

International Comparisons of Banking Efficiency

BY ALLEN N. BERGER

The banking industry around the globe has been transformed in recent years by unprecedented consolidation and cross-border activities. However, international consolidation has been considerably less than might have been expected in developed nations—such as long-term members of the EU—where barriers to entry have been significantly lowered. In contrast, foreign-owned banks have generally achieved much higher penetration in developing nations. We investigate the extent to which these differences may be related to bank efficiency concerns by reviewing and critiquing over 100 studies that compare bank efficiencies across nations. The studies are in three distinct categories: (1) comparisons of bank efficiencies in different nations based on the use of a common efficient frontier, (2) comparisons of bank efficiencies in different nations using nation-specific frontiers, and (3) comparisons of efficiencies of foreign-owned versus domestically owned banks within the same nation using the same nation-specific frontier. The research—particularly the findings in the third category—is generally consistent with the hypothesis that efficiency differences help to explain the consolidation patterns. The efficiency disadvantages of foreign-owned banks relative to domestically owned banks tend to outweigh the efficiency advantages in developed nations on average, and this situation is generally reversed in developing nations, with notable exceptions to both findings. We also stress the need for further research in this area.

I. INTRODUCTION

The world is becoming a smaller place, particularly for banks and other financial institutions. More institutions are crossing international borders and providing services in multiple nations. The increase in cross-border activity in financial services stems in large part from (1) deregulation that allows easier cross-border entry, (2) technological progress that makes it easier for institutions to monitor activities in multiple nations, and (3) increasing trade and foreign direct investment that creates demands for international services.

However, the banking industry has not consolidated across borders as much or as quickly as some have predicted. In most of the developed nations of North America, Europe, and East Asia, the foreign ownership of banks remains near 10% of total assets, while the proportion is much higher in most developing nations.¹ This is particularly an issue in the European Union (EU), where regulatory changes were designed to move the industry in the direction of a single market. Specifically, the Single Market Programme (SMP) has harmonized banking regulations, created

¹ In this paper and in much of the research literature, the terms “developed nations” and “developing nations” are based on International Monetary Fund (IMF) classifications. 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.

a single banking license that may be used across the member nations, and otherwise reduced bank entry barriers among EU nations. The implementation of the European Monetary Union also has reduced cross-border barriers by establishing a common currency among most of the large EU nations. Despite these changes, most of the bank mergers and acquisitions (M&As) in the long-term member nations of the EU in recent years are within individual nations. As discussed below, international consolidation activity is much more prevalent in the newer members of the EU that ascended in 2004, primarily former Socialist nations of Eastern Europe. Foreign bank presence is also much greater in many of the developing nations of Latin America, Asia, and Africa.

This international consolidation—or lack of consolidation—of the banking industry in the developed nations raises a number of important research and policy issues. The situation in the EU raises the serious policy concern that there may be efficiency disadvantages of foreign banks in developed nations that may be difficult to offset with public policies. More generally, the findings for developed nations as a whole raise questions regarding the efficiency of multinational institutions and their single-nation competitors, the efficiency of foreign bank subsidiaries versus home nation banks, potential systemic risk problems and the stability of the global financial system, the market power of financial institutions over various groups of customers, the availability of financial services to certain types of customers, the degree to which customers in developed and developing nations are served, and so forth. It might be expected, for example, that banks headquartered in the nations with most efficient organizations would acquire institutions in the nations with the least efficient organizations. Alternatively, the international consolidation might be deterred if there are significant efficiency disadvantages of foreign-owned banks relative to domestically owned banks, such as difficulties in managing from a distance, complexities in dealing with different economic environments (e.g., different language, culture, currency, and regulatory structures), or problems in processing “soft” information about local conditions. Such efficiency disadvantages of foreign-owned firms may also be significant in industries other than banking.

A significant amount of quality research has arisen in response to these and other research and policy issues. Much of this research has involved international comparisons of banking efficiency. At least three types of comparisons have been made in extant research literature:

1. Comparisons of the efficiencies of banks in different nations, with all banks measured against a common frontier.
2. Comparisons of the efficiencies of banks in different nations, with banks from each nation measured against their own nation-specific frontier.
3. Comparisons of the efficiencies of foreign-owned versus domestically owned banks within the same nation, with both types of banks measured against the same nation-specific frontier.

Thus, the comparisons differ in terms of whether the efficiencies are measured relative to a common efficient frontier that is composed from banks with the best practices drawn from multiple nations versus a single nation, and in terms of whether the “international” comparison refers to whether the banks are located in different nations versus operating in the same nation, but having ownership from different nations.

In this paper, we review the research in all three categories, but spend most of the effort on the third comparison, where we believe the value added is greatest. As argued in more detail below, the first category—comparisons of efficiencies in different nations using a common frontier—may be problematic because it may be virtually impossible to control for the very different economic environments in which the banks in different nations compete. That is, national differences in regulations, legal systems, financial market development, institutions, payment systems, competitive conditions, culture, demographics, and so forth may have important effects on costs and revenues that affect the distance from the common frontier, and it may be quite difficult to control for all of these factors. Moreover, even in the absence of these environmental differences, the efficiency of banks in their home nations may not accurately predict their efficiency in managing banks in other nations. The foreign-owned banks may have technological or other comparative advantages over domestically owned banks or these advantages may be more than offset by disadvantages owing to difficulties in managing from a distance, problems in processing local soft information, and so forth.

The second category—comparisons of efficiencies in different nations using nation-specific frontiers—are useful for a number of purposes, but cannot be used to draw any conclusions about whether banks in one nation are more efficient than those in other nations because they are measured against different frontiers. As well, these comparisons also cannot be used to directly address the policy and research questions regarding the international consolidation of financial institutions. As with the studies in the first category, studies in the second category do not incorporate the potential efficiency advantages and disadvantages of foreign-owned banks relative to domestically owned banks.

The third category—comparisons of efficiencies of foreign-owned versus domestically owned banks within the same nation using the same nation-specific frontier—generally resolves the main issues in the first two categories. The foreign- and domestically owned banks compete in the economic environment of the same nation and are measured against the same frontier, and so can be compared. The efficiencies of the foreign-owned banks should incorporate their efficiency advantages and disadvantages relative to domestically owned banks. Therefore, these comparisons directly address the policy and research questions regarding international consolidation. However, this category is not free of measurement difficulties—foreign-owned banks may receive unmeasured cross-subsidies from the home-nation headquarters or may have sample-selection issues owing to the fact that these institutions were often host-nation banks that may have been in relatively good or bad condition *ex ante*.

By way of preview, this research suggests that in developed nations, the efficiency disadvantages of foreign-owned banks relative to domestically owned banks tend to outweigh the efficiency advantages on average, with some notable exceptions. In developing nations, the situation may often be reversed, with the efficiency advantages of foreign-owned banks outweighing the advantages on average. Again, there are some notable exceptions.

Sections II and III briefly cover the arguments and research in the first two categories that compare efficiencies in different nations using a common frontier and using nation-specific frontiers, respectively. Section IV gives more detailed coverage of the research in the third category that compares the efficiencies of foreign-owned and domestically owned banks within the same nation using the same nation-specific frontier. We include some of the research on the potential efficiency advantages and disadvantages of foreign-owned banks relative to domestically owned institutions, given the likely importance of these advantages and disadvantages in explaining the pace of international banking consolidation. Section V draws brief conclusions.

Before proceeding, we offer several caveats. The views expressed do not necessarily reflect consensus among those that engage in banking efficiency research—many of the authors draw different conclusions than those offered here. In addition, because this literature is so large, we are not able to review all of the international efficiency comparisons. We also focus only on frontier efficiency, often called X-efficiency, in which the performance of each bank is measured relative to what the performance of a best-practice bank on the efficient frontier would be expected to be if it faced the same exogenous conditions as the bank being measured.² As well, we often do not differentiate among frontier efficiency concepts (e.g., cost versus profit efficiency, or input versus output efficiency), or measurement methods (e.g., parametric versus nonparametric techniques), which are reviewed in detail elsewhere (e.g., Berger and Humphrey, 1997). In addition, some of the important research and policy issues on bank globalization noted above, such as systemic risk implications, market power effects, and other social costs and benefits of bank performance are not fully captured in the measured efficiencies.

II. COMPARISONS OF EFFICIENCIES IN DIFFERENT NATIONS USING A COMMON FRONTIER

A number of studies evaluate the efficiencies of banks in different nations, measuring the efficiency of each bank relative to a common best-practice frontier. That is, the frontier is made up of the best-performing banks from the entire set of nations under scrutiny, rather than the best-performing banks in the same country

² In efficiency measurement, the frontier generally reflects the estimated behavior of the best performing banks in the sample, rather than any “true” efficient point, which would fully reflect the available technology and the optimal responses to market prices and the rest of the economic environment. This is expedient, given that the technology is unknown. It is also realistic, given that competition is unlikely to drive performance much beyond the observed best practice.

as each bank. Statistics such as average bank efficiency are then compared across nations. Most of these studies involve banks from several European nations, although many of these studies also include banks from other nations, particularly highly developed nations such as the U.S.

A number of early studies from the 1990s include Berg, Forsund, Hjalmarsson, and Suominen (1993), Fecher and Pestieau (1993), Bergendahl (1995), Bukh, Berg, and Forsund (1995), Allen and Rai (1996), Ruthenberg and Elias (1996), and Pastor, Perez, and Quesada (1997). These studies generally focus on comparing average efficiencies among the included nations. To illustrate, Berg, Forsund, Hjalmarsson, and Suominen (1993) measure the efficiency of banks operating in Norway, Sweden, and Finland relative to a common frontier made up of the best-practice institutions from all three nations. They find that Swedish banks are the most efficient on average. In one set of estimates, Swedish banks are 78% efficient versus 57% and 53% for Norway and Finland, respectively. The robustness of the findings is demonstrated in several ways, including through the deletion of all the banks on the frontier. Notably, the dominance of Swedish banks continues to hold in a follow-up analysis that adds Denmark to the other Nordic nations (Bukh, Berg, and Forsund, 1995).

However, some other early studies appear to show conflicting results. One study of financial institutions in 11 OECD nations finds that the average efficiency in Norway substantially exceeds the average in Sweden, 90% versus 76% (Fecher and Pestieau, 1993). Two of the early studies find that U.S. banks are among the most inefficient—second-lowest average efficiency among 11 OECD nations (Fecher and Pestieau, 1993) and second-lowest among eight developed nations (Pastor, Perez, and Quesada, 1997). The relatively low efficiency for U.S. banks from these studies using a common frontier across nations is in sharp contrast with international comparisons in the third category discussed below. Specifically, comparisons of efficiencies of foreign-owned versus domestically owned banks within the same nation using the same nation-specific frontier tend to find that U.S.-owned banks are more efficient than other banks.

A difficulty with these early studies—and a possible partial explanation of the conflicting results across studies—is that the econometric analyses do not control well for the differences in economic environments across nations. Banks that operate in different nations often face very different prudential supervisory and regulatory conditions that may affect their cost and profit performance, so they may be measured as being different distances from the common frontier on average for reasons totally unrelated to their competence in minimizing costs or maximizing profits. Similarly, measured efficiency differences could reflect differences in labor laws, usury ceilings, antitrust regulation and enforcement, or other legal conditions under which the banks function. As well, differences in market conditions, such as competition for inputs or outputs, quality of services provided, population density, financial market development, and so forth may help explain measured efficiency differences. Put another way, greater average efficiency for the banks of one nation relative those of another nation measured against a common frontier might

primarily reflect any or all of these differences in the economic environments, rather than differences in how efficiently the institutions are operated.

A number of studies from the 2000s improved on the earlier research by specifying better controls for differences in economic environments. Examples of these studies include Dietsch and Lozano-Vivas (2000), Lozano-Vivas, Pastor, and Hasan (2001), Lozano-Vivas, Pastor, and Pastor (2002), Maudos, Pastor, Perez, and Quesada (2002), and Kwan (2003). These studies include—in various combinations—variables measuring banking market conditions (e.g., income per capita, population, deposit, and branching densities), and market structure and regulation (e.g., concentration ratio, average equity capital ratio, risk, and firm specialization). These studies also measure the effects of the environmental variables on measured efficiency to assess the extent to which each of the environmental differences help explain the differences in average measured efficiency across nations.

Other recent analyses focus on countries with similar economic environments, so fewer controls are necessary. Several studies apply a common frontier to some or all of the 15 EU members before 2004 that were part of the SMP and other reforms for many years (EU15), prior to the accession of 10 new member nations in 2004 (e.g., Casu and Molyneux, 2003; Casu and Girardone, 2006; Barros, Ferreira, and Williams, 2007; Carbo Valverde, Humphrey, and Lopez del Paso, 2007; Maudos and Fernandez de Guevara, 2007). Clearly, many of the regulations have been harmonized across these nations, most have a common currency, and there is nominally free entry across the borders of these nations, making their environments more similar than prior to these reforms.

Other researchers compare some of the transition nations of Eastern Europe to a common frontier (e.g., Fries and Taci, 2004; Bonin, Hasan, and Wachtel, 2005; Rossi, Schwaiger, and Winkler, 2005; Yildirim and Philippatos, 2007). Again, it may be argued that the banks in these nations have somewhat similar environments. These nations all experienced the privatizing of state-owned banks, with foreign banks often taking large market shares. At least one study applies a common frontier to the EU15 and ascending 10 to compare them (e.g., Hollo and Nagy, 2006).

In addition, one recent study examines the efficiency effects of changes in governance of banks in five nations of Southeast Asia (Indonesia, Korea, Malaysia, Philippines, and Thailand) between 1990 and 2003 using a common frontier. It may be argued that these countries experienced similar crises and regulatory changes over this time period (Williams and Nguyen, 2005).

In some cases, studies using a common frontier go further and try to use the measured efficiency scores and environmental variables to draw direct inferences about the likely effects of cross-border consolidation. That is, some of these studies try to forecast the likely efficiency effects of cross-border entry based on measured efficiency in the bank's home nation, accounting for differences in the economic environments. To illustrate, Lozano-Vivas, Pastor, and Hasan (2001) evaluate data on commercial banks in 10 of EU15 nations (Belgium, Denmark, France, Germany, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom)

and try to determine which nation's banks are likely to be efficient if they were to establish operations in other European nations. They find, for example, that banks from Spain, Denmark, and Portugal are relatively efficient, and argue that this suggests that these banks are likely to operate efficiently in other sample nations.

Finally, some recent papers test the assumptions underlying the common frontier approach. One paper estimates both common and separate frontiers for European and U.S. banks and tests whether they operate under the same cost and profit frontiers (Bos and Kolari, 2005). They find that the data are consistent with a common profit frontier, but reject the common cost frontier.

Another study challenges the conventional use of a common frontier in the other studies and tries a different methodology. Bos and Schmiedel (2007) use data from eight large industrialized nations (seven of the EU 15 countries plus Switzerland) to estimate nation-specific cost and profit frontiers. They then construct a "meta-frontier" applying an envelope to these national frontiers using the methodology from Battese, Rao, and O'Donnell (2004). They find evidence of a single Western European banking market. More important for our purposes, their results suggest that the conventional estimates using common frontiers underestimate cost and profit efficiency and may result in biased cross-country comparisons.

Although this literature that uses a common frontier is interesting and innovative, two significant difficulties limit the value and applicability of these comparisons in our view. First, nations differ so greatly in terms of their economic environments that it seems unlikely that any set of environmental controls or methodological improvements can rule out the possibility that substantial differences in measured efficiency are due to environmental differences rather than the efficiency differences. For example, despite harmonized banking regulations, the single banking license, and removal of explicit cross-border entry barriers within the EU15, research has suggested that important international differences in economic environments remain due to institutional, cultural, and demographic differences; differences in the use of paper versus book entry, settlement cycles and methods, and payments systems; and differences in financial market development (e.g., Giddy, Saunders, and Walter, 1996; Goddard, Molyneux, and Wilson, 2001).

The data on cross-border penetration within the EU15 are consistent with such significant barriers. As shown in recent research, when the UK is excluded as a special case of an international financial center, foreign bank ownership in the EU15 averages only about 15%. This is in sharp contrast to the transition nations of Eastern Europe that recently ascended to the EU. When the two non-former Soviet nations (Malta and Cypress) are excluded from the ascending 10 nations, foreign bank ownership averages about 70%, without any history of a SMP (Berger, 2007).

Second, the use of a common frontier is limited because the efficiency of banks within their own borders may not be representative of how well they may perform as foreign-owned banks in other nations, even in the absence of environmental differences. This is the key policy issue in international comparisons of banking efficiency in our view. Even an institution that is very efficient in its home nation may have significant difficulties in managing foreign-owned banks in other nations.

Section IV below discusses in more detail some of the efficiency advantages and disadvantages of foreign-owned banks relative to domestically owned banks. We argue that examination of the actual efficiency of foreign-owned banks versus domestically owned banks operating in the same nation is superior for examining the efficiency implications and effects of international consolidation.³

III. COMPARISONS OF EFFICIENCIES IN DIFFERENT NATIONS USING NATION-SPECIFIC FRONTIERS

The vast majority of bank efficiency studies confine their attention to measuring the efficiencies of banks within a single nation against a best-practice frontier within the data set, which of course is also specific to that nation. A 1997 survey reviews 122 studies that apply efficiency analysis to depository financial institutions plus eight other studies that measure efficiency for insurance companies, covering 21 different nations in all (Berger and Humphrey, 1997). Of the 130 studies, only six include institutions from more than one nation, which are all among the early studies listed above that measure efficiencies relative to a common international frontier.

Of the 116 single-nation depository institution studies, about half, 66, use U.S. data. Most of the remaining studies, 41, use data from individual European nations, including Belgium (2 studies), Cyprus (1), Denmark (1), Finland (2), France (2), Germany (3), Greece (2), Italy (3), Norway (5), Spain (11), Sweden (1), Switzerland (1), Turkey (2), and the UK (5). The remaining nine studies are from Canada (2), India (1), Japan (2), Mexico (1), Saudi Arabia (1), and Tunisia (2). Thus, almost all of the analyses involve institutions from developed nations.

Although it is not surprising that the U.S. and European nations dominate the analyses, some of the individual national totals might be surprising, such as the 11 studies of Spanish banks, which is more than twice the number in any other non-U.S. nation. These differences across nations appear to reflect in large part the locations of the authors. Many researchers tend to study efficiency in their home nation and there appears to be more interest in bank efficiency in some nations, such as Spain, than in other nations. Another obvious factor influencing the choice of nation studied is the quality and accessibility of the data. This might help explain why there is only one single-nation study of a Latin American country (Mexico) as of 1997.

There have been many more single-nation studies after 1997. Most of the newer studies continue to analyze banks in the same 21 nations, particularly the U.S. and Europe. Nonetheless, the list of nations covered has increased tremendously. There

³ A different type of international comparison using a common frontier appears in a paper that uses data on 2,375 EU banks that are headquartered in 17 different European nations (some not EU members). Vander Vennet (2002) compares the efficiency of banks based on their activities—specializing banks that only engage in commercial banking, diversified conglomerates that also engage in securities and/or insurance activities, and universal banks that are diversified and also hold equity stakes in nonfinancial firms. He finds efficiency benefits to diversification and universal banking. The results are not distinguished or compared across nations, in effect treating the EU as a single market.

has been expansion to additional developed nations such as Australia (e.g., Otchere and Chan, 2003; Sturm and Williams, 2004) and Portugal (e.g., Barros and Borges, 2004), and to developing nations such as China (Berger, Hasan, and Zhou, forthcoming), Pakistan (e.g., Bonaccorsi di Patti and Hardy, 2005), South Korea (e.g., Gilbert and Wilson, 1998), Poland (Havrylchyk, 2006), Croatia (Kraft, Hofler, and Payne, 2006), Argentina (e.g., Delfino, 2003; Berger, Clarke, Cull, Klapper, and Udell, 2005), Thailand (e.g., Leightner and Lovell, 1998; Chantapong, 2005), Hungary (Hasan and Marton, 2003), and Malaysia (Matthews and Ismail, 2006).

Most of the single-nation efficiency studies do not focus on international comparisons. Rather, they are designed to address other issues, such as the effects of bank regulation on efficiency (e.g., DeYoung, 1998), the effects of domestic bank mergers and acquisitions on efficiency (e.g., Vander Venet, 1996), the effects of financial institution size and organization form on efficiency (e.g., Hermalin and Wallace, 1994), comparing the efficiency of state-owned banks versus privately-owned banks (e.g., Tulkens, 1993), examining the effects of market power on efficiency (e.g., Berger and Hannan, 1998), investigating which branches of an individual bank are most efficient (e.g., Athanassopoulos, 1998), examining the sources of productivity change (e.g., Berger and Mester, 2003; Kumbhakar and Sarkar, 2003), comparing different methods of efficiency measurement (e.g., Bauer, Berger, Ferrier, and Humphrey, 1998), and other policy, research, and management issues.⁴

Although it is not the main focus of this literature, the efficiency distributions for different nations from these studies are sometimes compared. For instance, Berger and Humphrey (1997) compute statistics from the average annual efficiency estimates of U.S. banks and of banks from 14 of the other nations.⁵ The authors find a mean efficiency of 79% and a median of 83% using 188 annual estimates from 50 U.S. bank efficiency studies. The data on 131 average efficiency values for banks from 14 non-U.S. nations yield a mean of 75% and a median of 81%. Thus, the data suggest that on average, banks in the U.S. are slightly closer to the U.S.-determined best-practices frontier than banks from other nations are from their nation-specific frontiers.⁶

These types of international comparisons can give indications of how dispersed banks in different nations are away from their nation-specific frontiers, but cannot be used to draw any conclusions about whether banks in one nation are more efficient than those in other nations because they are measured against different

⁴ See Berger and Mester (1997) for a more thorough review of the literature on the determinants of differences in the efficiencies of financial institutions.

⁵ Some of the studies are excluded because they use different institution types (e.g., branch efficiency rather than bank efficiency) or different efficiency concepts that are not comparable (e.g., profit efficiency rather than cost efficiency), and some of the studies are included multiple times because they report values for multiple years, techniques, and/or classes of banks.

⁶ Notably, these international differences are sometimes based on very different measurement techniques (e.g., parametric versus nonparametric methods), and so the differences may reflect in part that researchers using data from some nations tend to use specific techniques (e.g., all 5 of the UK studies summarized in Berger and Humphrey (1997) use nonparametric methods).

frontiers. To give an extreme example, the average efficiency measured against a nation-specific frontier might be 98% in Nation A, indicating that all the banks are approximately equally efficient, i.e., on or close to the Nation A's best-practice frontier. The average measured efficiency in Nation B might be only 50% because many banks are far from the Nation B best-practice frontier, but this does not rule out the possibility that every bank in Nation B might be more efficient than all of those in Nation A. Clearly, these comparisons also cannot be used to directly address the important policy and research questions regarding the international expansion of financial institutions.

Despite these limitations, these international comparisons may be useful for a number of purposes. For example, differences in efficiency dispersion may be used to make judgments about the degrees of competition in different nations. To the extent that input and output markets within a nation are competitive and there are no barriers to entry or exit or to adopting the best-practice technology, the dispersion in efficiency would be expected to be relatively small, as any best practice would be quickly copied and the benefits would be competed away and passed on to consumers or factors of production. Thus, differences in efficiency dispersion might be used to assess the effects of differences in competition policy, entry restrictions, and other government policies.

International comparisons of the distributions of efficiency within a nation can also be used to address other research and policy questions. For example, one study evaluates the economic effects of the relative efficiency of community banks versus other banks using data from 21 developed nations and 28 developing nations (Berger, Hasan, and Klapper, 2004). Using nation-specific frontiers for each year of the data, the efficiencies of the banks in each nation are ranked on a uniform scale over $[0,1]$, so that the distributions are comparable across nations. The authors then evaluate the effects on national economic performance of the weighted-average efficiency ranks of community banks (as represented by small, private, domestically owned institutions). They find that within both the groups of developed and developing nations, higher efficiency of these community banks relative to other banks in the same nation is associated with faster gross domestic product (GDP) growth, a higher employment share for small and medium enterprises (SMEs), and greater overall bank lending.

Another study compares the effects of specialization on bank efficiency across the banking systems of EU countries over 1992–1998 (Pastor and Serrano, 2006). Cost inefficiencies in each nation are decomposed into two different components, one related to the composition of specializations in each banking system, and the second related to inefficiencies of banks within their specialization. The results suggest that the international differences in efficiency or dispersion from nation-specific frontiers are significantly reduced by removing the effects of the composition of outputs. For example, specialization in retail banking appears to be associated with high costs and dispersion from the frontier, so accounting for this reduces the international differences in dispersion.

IV. COMPARISONS OF EFFICIENCIES OF FOREIGN-OWNED VERSUS DOMESTICALLY OWNED BANKS IN THE SAME NATION USING A NATION-SPECIFIC FRONTIER

A number of recent studies have expanded the bank efficiency literature by comparing the efficiencies of foreign-owned versus domestically owned banks within the same nation using the same nation-specific frontier. This directly addresses issues related to the abilities of banks to operate across international borders by examining banks that have actually crossed these borders. Comparing the efficiencies of these foreign-owned banks with domestically owned banks in the same nation also resolves the aforementioned problem of trying to control for differences in economic environments by comparing banks that operate in the same nation. However, these studies also introduce some other measurement problems, as discussed below.

In this section, we first review some of the efficiency advantages and disadvantages of foreign-owned banks relative to domestically owned institutions. We then review the empirical research that compares foreign-owned and domestically owned banks in the same nation against the same nation-specific frontier, and discuss some of the measurement problems inherent in these comparisons.

EFFICIENCY ADVANTAGES OF FOREIGN-OWNED BANKS RELATIVE TO DOMESTICALLY OWNED BANKS

One possible efficiency advantage for foreign-owned banks relative to domestically owned banks is that multinational presence may allow the organizations of which the foreign-owned banks are subsidiaries to serve corporate customers that operate in multiple nations. Multinational customers may benefit from the services of financial institution with presence in the same set of nations, and may be willing to pay more for doing business with those institutions. Some of revenues may come from financial institutions following their existing customers across international borders, maintaining the benefits of existing relationships. Many studies have give evidence that some banking organizations engage in the “follow-your-customer” strategy of setting up offices in nations in which their home nation corporate customers have foreign affiliates (e.g., Goldberg and Saunders, 1981; Grosse and Goldberg, 1991; Ter Wengel, 1995; Brealey and Kaplanis, 1996). However, other evidence indicates that foreign-owned banks may not cater primarily to firms headquartered in the home nation, lending mostly to other business borrowers (Stanley, Roger, and McManis, 1993; Seth, Nolle, and Mohanty, 1998).

Another potential efficiency advantage for foreign-owned banks is that their organizations may be able to diversify risks across nations and regions of the world. This may raise profits and/or lower costs by providing superior financial stability for which customers may be willing to pay, reducing other costs of risk management, lowering the organization’s cost of capital (i.e., allowing the organization to operate with a lower equity/asset ratio and/or with lower interest rates on debt),

or allowing the institution to invest in some higher risk-higher expected return investments. Existing research on the correlations of bank earnings across nations suggest strong possibilities for risk diversification through international expansion. Berger, DeYoung, Genay, and Udell (2000, Table 1) show very low correlations across nations, and in some cases they find negative correlations even among long-term EU member nations. For example, bank returns on equity in Germany are found to be negatively correlated with those in Spain, France, Luxembourg, and Portugal over a 17-year period (1979–1996). Hartmann, Straetmans, and de Vries (2005) also find that cross-country spillover of extreme bank risk in the 12 Euro Area nations is low relative to the spillover within individual nations, consistent with cross-border risk diversification potential within the EU. The stability of foreign-owned banks may be particularly important in developing nations that are subject to high probabilities of financial crises. For example, Goldberg, Dages, and Kinney (2000) find that foreign banks in Argentina and Mexico may provide credit smoothing and financial stability during financial crises.

There is relatively little research on the diversification benefits to multinational banking organizations, but international diversification has been found to improve the risk-expected return tradeoff and profit efficiency in the reinsurance industry (Cummins and Weiss, 2000). Research on banks within the U.S. also shows substantial improvements in performance from geographical diversification within the nation (e.g., Hughes, Lang, Mester, and Moon, 1996; Demsetz and Strahan, 1997; Hughes and Mester, 1998). As well, studies of domestic bank mergers and acquisitions (M&As) within the U.S. find that M&As improves profit efficiency, and that this improvement may be linked to an increased diversification of risks (Akhavain, Berger, and Humphrey, 1997; Berger, 1998).

Foreign-owned banks that are headquartered in developed nations may have additional advantages over domestically owned institutions in developing nations. These may include managerial expertise and experience, access to capital, ability to make larger loans, seasoned labor force, market power over suppliers, and so forth. Foreign-owned banks may have particularly clear advantages in those developing nations in which state-owned banks have large market shares. All but a handful of nations have state-owned banks, and in some developing nations, state-owned institutions have very large market shares.⁷ State-owned banks generally have objectives other than maximizing efficiency—development of specific industries, sectors, or regions, assistance to new entrepreneurs, expansion of exports, and so forth—which may make it easier for foreign-owned banks to have access to profitable opportunities and to be relatively efficient. Most of the research in this area suggests that large concentrations of state bank ownership have unfavorable economic consequences (e.g., Barth, Caprio, and Levine, 1999; La Porta, Lopez-de-Silanes, and Shleifer, 2002; Berger, Hasan, and Klapper, 2004).

⁷ For example, assets at state-owned banks are 52% of the total in Brazil (Barth, Caprio, and Levine, 2001).

Foreign-owned institutions from developed nations may also have advantages in the use of some technologies in developing nations. Large, multinational banking organizations may have comparative advantages in technologies that are based on “hard” information that is quantitative and verifiable—such as credit scores, data in financial statements, or easily-valued fixed assets pledged as collateral or leased—given their experience and economies of scale in processing “hard” data (e.g., Berger and Udell, 2006). However, these institutions are likely to be at comparative disadvantages in technologies like relationship lending that are based primarily on “soft” information that is difficult to quantify or verify. For the most part, it might be expected that foreign-owned banks would have difficulty in establishing local relationships based on soft information in developing nations. However, in some cases, they may be able to use hard-information-based technologies to gain advantages by using available hard information on the firms, industries, or nations.⁸

Some recent research on lending in developing nations is consistent with these advantages of foreign-owned banks in making loans based on hard information. A global survey of firms in 35 nations 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, 2006). Consistent with this, a study of foreign-owned banks in 28 developing nations finds that a greater market share for foreign-owned banks is associated with higher SME employment shares (Berger, Hasan, and Klapper, 2004). 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). Similarly, other research suggests that foreign banks tend to establish relationships with relatively transparent firms—those that are larger, listed, and foreign-owned (Berger, Klapper, Martinez Peria, and Zaidi, forthcoming).

There may also be dynamic efficiency gains or losses associated with the cross-border consolidation process itself. M&As may involve changes in organizational focus or managerial behavior that change the efficiency of the organizations—moving them toward or away from the best-practice frontier. For example, efficiency may be improved if the acquiring institution is more efficient *ex ante* and brings the efficiency of the target up to its own level by spreading its superior managerial expertise or its policies and procedures over more resources. An M&A may also improve efficiency by awakening management to the need for improvement or by being used as an excuse to implement unpleasant restructuring. As noted below, there are other potential efficiency losses related to the M&A process.

There is not much research available that directly analyzes the efficiency effects of the cross-border consolidation process, but related research on the performance effects of cross-border M&As are often unfavorable. For example, a study of

⁸ For example, Citibank’s “Citibusiness” initiative allows it to provide loans to SMEs in developing nations using industry-level data. Credit is targeted to SMEs in industries with high growth potential, with very little information on the individual firms.

recent cross-border M&As in Europe found that the associated combined bidder and target value changes were generally zero or negative, whereas the combined values changes were positive on average for domestic M&As in these same nations (Beitel and Schiereck, 2001). Other studies of domestic and cross-border M&As involving U.S. banks find that value is created by cross-border M&As, but also that a more concentrated geographic and activity focus has positive effects on value, suggesting less benefits from cross-border M&As (DeLong, 2001; Amihud, Delong, and Saunders, 2002).

EFFICIENCY DISADVANTAGES OF FOREIGN-OWNED BANKS RELATIVE TO DOMESTICALLY OWNED BANKS

One possible efficiency disadvantage for foreign-owned banks relative to domestically owned institutions is that the foreign-owned banks are sometimes located at significant distances from their organization headquarters, which may be associated with organizational diseconomies to operating or monitoring from a distance. However, studies of the efficiency effects associated with the distance of a bank from its headquarters within the U.S. suggest that these efficiency effects are relatively small and are falling over time with technological progress (Berger and DeYoung, 2001, 2006). Also consistent with the finding of reduced disadvantages associated with distance over time, some studies find that U.S. banks have been increasing the distances at which they make small business loans (e.g., Petersen and Rajan, 2002; Hannan, 2003; Brevoort and Hannan, 2006), although one study finds little change in distance in lending by Belgian banks (Degryse and Ongena, 2002).

Other possible efficiency disadvantages for foreign-owned banks are differences in the economic environment of the nation of operations from those in the headquarters nation of the foreign-owned bank. Differences in language, culture, currency, and regulatory/supervisory structures, and so forth may increase the costs of management, impede the flow of information, or reduce efficiency in other ways. Foreign-owned banking organizations also often face explicit or implicit rules or supervisory barriers, although as noted, these disadvantages have been reduced to some degree by government policies. Some research on the barriers faced by foreign-owned institutions suggests high regulation, distance, and cultural differences all tend to deter cross-border M&As, although the exact sources of the diseconomies are difficult to disentangle (e.g., Buch, 2003, 2005; Buch and DeLong, 2004; Choi, Francis, and Hasan, 2006).

As alluded to above, foreign-owned banks may be at comparative disadvantages in technologies that are based on “soft” information about local conditions that is difficult to process and communicate for these organizations (e.g., Berger and Udell, 2002; Stein, 2002). Some foreign-owned nonfinancial firms may prefer domestically owned banks due to the “concierge” services that they can provide in terms of knowledge of the local economic conditions, local suppliers of goods and services, local customers, and so forth. One study finds that foreign affiliates

of multinational corporations operating in Europe usually choose domestically owned banks for cash management services, consistent with the “concierge” effect (Berger, Dai, Ongena, and Smith, 2003). Soft information is generally thought to be most important in relationship lending to informationally opaque SMEs. There is relatively little evidence on the types of SME loans issued by foreign-owned banks (other than the research noted above), but the evidence comparing large versus small domestic bank lending in developed nations is consistent with disadvantages in relationship lending for large banking organizations. Among other findings, large banks tend to lend to larger, older, more financially secure firms (e.g., Haynes, Ou, and Berney, 1999); have shorter and less exclusive relationships (e.g., Berger, Miller, Petersen, Rajan, and Stein, 2005); and base their lending decisions more on financial ratios rather than prior relationships (e.g., Cole, Goldberg, and White, 2004).

As noted above, the cross-border M&A process may generate either efficiency improvements or deteriorations. Here we note that efficiency may deteriorate because of the costs of consummating the M&A (legal expenses, consultant fees, severance pay, etc.) or any disruptions from downsizing, meshing of corporate cultures, or turf battles. As well, efficiency may decline if an inefficient management team spreads its policies and procedures or shifts focus away from maximizing efficiency toward other goals, such as increasing organization size.

EVIDENCE THAT COMPARES THE EFFICIENCY OF FOREIGN-OWNED BANKS AND DOMESTICALLY OWNED BANKS IN THE SAME NATION AGAINST THE SAME NATION-SPECIFIC FRONTIER

There are a number of studies comparing efficiency of foreign-owned and domestically owned banks in the same nation against the same nation-specific frontier. Studies of U.S. banking data generally find that foreign-owned banks are significantly less efficient on average than domestic banks (e.g., DeYoung and Nolle, 1996; Hasan and Hunter, 1996; Mahajan, Rangan, and Zardkoohi, 1996; Chang, Hasan, and Hunter, 1998). The studies generally do not distinguish the results by the nation in which the foreign-owned banks are located. By itself, this evidence cannot differentiate between the hypothesis that foreign-owned banks are generally less efficient than domestically owned banks versus the hypothesis that U.S. institutions tend to be more efficient than institutions from other nations. As well, this evidence alone cannot determine whether the foreign-owned banks from some other nations are more efficient than the domestic U.S. banks.

Some of the research using data on banks in other developed nations finds that foreign-owned banks are approximately equally efficient to domestically owned banks (e.g., Vander Venet, 1996; Hasan and Lozano-Vivas, 1998) or more efficient than domestically owned banks (Sturm and Williams, 2004). Again, the results are not distinguished by the nation of origin of the foreign-owned banks, limiting the conclusions that may be drawn.

The most comprehensive studies of developed nations use multiple nations and identify the nation of origin of the foreign-owned banks. The results generally suggest that foreign-owned banks are on average less efficient than domestically owned banks. However, foreign-owned banks headquartered in the U.S. are often more efficient than domestically owned banks in many nations (e.g., Berger, DeYoung, Genay, and Udell, 2000; Miller and Parkhe, 2002). The exact reasons for the relative success of U.S.-owned banks are not known. Further research suggests that the U.S. has idiosyncratic comparative advantages at both exporting and importing financial institutions management via foreign direct investment (FDI) mergers and acquisitions (Berger, Buch, DeLong and DeYoung, 2004). One possible explanation is the competitive environment of the U.S. market, which is relatively open and subject to strong competition from financial markets.

The studies of banks in developing nations often find different results from the studies of banks in developed nations, as would be predicted based on the discussion above of the efficiency advantages of foreign-owned banks in developing nations. For example, a study of foreign banks in over 80 countries finds that foreign-owned banks have relatively high profitability in developing nations (Claessens, Demirgüç-Kunt, and Huizinga, 2001). Some studies of banks in individual developing nations also find that foreign banks are the most efficient in Croatia (Kraft, Hofler, and Payne, 2006), China (Berger, Hasan, and Zhou, forthcoming), Pakistan (Bonaccorsi di Patti and Hardy, 2005), Hungary (Hasan and Marton), and Malaysia (Matthews and Ismail, 2006).

However, other studies of developing nations often find that foreign banks are only of comparable efficiency to or slightly lower efficiency than private domestically owned banks in Eastern Europe (Yildirim and Philippatos, 2007), Argentina (Delfino, 2003; Berger, Clarke, Cull, Klapper, and Udell, 2005), Poland (Havrylchyk, 2006), and Thailand (Chantapong, 2005). In most of these studies, the foreign banks are generally more efficient than state-owned banks.⁹

As noted above, these studies resolve some of the measurement problems of the other two types of international comparisons, but they also introduce some other problems. The available data sets on foreign-owned banks generally include information on the performance of the bank, but not on the entire multinational organization. The goals of the foreign-owned bank may not be to minimize costs or maximize profits, as typically assumed in efficiency analysis, but rather to further the goals of the organization as a whole. As noted above, a foreign-owned bank may contribute to the organization by serving the foreign offices of multinational corporate customers or by diversifying the risks of the organization—neither benefit may appear on the books of the foreign-owned bank. There may also be cross-subsidies from the home-nation headquarters to the foreign-owned bank or vice versa that are not taken into account. For example, some of the information

⁹ In contrast, a study of Indian banks finds that state-owned banks are more efficient than both foreign-owned banks and private domestically owned banks, although this finding may be partially explained by the accounting practices of government auditors (Bhattacharya, Lovell, and Sahay, 1997).

processing and management may be located at the headquarters and the costs of these activities may be on the books of the organization in the headquarters nation. Foreign-owned banks may also be able to operate with very little equity capital, in effect, using the capital of the organization as a whole.

In addition, there may be sample-selection issues for foreign-owned banks. Some evidence suggests that multinational banking organizations may tend to buy host-nation banks that already have unresolved performance problems (e.g., Peek, Rosengren, and Kasirye, 1999) or host-nation banks that have had their nonperforming loans removed (e.g., Berger, Clarke, Cull, Klapper, and Udell, 2005).

V. CONCLUSIONS

International comparisons of bank efficiency may be used to address a number of important policy and research questions, especially issues regarding the international consolidation of the banking industry. In this paper, we review the findings of over 100 studies that provide such comparisons. We divide the studies into three categories—(1) comparisons of bank efficiencies in different nations using a common frontier, (2) comparisons of bank efficiencies in different nations using nation-specific frontiers, and (3) comparisons of efficiencies of foreign-owned versus domestically owned banks within the same nation using the same nation-specific frontier.

All three types of comparisons yield interesting findings, and also have limitations. Studies in the first category using common frontiers have progressed significantly by controlling for differences in environment through econometric methods, by choosing nations with similar environments, and by methodological improvements such as the “meta-frontier.” However, we argue that it is unlikely that any controls for environmental differences or methodological breakthroughs are sufficient to eliminate the possibility that measured differences in efficiency are due to unmeasured environmental variations rather than actual efficiency differences.

Studies in the second category using nation-specific frontiers are useful for comparing the effects of different types of banks, such as community banks or banks that specialize in retail services, relative to other banks. These types of comparisons can also suggest how dispersed banks in different nations are away from their nation-specific frontiers, but cannot be used to draw any conclusions about whether banks in one nation are more efficient than those in other nations because they are measured against different frontiers.

We argue that only the third category that compares foreign and domestic banks under the same conditions directly addresses the key international consolidation issues noted above—why cross-border consolidation among developed nations is so low and why foreign bank presence is so much higher in developing nations. The main reason why the studies in the first two categories are not useful for this purpose is that they evaluate banks operating within their own nations and

do not take account of the advantages and disadvantages for foreign-owned banks relative to domestically owned banks. The research suggests that these advantages and disadvantages are significant and differ substantially depending on whether the host nation is a developed or developing nation.

The research in the third category generally suggests that in developed nations, the efficiency disadvantages of foreign-owned banks relative to domestically owned banks tend to outweigh the efficiency advantages on average. That is, the difficulties in managing from a distance, in dealing with different economic environments, in processing “soft” information about local conditions, and so forth may reduce the efficiency of foreign-owned banks relative to domestically owned banks in the same nation more than the benefits of serving multinational customers, international risk diversification, and so forth increase the relative efficiency of foreign-owned banks on average. This research is subject to measurement problems, primarily because the data on foreign-owned banks excludes information on the remainder of the international organization, where some of the benefits and costs of international consolidation may be recorded. Nonetheless, the finding in most cases that foreign-owned banks are measured as less efficient than domestically owned banks may help explain in part why the banking industry has not consolidated across borders as much or as quickly as some have predicted. More research is clearly needed to draw definitive conclusions.

Additional research may also be needed to come to convincing conclusions regarding why U.S.-based foreign-owned banks are often the exception—being relatively efficient in other developed nations. This may be related to the openness of U.S. banking markets, or to competition from well-developed financial markets that forces large U.S. institutions to be efficient, but the exact cause is not known.

In developing nations, the research suggests that the situation is often reversed. The efficiency advantages of foreign-owned banks relative to domestically owned banks may tend to outweigh the disadvantages on average in many nations. This finding may be related to the additional advantages that foreign-owned banks headquartered in developed nations may have in developing nations. These include managerial expertise and experience, access to capital, use of technology, and so forth, as well as often competing against state-owned banks that may have objectives other than maximizing efficiency. Despite the measurement problems, the finding that foreign-owned banks tend to be measured as more efficient than domestically owned banks in developing nations may help explain in part why foreign organizations have often taken significant market shares in relative short time periods in some developing nations.

Again, more research is needed to draw definitive conclusions. As well, additional research is called for to investigate why domestically owned banks in some developing nations appear to be able to maintain comparable efficiency to foreign-owned institutions.

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VII. NOTES ON CONTRIBUTOR/ACKNOWLEDGMENTS

Allen N. Berger is Senior Economist at the Board of Governors of the Federal Reserve System and Senior Fellow at the Wharton Financial Institutions Center. Mr. Berger also currently serves on the Board of Directors of the Financial Management Association and the editorial boards of 7 professional economics and finance journals. He is past editor of the *Journal of Money, Credit, and Banking* and has co-edited 6 special issues of various journals.

Mr. Berger has published more than 100 professional economics and finance articles, including papers in the *Journal of Political Economy*, *American Economic Review*, *Journal of Monetary Economics*, *Journal of Finance*, and *Journal of Financial Economics*. His research covers a variety of topics related to financial institutions. He received a Ph.D. in Economics from the University of California, Berkeley in 1983, and a B.A. in Economics from Northwestern University in 1976.

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