FOREIGN bank shares may be diminished.

In Regressions 9-12 of Table 5, the estimated coefficients on SMALL SHARE and SMALL EFF RANK are again all positive for both the SME EMP and BKLENDGDP equations, although in one case, the coefficient on SMALL EFF RANK loses its statistical significance from the inclusion of the STATE and FOREIGN terms (i.e., it was significant in Table 4, but not in Table 5). An increase in SMALL SHARE of 0.10 is estimated to increase SME EMP by 0.01565 (cost) and by 0.0277 (profit), or about 1 to 3 percentage points, and a 0.10 increase in SMALL EFF RANK is estimated to increase SME EMP by 0.02968 (cost) and by 0.01635 (profit) or about 2 to 3 percentage points. In terms of effects on overall bank lending, a 0.10 increase in SMALL SHARE is estimated to increase BKLENDGDP by 0.03190 (cost) and by 0.01195 (profit) or about 1 to 3 percentage points, and 0.10 increase in SMALL EFF RANK raises BKLENDGDP by estimates of 0.00595 (cost) and 0.00483 (profit) or about ½ of one percentage point. The interaction term SMALL SHARE x EFF RANK is positive in three of four cases, but loses all of its statistical significance when the STATE and FOREIGN terms are included.

Also in Regressions 9-12 of Table 5, the estimated coefficients on STATE SHARE are all negative and statistically significant and the estimated coefficients on FOREIGN SHARE are all positive and statistically significant. Analogous to GDP GROWTH findings above, greater shares for STATE banks are negatively associated with SME employment and bank lending and vice versa for FOREIGN banks. We again do not evaluate economic significance for these shares because of difficulties with the measured efficiency effects.

4.5. Selected control variable results

We briefly note some of the findings regarding the control variables for other dimensions of the financial system on GDP GROWTH, SME EMP, and BKLENDGDP in the three results tables. The measured effects of MKTCAPGDP on GDP growth are positive and statistically significant in all the Panel A regressions in Tables 3, 4, and 5, confirming the standard result in the finance-growth literature that the development of public debt and equity capital markets is positively related to economic growth. The measured effects of MKTCAPGDP on SME EMP and BKLENDGDP are generally statistically insignificant or inconsistent, which is not surprising, given that the transmission mechanism for public capital markets is not expected to provide substantial capital to SMEs or to operate through banks.

The coefficients on ECON FREEDOM, the index that reflects the extent of government intervention in monetary policy, relative openness of trade, and related issues are negative in all the regressions (although not always statistically significant), consistent with the financial-growth literature findings that more freedom has beneficial effects. The findings for COMMON LAW, which identifies nations with English common law, are generally insignificant or inconsistent, which may be surprising, given the strength of this variable in other research.

The findings for BANK CR3 are mixed, as also occurs in the empirical literature. The coefficients are generally negative and significantly significant for developed nations, consistent with the exercise of market power under the structure-conduct-performance hypothesis. However, the coefficients are often positive and in some cases statistically significant for developing nations, consistent with the benefits from market power in terms of investments in lending relationships

4.6. Additional robustness checks

As shown in the tables above, the main findings with regard to the economic effects of the community bank health are robust to a number of factors, including the specification of either cost or profit efficiency ranks, to the inclusion or exclusion of the interaction of share and efficiency rank, and the inclusion or exclusion of the national-level control variables for factors identified in the finance-growth literature. The main findings are also shown to hold for both developed and developing nations.

A number of additional checks not shown in the tables are briefly described here. First, we try alternative definitions of the endogenous variables. For example, we try replacing GDP GROWTH with GDP growth per capita, replacing BKLENDGDP with the total-private-sector-credit-to-GDP ratio, and replacing SME EMP with the share of enterprises that are SMEs, and the main results are materially unaffected.

We also try altering the specification of some of the measures of the relative health of community banks. For example, we replacing the weighted-average efficiency ranks of the community banks with weighted average ranks of other financial ratios that may reflect bank quality – such as the ratio of total costs to assets and the return on assets ROA. These replacements yield no material change in findings.

As well, we try including some additional variables from the finance-growth literature as extra control variables. We try adding a measure of international trade (exports plus imports as a ratio to GDP), and the results

remain but are weakened.[19] We also try using the bank regulation variable from Barth, Caprio, and Levine (2001) – which measures the restrictions on banking organizations engaging in securities, insurance, real estate activities, and ownership of nonfinancial firms – in place of our ECON FREEDOM variable, and the main results are strengthened. However, our results are weakened if we include both the regulation and freedom variables, likely due to collinearity from including two variables measuring regulation. In addition, we try including a measure of education (secondary school enrollment percentage, taken from World Development Indicators), and our results continue to hold in most cases. As well, we try including variables for Government Consumption (from International Financial Statistics) and Composite Risk (taken from the Wall Street Journal/Heritage Foundation Governance data), and the main results are robust, albeit weakened.

In addition, we try altering the data sample in several ways. We try excluding the effects of the Asian crisis by dropping all observations from Asia for 1997 and 1998. As a further measure, we try excluding all Asian observations. The main results remain robust, but weakened by the reduced numbers of observations. Similarly, we find the results to be robust when the Transition nations are excluded. We also experimented with extending the lag structure beyond measuring the exogenous variables with a one-year lag to further mitigate the potential endogeneity problem. We try measuring the dependent variables as two- and three-year averages or growth rates to create additional temporal separation between the endogenous and exogenous variables. The results are robust, but weaker with two-year averages/growth rates, and are no longer significant with three years because of the substantially reduced numbers of observations.

Finally, we try running the models specifying fixed-effect dummies for each nation in place of the national-level control variables (which do not vary much within a nation) and the regional dummies (which are constant for each nation). The findings for the GDP GROWTH and BKLENDGDP regressions remain robust, but the SME employment regressions become insignificant due to the smaller numbers of observations.

5. Conclusions

We test the effects of the relative health of community banks on economic growth and investigate two potential transmission mechanisms for these effects. The relative health of community banks is measured by the total market shares of these banks and their weighted-average efficiency ranks – indicators of how well they perform relative to other banks within the same nation. The potential transmission mechanisms are through

[19] We view international trade primarily as an endogenous variable that reflects the vitality of the economy, rather than as exogenous to economic growth.

improved financing opportunities for SMEs and through increased overall flows of bank credit. We allow for different potential definitions of community banks, including the possibility that state-owned banks and foreign-owned banks may function as community banks in developing nations as well as small, private, domestically-owned banks. Our empirical analysis employs data over the period 1993-2000 on the economic performance and financial systems of 49 nations, as well as detailed financial information on the individual banks that operate in these nations.

We try to contribute to two important fields in finance – the finance-growth literature and the community banking literature. We try to add to the finance-growth literature by 1) focusing on a dimension of the financial system that is typically not examined in that line of research – the relative health of community banks – and 2) investigating potential mechanisms for how its effects may be transmitted into economic growth. We try to extend the community banking research by 1) examining the effects of community banks on overall economic performance, 2) performing the analysis on an international basis using data from both developed and developing nations, 3) allowing for different potential definitions of community banks, and 4) investigating the effects of efficiency rank as well as market share and their interactions, i.e., investigating the quality as well as quantity of community banking.

The literature on developed nations generally defines community banks as small, private, domestically-owned institutions (SMALL banks) because these banks are found to have comparative advantages in some types of lending to SMEs. Our test results from both developed and developing nations are consistent with the hypothesis that relatively healthy SMALL banks are associated with faster GDP growth. Both the market shares and the weighted-average efficiency ranks of these institutions have positive, statistically significant coefficients in the GDP growth regressions. The estimated effects of increasing the market shares and efficiency ranks of these banks are also economically significant. The coefficients on the interaction terms between market shares and efficiency ranks are also positive and statistically significant for both developed and developing nations, consistent with the hypothesis that the marginal benefits of higher shares for community banks are greater when these banks are more efficient.

The data provide only mixed support for the two hypothesized transmission mechanisms from the relative health of community banks to economic growth through improved financing opportunities for SMEs or through greater overall flows of bank credit. To scrutinize these mechanisms, we test whether 1) community bank health has positive effects on the SME employment share and the ratio of overall bank lending to GDP, 2) these

intermediate variables have positive effects on GDP growth, and 3) the addition of these variables to the GDP growth regressions substantially diminishes the measured effects of community bank health on GDP growth. We find that the relative health of SMALL banks is positively associated with both the SME employment share and the overall-bank-lending-to-GDP ratio in both developed and developing nations. We also find that these intermediate variables are positively related to GDP growth, although the relationship is generally only statistically significant for the SME employment ratio. However, we do **not** find substantial diminishment of the measured effects of the relative health of SMALL banks on GDP growth when the intermediate variables are included in the GDP growth regressions for developed or developing nations.

The literature on developing nations suggests that the definition of community banks might be extended to include state-owned banks (STATE banks) or foreign-owned banks (FOREIGN banks) as well as SMALL banks. These potential alternative types of community banks may be able to overcome some of their disadvantages in SME lending in nations in which SMALL banks have difficulty providing sufficient credit using subsidies, by making use of decentralized organizational structures, or by employing better technologies. Our test results from developing nations suggest that larger market shares for FOREIGN banks are associated with better economic performance in terms of faster GDP growth, greater SME employment shares, and higher bank lending to GDP ratios, but worse economic performance in terms of these outcomes for larger shares for STATE institutions. These findings suggest that at least in some cases, foreign-owned banks may function as community banks, but that state-owned banks do not appear to play this role in an effective fashion. The evidence on efficiency ranks for STATE and FOREIGN banks do not show consistent patterns, which may reflect difficulties in measuring the efficiency ranks of these institutions. Our findings are robust to a number of changes in specification, samples, lag structures, and so forth.

Our analysis as well as the extent research in both the finance-growth and community banking literatures may help contribute to discussions of public policy toward domestic consolidation, foreign bank entry, privatization of state-owned banks, and support for public credit information bureaus and other methods of supporting SME lending. The extant research would appear to be consistent with favorable economic consequences from policies that promote relatively healthy SMALL banks in both developed and developing nations. Notably, policies that simply protect these banks from competition in product markets or from the markets for corporate control have been found to lead to more inefficiency and less growth (e.g., Jayaratne and Strahan 1996, 1998). In developing nations, the extant research would also appear to be consistent with favorable

consequences from policies that allow FOREIGN banks to enter and from policies that privatize STATE banks or reduce their market shares in other ways.

Finally, our findings are subject to significant caveats. The nature of international comparisons requires heroic assumptions because of the many important differences across nations for which it is not possible to control. Although we try to mitigate this problem in several ways, the results should be viewed as only suggestive of the relationship between the relative health of community banks and overall economic performance. In addition, as noted above, we do not have universal coverage of the banks in each nation, and may be missing significant proportions of SMALL, STATE, and FOREIGN banks. Thus, we have to assume that the market shares and weighted-average efficiency ranks for the reporting community banks are indicative of the relative health of community banks as a whole. Our findings are also subject to possible simultaneous-equations bias – higher GDP growth, SME employment, or bank lending may affect the health of community banks in ways for which we are unable to control in the regressions. We try to mitigate this potential problem by using measures of the relative health of community banks rather than measures of absolute health, so that the problem occurs only to the extent that these variables affect community banks more than other institutions. As well, we measure our exogenous variables with lags because the future cannot cause the past. Although these measures mitigate this potential problem, we cannot entirely eliminate it. Additional biases may be introduced when the SME employment share and the ratio of overall bank lending to GDP are included in the GDP growth regressions to the extent that GDP growth directly increases or decreases these ratios. Despite these caveats, we believe our analysis provides some useful steps in understanding the role of community banks in the link between finance and growth, and in evaluating some of the research and policy issues regarding community banking around the world.

Appendix 1. Examples of state-owned banks in developing nations

India has a relative large presence of state-owned banks. An example of a 100% government owned and operated financial institution is the Small Industries Development Bank of India (SIDBI), which has a mandate to promote growth in small firms and microenterprises. SIDBI provides funding for fixed assets as well as working capital, and also helps promote SMEs in both domestic and international markets, with products ranging from factoring services to microcredit schemes for women entrepreneurs. SIDBI has also established a joint venture with a technical training college to provide IT training. In addition, SIDBI has established venture capital funds using government subsidies to promote the automobile, software and other industries. Note that SIDBI operates as a fiscal expense to the Government of India.

India also has state-owned institutions that receive government subsidies, but operate as commercial banks (Hanson 2002). The largest bank in India is the State Bank of India (SBI), which is over 50% state-owned and has more than US$45 billion in total assets. This bank was formerly privately-owned and nationalized in the 1970s as part of a government initiative to take over private banks and redirect credit to underserved sectors and populations. Currently, over 40% of SBI bank credit is directed to "priority sector lending," which includes agriculture and SME financing, including certain castes, small farmers, and women cooperatives (SBI 2001 Annual Report). Although state-owned banks are generally criticized for overstaffing and having weak IT infrastructures, one study found that foreign-owned and private, domestically-owned banks in India were less efficient than state-owned banks (Bhattacharya, Lovell, and Sahay 1997). However, this finding may be partially explained by the accounting practices of government auditors.

At the other end of the spectrum are state-owned institutions that have been successfully privatized. An example is ICICI, which was formed in 1955 at the initiative of the Government of India and the World Bank to create a development financial institution for providing medium-term and long-term project financing to Indian businesses. During the 1990s, it evolved into a private, full-service bank. ICICI is now India's second largest bank and offers a wide range of banking products and financial services to retail and corporate customers. In 1999, ICICI become the first Indian company to be listed on the New York Stock Exchange.

Although state-owned banks are generally found to have problems in providing financial services and often require significant government subsidies, there are some exceptional cases of state-owned institutions that are able to meet their SME lending objectives without explicit government subsidies. The Mauritius Commercial Bank (MCB) has less than 5% direct government share, and is a profitable and efficient institution (Mauritius Commercial Bank Annual Report 2002). In addition, the Thai Bank for Agriculture and Agricultural Cooperatives (BAAC) is a rare case of a development bank with mandated lending objectives that does not depend on subsidies and succeeds in providing credit to rural farmers. In 1998, the BAAC extended loans to more than 80% of Thailand's farming households (Townsend and Yaron 2001).

References

Armendariz de Aghion, B., and J. Morduch, "Microfinance Beyond Group Lending," *The Economics of Transition* 8 (2000), 401-20.

Avery, R.B., and K.A. Samolyk, "Bank Consolidation and the Provision of Banking Services: Small Commercial Loans," Journal of Financial Services Research (2004).

Ayyagari, M., T. Beck, and A. Demirgüc-Kunt, "Small and Medium Enterprises Across the Globe: A New Database," World Bank Working paper, 2002.

Barth, J., G. Caprio, and R. Levine, "Banking Systems Around the Globe: Do Regulation and Ownership Affect Performance and Stability," World Bank Working paper, 1999.

Barth, J., G. Caprio, and R. Levine, "The Regulation and Supervision of Banks Around the World." A New Database. In: Litan R. and R. Herring (Eds.), *Integrating Emerging Market Countries into the Global Financial System*, Brookings Institution Press, Washington, D.C., 2001.

Beck, T., A. Demirgüc-Kunt, and R. Levine, "Small and Medium Enterprises, Economic Growth and Development," World Bank Working paper, 2003a.

Beck, T., A. Demirgüc-Kunt, and R. Levine, "Bank Competition, Financing Obstacles and Access to Credit," World Bank working paper, 2003b.

Berger, A.N., S.D. Bonime, L.G. Goldberg, et al., "The Dynamics of Market Entry: The Effects of Mergers and Acquisitions on Entry in the Banking Industry," *Journal of Business* (forthcoming).

Berger, A.N., R. DeYoung, H. Genay, et al., "The Globalization of Financial Institutions: Evidence from Cross-border Banking Performance." *Brookings-Wharton Papers on Financial Services* 3, 2000, 23-158.

Berger, A.N., L.G. Goldberg, and L.J. White, "The Effects of Dynamic Changes in Bank Competition on the Supply of Small Business Credit," *European Finance Review* 5 (2001), 115-139.

Berger, A.N., A.K Kashyap, and J.M. Scalise, "The Transformation of the U.S. Banking Industry: What a Long, Strange Trip It's Been," *Brookings Papers on Economic Activity* 2, 1995, 55-218.

Berger, A.N., L.F. Klapper, and G.F. Udell, "The Ability of Banks to Lend to Informationally Opaque Small Businesses," *Journal of Banking and Finance* 25 (2001), 2127-2167.

Berger, A.N., and L.J. Mester, "Inside The Black Box: What Explains Differences in the Efficiencies of Financial Institutions?" *Journal of Banking and Finance* 21 (1997), 895-947.

Berger, A.N., N.H. Miller, M.A. Petersen, et al., "Does Function Follow Organizational Form?" Evidence from the Lending Practices of Large and Small Banks, National Bureau of Economic Research Working paper 8752, 2002.

Berger, A.N., A. Saunders, J.M. Scalise, et al., "The Effects of Bank Mergers and Acquisitions on Small Business Lending," *Journal of Financial Economics* 50 (1998), 187-229.

Berger, A.N., and G.F. Udell, "Universal Banking and the Future of Small Business Lending," in A. Saunders and I. Walter, ed: *Financial System Design: The Case for Universal Banking* (Irwin Publishing, Burr Ridge, IL), 1996, 559-627. Burr Ridge, IL: Irwin Publishing.

Berger, A.N., and G.F. Udell, "Small Business Credit Availability and Relationship Lending: The Importance of Bank Organisational Structure," *Economic Journal* 112 (2002), F32-F53.

Bhattacharya, A., C.A.K. Lovell, and P. Sahay, "The Impact of Liberalization on the Productive Efficiency of Indian Commercial Banks," *European Journal of Operational Research* 98, 332-345, 1997.

Black S.E., and P.E. Strahan, "Entrepreneurship and Bank Credit Availability," *Journal of Finance* 57 (2002), 2807-2833.

Bonaccorsi di Patti, E. and G. Dell'Ariccia, "Bank Competition and Firm Creation," IMF working paper, 2001.

Bonaccorsi di Patti, E. and G. Gobbi, "The Effects of Bank Consolidation and Market Entry on Small Business Lending," Banca D'Italia Temi di Discussione 404, 2001.

Carter, D.A., J.E. McNulty, and J.A. Verbrugge, "Do Small Banks have an Advantage in Lending?" An Examination of Risk-adjusted Yields on Business Loans at Large and Small Banks, *Journal of Financial Services Research* (2004).

CGAP, "Focus Note No. 10," August, 1997.

Cetorelli, N., "Life-Cycle Dynamics in Industrial Sectors. The Role of Banking Market Structure," Federal Reserve Bank of Chicago WP2002-26, 2002.

Cetorelli, N. and M. Gambera, "Banking Market Structure, Financial Dependence and growth: International Evidence from Industry Data, *Journal of Finance* 56, 617-648, 2001.

Cetorelli, N. and P.E. Strahan, "Banking Competition, Technology and the Structure of Industry," mimeo, 2002.
Claessens, S., A. Demirgüc-Kunt, and H. Huizinga, "How Does Foreign Entry Affect the Domestic Banking Market?" *Journal of Banking and Finance* 25 (2001), 891-911.

Clarke, G., and R. Cull, "Political and Economic Determinants of the Likelihood of Privatizing Argentine Public Banks," *Journal of Law and Economics* (forthcoming).

Clarke, G., R. Cull, and S.M. Martinez Peria, "How Does Foreign Bank Participation Affect Access to Credit by SMEs? Evidence from Survey Data," World Bank Working Paper, 2002.

Clarke, G., R. Cull, S.M. Martinez Peria, et al., "Bank Lending to Small Businesses in Latin America: Does Bank Origin Matter?" World Bank Working Paper, 2002.

Cole, R.A., L.G. Goldberg, and L.J. White, "Cookie-cutter versus Character: The Micro Structure of Small Business Lending by Large and Small Banks," in J.L. Blanton, A. Williams, and S.L.W. Rhine, ed.: *Business Access to Capital and Credit* (Federal Reserve System Research Conference), 1999, 362-389.

DeYoung, R., L. Goldberg, and L. White, "Youth, Adolescence, and Maturity of Banks. Credit Availability to Small Business in an Era of Banking Consolidation," *Journal of Banking and Finance* 23, 463-492, 1999.

DeYoung, R., and D.E. Nolle. "Foreign-owned Banks in the U.S.: Earning Market Share or Buying It?" *Journal of Money, Credit, and Banking* 28(4) (1996), 622-636.

Ferrier, G.D., 2001, Bank efficiency and economic growth: The case of ASEAN, University of Arkansas working paper.

Grosse, R., and L.G. Goldberg, L.G., "Foreign Bank Activity in the United States: An Analysis by Country of Origin," *Journal of Banking and Finance* 15 (1991), 1093-1112.

Goldberg, L., B.G. Dages, and D. Kinney, "Foreign and Domestic Bank Participation in Emerging Markets: Lessons from Mexico and Argentina," Federal Reserve Bank of New York *Economic Policy Review* v6, n3, 2000, 17-36.

Goldberg, L.G., and A. Saunders. "The Determinants of Foreign Banking Activity in the United States." *Journal of Banking and Finance* 5 (1981), 17-32.

Hancock, D. and J.A. Wilcox, "The Credit Crunch' and the Availability of Credit to Small Business, *Journal of Banking and Finance* 22 (1998), 983-1014.

Hannan, T.H., "Bank Commercial Loan Markets and the Role of Market Structure: Evidence from Surveys of Commercial Lending," *Journal of Banking and Finance* 15 (1991), 133-149.

Hannan, T.H., "Market Share Inequality, the Number of Competitors, and the HHI: An Examination of Bank Pricing," *Review of Industrial Organization* 12, 1997, 23-35.

Hanson, J., "Indian Banking: Market Liberalization and the Pressures for Market Framework Reform," in A. Krueger, ed: *Economic Policy Reforms and the Indian Economy,* 2002.

Hauswald, R., and R. Marquez, "Competition and Strategic Information Acquisition in Credit Markets," University of Maryland Working paper, 2002.

Haynes, G.W., C. Ou, and R. Berney, "Small Business Borrowing from Large and Small Banks," in *Business Access to Capital and Credit,* in J.L. Blanton, A. Williams, and S.L.W. Rhine, ed.: *Business Access to Capital and Credit* (Federal Reserve System Research Conference), 1999, 287-327.

International Financial Statistics, International Monetary Fund, Vol. 53, No.10, October 2002.

Jappelli, T., and M. Pagano, "Information Sharing, Lending and Defaults: Cross-country Evidence," *Journal of Banking and Finance* 26 (2002), 2017-2045.

Jayaratne, J., and P.E. Strahan, "The Finance-Growth Nexus: Evidence from Bank Branch Deregulation," *Quarterly Journal of Economics* 111 (1996), 639-70.

Jayaratne, J., and P.E. Strahan, "Entry Restrictions, Industry Evolution, and Dynamic Efficiency: Evidence from Commercial Banking," *Journal of Law and Economics* 41 (1998), 239-73.

King, R.G. and R. Levine, "Finance and Growth: Schumpeter Might Be Right," *Quarterly Journal of Economics* 108 (1993), 717-37.

Klapper, L.F. and V. Sulla, "The Role of SMEs Around the World," World Bank mimeo, 2002.

La Porta, R., F. Lopez-de-Silanes, and A. Shleifer, "Government Ownership of Banks," *Journal of Finance* 57 (2002), 265-301.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, et al., "Legal Determinants of External Finance," *Journal of Finance* 52 (1997), 1131-1150.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, et al., "Law and Finance," *Journal of Political Economy* 106 (1998),

1113-1155.

Mauritius Commercial Bank, Annual Report, 2002.

Morduch, J., "The Microfinance Promise," *Journal of Economic Literature* v37 (4) (1999), 1569-1614.

Morduch, J., The Microfinance Schism," *World Development* v28 (4), 2000, 617-629.

Peck, C.R., "Commercialization and Mission Drift," CGAP Occasional Paper No 5, 2000.

Peek, J., and E.S. Rosengren, "Bank Consolidation and Small Business Lending: It's Not Just Bank Size That Matters," *Journal of Banking and Finance* 22, (1998), 799-819.

Peek, J., E.S. Rosengren, and F. Kasirye, "The Poor Performance of Foreign Bank Subsidiaries: Were the Problems Acquired or Created?" *Journal of Banking and Finance* 23 (1999), 579-604.

Petersen, M.A., and R.G. Rajan, "The Effect of Credit Market Competition on Lending Relationship," *Quarterly Journal of Economics* 110 (1995), 407-443.

Petersen, M.A. and R. Rajan, "Does Distance Still Matter?" The Information Revolution in Small Business Lending, *Journal of Finance* 57, (2002), 2533-70.

Robinson, M., *The Microfinance Revolution: Sustainable Finance for the Poor*, Volume I, The World Bank: Washington, DC., 2001.

Sapienza, P., "The Effects of Government Ownership on Bank Lending," *Journal of Financial Economics* (forthcoming).

"Small Industries Development Bank of India," Annual Report, 1997-1998

Stein, J.C., "Information Production and Capital Allocation: Decentralized vs. Hierarchical Firms," *Journal of Finance* 57 (2002), 1891-1921.

Strahan, P.E., and J.P. Weston "Small Business Lending and the Changing Structure of the Banking Industry," *Journal of Banking and Finance* 22 (1998), 821-45.

Townsend, R. and J. Yaron, "The Credit Risk-Contingency System of an Asian Development Bank," *Economic Perspectives*, Federal Reserve Bank of Chicago, 31-48, 2001.

Turnag News Agency, "Shore Overseas Azerbaijan is Developing Credit Activity," February 6, 2003.

Wachtel, P., "How Much Do We Really Know About Growth and Finance?," Federal Reserve Bank of Atlanta *Economic Review* 88 (First quarter) 2003, 33-47.

Williamson, O., "The Economics of Defense Contracting: Incentives and Performance," in R. McKean, ed: *Issues in Defense Economics* (Columbia University Press, New York), 1967.

Williamson, O., "Corporate Finance and Corporate Governance," *Journal of Finance* 43 (1988), 567-591.

Table 1 - Panel A
Descriptive Statistics – 21 Developed Nations

	Mean	Standard Deviation	Minimum	Maximum
GDP GROWTH	0.030	0.023	-0.025	0.123
SME EMP	0.600	0.164	0.290	0.900
BKLENDGDP	0.950	0.176	0.446	1.470
SMALL SHARE	0.350	0.221	0.061	0.829
SMALL COST EFF RANK	0.510	0.089	0.346	0.669
SMALL PROFIT EFF RANK	0.440	0.099	0.244	0.597
MKTCAPGDP	0.872	0.729	0.035	3.856
ECON FREEDOM	2.060	0.352	1.350	2.850
COMMON LAW	0.250	0.434	0.000	1.000
BANK CR3	0.660	0.149	0.142	0.890

Table 1 - Panel B
Descriptive Statistics – 28 Developing Nations

	Mean	Standard Deviation	Minimum	Maximum
GDP GROWTH	0.030	0.041	-0.148	0.139
SME EMP	0.540	0.201	0.038	0.865
BKLENDGDP	0.800	0.138	0.410	0.995
SMALL SHARE	0.260	0.189	0.056	0.746
SMALL COST EFF RANK	0.540	0.094	0.342	0.718
SMALL PROFIT EFF RANK	0.560	0.071	0.414	0.661
STATE SHARE	0.230	0.196	0.058	0.763
STATE COST EFF RANK	0.310	0.092	0.107	0.457
STATE PROFIT EFF RANK	0.360	0.113	0.166	0.690
FOREIGN SHARE	0.390	0.177	0.054	0.754
FOREIGN COST EFF RANK	0.500	0.120	0.250	0.785
FOREIGN PROFIT EFF RANK	0.620	0.152	0.330	0.861
MKTCAPGDP	0.363	0.354	0.045	1.996
ECON FREEDOM	2.890	0.529	1.800	4.350
COMMON LAW	0.030	0.158	0.000	1.000
BANK CR3	0.620	0.168	0.035	0.860

The statistics for the endogenous variables, GDP GROWTH, SME EMP, and BKLENDGDP, are based on 1994-2000 data. The exogenous variables are lagged one year, so their statistics are based on 1993-1999. data SME EMP is the employment share held by the SMEs in a given nation where SMEs are businesses with less than 250 employees. SME GDP GROWTH is the annual growth rate of GDP; BKLENDGDP is the ratio of total bank lending to GDP; SMALL SHARE is the market share held by small banks where SMALL bank is a private, domestically-owned bank with assets less than $1 billion for developed nations and with assets less than $100 million for developing nations; SMALL COST (PROFIT) EFF RANK is the weighted average cost (profit) efficiency ranks for small banks; STATE is the market share held by state-owned banks; STATE COST (PROFIT) EFF RANK is the weighted average cost (profit) efficiency ranks for STATE banks; FOREIGN SHARE is the market share held by foreign-owned banks; FOREIGN COST (PROFIT) EFF RANK is the weighted average cost (profit) efficiency ranks for FOREIGN banks. MKTCAPGDP is the market value of all publicly held debt and equity securities as a ratio to GDP. ECON FREEDOM is an index that reflects the extent of government intervention in monetary policy, relative openness of trade, and related issues in the nation. COMMON LAW is a dummy variable to differentiate the nations with English common law. BANK CR3 is the asset concentration ratio for the top three banks in the nation. Data sources are discussed in the text.

Table 2

Numbers of Banks, SMALL Banks, STATE Banks, and FOREIGN Banks in Developed and Developing Nations, Averaged over 1994-2000

	Developed Nations			Developing Nations			
	Total Number of Banks	Number of SMALL Banks		Total Number of Banks	Number of SMALL Banks	Number of STATE Banks	Number of FOREIGN Banks
Australia	54.5	14.2	Argentina	132.5	39.6	4.5	12.0
Austria	191.6	137.4	Azerbaijan	10.5	9.2	4.0	3.3
Belgium	112.6	59.0	Belarus	14.2	8.1	7.5	10.2
Canada	58.7	24.7	Bolivia	17.7	5.0	4.2	3.5
Denmark	112.1	87.2	Brazil	179.5	45.8	5.5	22.5
Finland	13.5	3.5	Bulgaria	25.2	15.5	6.5	11.7
France	454.2	186.2	Chile	35.5	6.2	2.8	12.2
Germany	2368.5	1829.0	Colombia	41.0	2.2	5.0	8.0
Greece	27.8	11.4	Costa Rica	35.2	23.6	5.5	6.8
Hong Kong	60.1	9.5	Croatia	45.7	21.0	9.5	12.5
Ireland	46.5	12.0	Czech Republic	35.5	5.7	8.5	17.8
Italy	641.4	469.2	Egypt	33.5	1.6	6.5	7.5
Japan	214.1	3.0	Estonia	11.7	6.2	5.2	6.5
Netherlands	79.2	34.9	Hungary	33.2	7.6	7.5	23.7
New Zealand	17.8	7.3	India	74.2	6.3	24.3	6.0
Norway	53.4	27.0	Kazakhstan	19.5	1.6	5.2	4.6
Spain	189.7	79.5	Korea, Rep.	33.0	14.8	6.5	5.8
Sweden	36.2	10.3	Latvia	29.2	20.5	5.1	10.2
Switzerland	328.6	275.7	Mexico	58.7	8.5	6.8	12.5
United Kingdom	276.4	220.2	Peru	26.5	5.5	7.2	6.6
United States	1166.1	368.5	Philippines	51.5	6.8	7.5	6.2
			Poland	57.0	7.6	8.5	29.3
			Romania	34.2	17.5	4.2	12.5
			Russia	162.7	78.5	6.8	10-.7
			Slovak Republic	22.5	6.8	4.5	14.5
			Slovenia	28.2	6.5	8.0	6.5
			Tunisia	15.4	3.5	5.2	9.7
			Turkey	64.1	8.7	15.8	14.2

Notes: For most nations, the statistics reported here are based on 1994-2000 averages. In a few cases, data are not available for some of the nations in certain years, especially for 1994. For these scenarios, we show the average based on the available years. A SMALL bank is a private, domestically-owned bank with assets less than $1 billion for developed nations and with assets less than $100 million for developing nations. STATE and FOREIGN banks refer to state-owned and foreign-owned banks, respectively.

Table 3 – Panel A
Developed Nations
Dependent Variable: GDP GROWTH

	Regression 1 Cost		Regression 2 Profit		Regression 3 Cost		Regression 4 Profit		Regression 5 Cost		Regression 6 Profit	
	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat
Intercept	-0.001***	-4.15	0.027 ***	3.02	-0.001**	-1.99	0.028**	2.43	0.036	1.60	0.051	1.48
SMALL SHARE	0.032**	2.07	0.047***	4.94	0.029**	2.05	0.051**	2.24	0.034**	2.45	0.042**	2.17
SMALL EFF RANK	0.043*	1.95	0.021*	1.87	0.041**	2.21	0.024*	1.89	0.033*	1.70	0.005*	1.77
SMALL SHARE x EFF RANK	-	-	-	-	0.011	1.62	0.008**	2.16	0.026*	1.87	0.013**	2.25
MKTCAPGDP	-	-	-	-	-	-	-	-	0.018**	1.98	0.011**	2.20
ECON FREEDOM	-	-	-	-	-	-	-	-	-0.012	-1.07	-0.016	-0.92
COMMON LAW	-	-	-	-	-	-	-	-	0.007*	1.91	0.011*	1.68
BANK CR3	-	-	-	-	-	-	-	-	-0.016*	-1.92	-0.012*	-1.80
ASIA	-0.001*	-1.68	-0.003	-0.16	-0.001	-0.02	-0.003	-0.18	-0.004	-0.18	-0.005	-0.26
OCEANIA	0.005*	1.81	-0.001	-0.20	0.016*	1.71	-0.002	-0.20	0.009*	1.68	-0.012	-0.96
WESTERN EUROPE	0.010	1.02	0.011**	2.50	0.005	1.04	0.011**	2.46	0.006	0.93	0.013 **	2.05
Adjusted R-Squared	0.3437		0.3282		0.3535		0.3437		0.3903		0.3952	
Number of Observations	137		137		137		137		137		137	

Table 3 – Panel B
Developed Nations
Dependent Variable: GDP GROWTH / Dependent Variable: SME EMP / Dependent Variable: BKLENDGDP

	Regression 7 Cost		Regression 8 Profit		Regression 9 Cost		Regression 10 Profit		Regression 11 Cost		Regression 12 Profit	
	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat
Intercept	0.055	1.32	0.067	1.45	0.908**	2.12	1.066**	2.43	0.840*	1.74	0.633**	2.10
SMALL SHARE	0.044*	1.80	0.044*	1.75	0.115*	1.94	0.299**	2.59	0.121*	1.70	0.189*	1.89
SMALL EFF RANK	0.005*	1.75	0.002*	1.66	0.021*	1.77	0.311**	2.25	0.181**	2.53	0.121**	2.68
SMALL SHARE x EFF RANK	0.002	1.23	0.012*	1.70	0.479*	1.68	0.972**	2.03	0.094*	1.82	0.057*	1.85
MKTCAPGDP	0.014**	1.99	0.002**	2.14	0.017	1.38	0.005	1.26	0.015	0.02	-0.026	-0.36
ECON FREEDOM	-0.015	-0.82	-0.017	-0.81	-0.016	-1.12	-0.229*	-1.75	-0.116**	2.75	0.231	0.95
COMMON LAW	0.010	1.23	0.009*	1.72	-0.061	-0.91	-0.032*	1.90	-0.128*	-1.90	-0.159*	-1.66
BANK CR3	-0.014	-1.02	-0.010	-0.93	-0.276*	-1.89	-0.229*	-1.74	-0.253	-1.17	-0.383*	-1.69
SME EMP	0.017*	1.70	0.018	1.61	-	-	-	-	-	-	-	-
BKLENDGDP	0.006	1.42	0.005*	1.77	-	-	-	-	-	-	-	-
ASIA	-0.005	-1.23	-0.005	-1.22	-0.061	-0.91	-0.048	-1.30	0.643**	2.38	0.663**	2.41
OCEANIA	0.011*	1.67	-0.010*	-1.70	-0.053	-0.88	-0.047	-1.07	0.136	1.37	0.109	1.10
WESTERN EUROPE	0.007	0.97	0.013**	2.08	-0.029	0.54	0.032	1.44	0.221**	2.39	0.142*	1.83
Adjusted R-Squared	0.4349		0.4196		0.1327		0.1448		0.3254		0.3371	
Number of Observations	60		60		60		60		137		137	

Notes: *, **, *** indicate significance at 10, 5, and 1 percent levels, respectively, based on heteroskedasticity-corrected standard errors. SMALL SHARE x EFF RANK is the interaction between SMALL SHARE and SMALL EFF RANK. Time dummies are included, but are not shown in the table. ASIA, OCEANIA, and WESTERN EUROPE are regional dummies (NORTH AMERICA is the excluded region).

Table 4 – Panel A
Developing Nations
Dependent Variable: GDP GROWTH

	Regression 1 Cost		Regression 2 Profit		Regression 3 Cost		Regression 4 Profit		Regression 5 Cost		Regression 6 Profit	
	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat
Intercept	0.023*	1.66	0.007	0.60	0.017	1.31	0.035	0.93	0.013	0.45	0.031	1.05
SMALL SHARE	0.035**	2.34	0.038**	2.59	0.036**	2.83	0.123**	2.75	0.127**	2.44	0.117***	2.88
SMALL EFF RANK	0.012**	2.15	0.042**	2.27	0.026*	1.90	0.037**	1.98	0.027*	1.80	0.016**	1.96
SMALL SHARE x EFF RANK	-	-	-	-	0.166***	3.29	0.159**	2.05	0.164***	3.16	0.151**	2.07
MKTCAPGDP	-	-	-	-	-	-	-	-	0.005*	1.79	0.004*	1.68
ECON FREEDOM	-	-	-	-	-	-	-	-	-0.007*	-1.72	-0.008*	-1.76
COMMON LAW	-	-	-	-	-	-	-	-	0.021	1.58	0.021	1.53
BANK CR3	-	-	-	-	-	-	-	-	0.014	0.74	0.017	0.86
ASIA	0.009*	1.85	0.008	0.73	0.009*	1.86	0.008	0.73	0.011*	1.76	0.010	0.90
AFRICA	0.005	1.33	0.007	1.05	0.007	1.35	0.007	1.05	0.009	1.08	0.006	1.13
TRANSITION	-0.008*	-1.70	-0.009*	-1.73	-0.008*	-1.66	-0.009*	-1.73	-0.008*	-1.68	-0.008*	-1.82
Adjusted R-Squared	0.0512		0.0729		0.0873		0.0950		0.0931		0.0996	
Number of Observations	243		243		243		243		243		243	

Table 4 – Panel B
Developing Nations

	Dependent Variable: GDP GROWTH Regression 7 Cost		Regression 8 Profit		Dependent Variable: SME EMP Regression 9 Cost		Regression 10 Profit		Dependent Variable: BKLENDGDP Regression 11 Cost		Regression 12 Profit	
	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat
Intercept	-0.027	-0.62	0.019	0.45	0.614**	2.07	0.714*	1.66	1.060***	10.72	0.931***	12.03
SMALL SHARE	0.122**	2.37	0.110**	2.11	0.075*	1.68	0.216*	1.79	0.009*	1.90	0.282*	1.86
SMALL EFF RANK	0.017*	1.81	0.006*	1.77	0.202**	2.77	0.180**	2.56	0.142*	1.73	0.228**	2.05
SMALL SHARE x EFF RANK	0.167***	3.24	0.147*	1.80	0.032*	1.86	0.10	1.60	0.178	1.33	0.063*	1.76
MKTCAPGDP	0.006*	1.85	0.006*	1.89	0.023	0.98	0.034	1.42	-0.085	1.45	0.014*	1.83
ECON FREEDOM	-0.004	-1.40	-0.005	-1.60	-0.048**	-2.47	-0.046**	-2.16	-0.096**	-2.44	-0.107**	2.78
COMMON LAW	0.016	1.09	0.016	1.47	0.094	1.55	0.080	1.29	0.001	0.10	0.014	0.31
BANK CR3	0.009	0.45	0.010	0.50	0.099	1.45	0.126*	1.81	0.084	1.21	0.069	1.13
SME EMP	0.050**	2.39	0.053**	2.59	-	-	-	-	-	-	-	-
BKLENDGDP	0.009	1.49	0.007	0.26	-	-	-	-	-	-	-	-
ASIA	0.003	0.29	0.002	0.21	0.153**	2.84	0.136**	2.36	0.076**	2.53	0.089***	3.02
AFRICA	0.003	0.20	0.001	0.06	0.121**	2.00	0.100	1.65	0.003	0.08	0.002	0.065
TRANSITION	-0.004*	-0.73	-0.004*	-1.72	-0.067***	-2.99	-0.068***	-2.97	-0.025	-1.45	-0.025	-1.49
Adjusted R-Squared	0.1105		0.1097		0.1382		0.1297		0.1760		0.2056	
Number of Observations	85		85		85		85		243		243	

Notes: *, **, *** indicate significance at 10, 5, and 1 percent levels, respectively, based on heteroskedasticity-corrected standard errors. SMALL SHARE x EFF RANK is the interaction between SMALL SHARE and SMALL EFF RANK. Time dummies are included, but are not shown in the table. ASIA, AFRICA, and TRANSITION are regional dummies (LATIN AMERICA is the excluded region).

Table 5 – Panel A
Developing Nations
Dependent Variable: GDP GROWTH

	Regression 1 Cost		Regression 2 Profit		Regression 3 Cost		Regression 4 Profit		Regression 5 Cost		Regression 6 Profit	
	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat
Intercept	0.008	0.51	-0.009	-0.57	0.011	0.57	0.019	0.85	-0.027	-0.63	0.034	0.76
SMALL SHARE	0.027*	1.94	0.045**	2.76	0.041**	2.81	0.097**	2.00	0.032**	2.20	0.088*	1.84
SMALL EFF RANK	0.038**	2.34	0.049**	2.58	0.047**	2.07	0.016*	1.83	0.041*	1.91	0.015*	1.75
SMALL SHARE x EFF RANK	-	-	-	-	0.168***	3.40	0.092**	2.45	0.176***	3.42	0.091*	1.74
STATE SHARE	-0.042*	-1.71	-0.031**	-2.06	-0.061*	-1.72	-0.182**	-2.22	-0.056*	1.70	-0.181**	-2.12
STATE EFF RANK	0.010	0.14	0.022	0.31	0.056	0.64	0.030	0.41	0.183	1.57	-0.134	-0.37
STATE SHARE x EFF RANK	-	-	-	-	0.161	1.05	0.194**	2.77	0.207	1.18	0.214**	2.18
FOREIGN SHARE	0.025**	1.99	0.081*	1.84	0.103**	1.98	0.056*	1.86	0.210**	2.68	0.060*	1.93
FOREIGN EFF RANK	0.001	1.42	0.007	0.32	0.021	0.58	0.011	0.45	0.066	1.35	0.004	0.15
FOREIGN SHARE x EFF RANK	-	-	-	-	-0.150	-0.36	-0.034	-0.85	-0.138	-0.54	-0.048	-1.00
MKTCAPGDP	-	-	-	-	-	-	-	-	0.004*	1.86	0.003*	1.70
ECON FREEDOM	-	-	-	-	-	-	-	-	-0.011	-1.64	-0.010*	-1.73
COMMON LAW	-	-	-	-	-	-	-	-	0.056*	1.75	0.005*	1.66
BANK CR3	-	-	-	-	-	-	-	-	0.013	0.59	0.031	1.27
ASIA	-0.001	-0.26	-0.001	-0.07	-0.001	-0.25	-0.001	-0.37	-0.028	-0.44	-0.020	-1.62
AFRICA	-0.005	-0.42	-0.016	1.43	-0.004	-0.45	-0.015	-1.49	-0.029	-0.82	-0.026	-0.78
TRANSITION	-0.186**	-2.10	-0.025**	-2.84	-0.196**	-2.13	-0.172**	-2.15	-0.020**	-2.08	-0.025**	-2.19
Adjusted R-Squared	0.0934		0.0994		0.1169		0.1238		0.1321		0.1437	
Number of Observations	243		243		243		243		243		243	

Table 5 – Panel B
Developing Nations

	Dependent Variable: GDP GROWTH				Dependent Variable: SME EMP				Dependent Variable: BKLENDGDP			
	Regression 7 Cost		Regression 8 Profit		Regression 9 Cost		Regression 10 Profit		Regression 11 Cost		Regression 12 Profit	
	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat	Parameter	t-stat
Intercept	-0.021	0.20	-0.006	-0.37	0.456	1.19	1.06**	2.81	0.872***	8.14	1.112***	8.43
SMALL SHARE	0.160**	2.63	0.094*	1.74	0.107*	1.78	0.032*	1.77	0.242**	2.77	0.457**	2.51
SMALL EFF RANK	0.019*	1.78	0.015*	1.66	0.272*	1.69	0.041*	1.80	0.021	0.45	0.217**	2.76
SMALL SHARE x EFF RANK	0.165**	2.80	0.143*	1.94	0.099	1.04	0.490	0.81	0.154	0.99	-0.675	-1.05
STATE SHARE	-0.015*	-1.90	-0.016*	-1.83	-0.988*	-1.84	-1.271**	-1.96	-1.91***	7.43	-7.55***	3.38
STATE EFF RANK	-0.139	-0.90	-0.130	-0.89	0.402	0.62	0.382	0.52	1.452	1.20	0.657	0.95
STATE SHARE x EFF RANK	0.195**	2.06	0.101**	2.08	2.031	1.23	1.299**	2.08	-2.443**	-2.68	-0.350**	2.00
FOREIGN SHARE	0.051*	1.70	0.042*	1.85	0.016*	1.67	0.459*	1.82	0.335***	3.50	0.175**	2.64
FOREIGN EFF RANK	0.008	0.17	0.002	0.92	-0.246	-0.57	0.027	1.11	-0.163	-0.52	-0.049	-1.20
FOREIGN SHARE x EFF RANK	-0.048	-0.55	-0.038	-0.93	0.141	1.05	0.367	0.83	0.041**	2.71	0.082*	1.78
MKTCAPGDP	0.006*	1.80	0.003	1.54	0.107	1.62	0.066*	1.90	-0.004	-0.35	-0.001	-0.13
ECON FREEDOM	-0.009	-0.37	-0.009	-1.43	-0.075*	1.91	-0.075	-0.62	-0.011	-1.47	-0.111***	3.33
COMMON LAW	0.023	1.62	0.023	1.60	0.064	1.25	0.113	0.81	0.245***	3.41	0.096**	1.96
BANK CR3	0.020	0.55	0.021	1.17	0.249	1.02	0.047	0.26	-0.014*	-1.80	-0.014	0.28
SME EMP	0.031*	1.74	0.033	1.65	-	-	-	-	-	-	-	-
BKLENDGDP	0.047	0.96	0.040	0.82	-	-	-	-	-	-	-	-
ASIA	-0.015	-0.08	-0.015	-0.94	0.145**	2.16	0.173*	1.89	0.019	0.70	0.0454*	1.86
AFRICA	0.012	0.32	0.008	0.25	-0.016	-1.23	-0.013	1.00	-0.138**	-2.69	-0.112*	-2.21
TRANSITION	-0.019*	-1.68	-0.019*	-1.81	-0.089	-1.40	-0.072	-1.51	-0.071***	-3.61	-0.065***	3.08
Adjusted R-Squared	0.1459		0.1605		0.1159		0.1468		0.2470		0.2613	
Number of Observations	85		85		85		85		243		243	

Notes: *, **, *** indicate significance at 10, 5, and 1 percent levels, respectively, based on heteroskedasticity-corrected standard errors. SMALL SHARE x EFF RANK, STATE SHARE x EFF RANK, and FOREIGN SHARE x EFF RANK are the interactions between SMALL SHARE and SMALL EFF RANK, STATE SHARE and STATE EFF RANK, and FOREIGN SHARE and FOREIGN EFF RANK, respectively. Time dummies are included, but are not shown in the table. ASIA, AFRICA, and TRANSITION are regional dummies (LATIN AMERICA is the excluded region).

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