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Towards a Theory of International Banking

Robert Z. Aliber*

In the next few years, the geographic scope of the market for individual banks will increase sharply with the growing use of electronic funds transfer mechanisms. The costs and the inconvenience of using banks based in distant locations will decline. Inevitably, the change in the technology of payments will enlarge the market for major banks across the national borders; U.S. banks will find it easier to attract foreign customers and foreign banks will find it easier to attract U.S. customers and international banking will expand.

Currently over one-hundred U.S. banks have foreign branches or offices; five have sizable branch networks. More than 60 foreign banks have set up one or more branches in the United States and several have established branch networks in California. The assets of U.S. banks operating abroad are about 15 percent of domestic U.S. bank assets, although 70 percent of the foreign assets involve off-shore transactions in dollars. Foreign banks now account for nearly 7 percent of bank assets in the United States.

This article presents two theoretical approaches for viewing the phenomenon of international banking. One approach, based on international trade theory, emphasizes comparative costs of banking in different countries and "barriers to trade" which prevent costs from being equalized. The second approach, based on industrial organization theory, assesses the market structure of banks in different countries through comparisons in mark-ups or spreads between borrowing and lending rates.

Trade Theory Approach

One set of hypotheses about the competitive position of banks in different countries is based on theories of international trade. Thus, banking will be most substantial in those countries which have a comparative advantage in producing bank products in those countries' services.

Imagine that there were free trade in money and in loans, convenience (e.g., bank office location) would be much less important to borrowers and depositors in choosing among competing banks. The market share of the more efficient banks would increase. If the less efficient banks set their interest rates to maintain their market share, their profit rates and the rate of growth of their capital would decline. The efficient, low-cost banks would be able to attract capital and increase their market shares, while the higher-cost banks—and the banks most susceptible to loss charge-offs—would incur declines in market shares.

Several questions arise when competition among banks is examined in an international context — as an international industry, with firms based in different countries competing in the same market or in overlapping segments

*Professor of International Trade and Finance, Graduate School of Business, University of Chicago; Visiting Scholar, Federal Reserve Bank of San Francisco, Fall 1975.

of various national markets. One is the comparative cost of production of banks based in different countries, which concerns the relative efficiency of banks operating in different countries; this is the standard international-trade question of comparative advantage. Answering this question requires a model of the inputs, outputs, and the production function in banking. A related question involves the impact of national regulation on the costs of producing bank services; in part the rapid growth of offshore banking results from efforts to circumvent the costs of national regulation. A final question is whether firms based in some countries have advantages in owning banks overseas—the traditional international-investment question.

One analogy to competition in international banking is provided by the international automobile industry. Currently about 15 companies supply the world market for autos. Most countries import autos. Trade in autos is extensive, even among the producing countries; the Swedes buy many Fiats and the Italians buy some Volvos. Over the last 20 years, competition in national and international markets has led to a sharp decline in the number of automobile firms. Within the United States, old-line firms such as Studebaker, Packard, Hudson, and Willys have disappeared, as have Citroen, Sunbeam, Audi, Simca, Wolsey, and Maserati abroad. It is a truism that the defunct firms have not been able, given the level of market prices, to earn the profits necessary to maintain their capital position.

Banks face a similar problem—if they are less efficient than their competitors, they are less able to acquire the capital necessary to finance their expansion and maintain their market share. But if they raise their selling prices to realize a higher rate of return, their market share may fall.

The reduction in the number of firms noted in the world automobile industry has already occurred in most national markets for banks. In the Netherlands banking is dominated by two firms; in France, by four firms; in Canada, Great Britain, and Japan by about ten. Within the United States, in contrast, the combination of anti-trust legislation and limits on branch banking across state boundaries has resulted in much less concentration.

International trade in money is less extensive than international trade in autos, even though the apparent costs of trade in automobiles are larger. The national markets for bank products are segmented by the costs of using the foreign-exchange market. Segmentation of national money markets also may result from the inconvenience of using distant banks. As these costs fall further, competitive pressures should insure that buyers of bank products and users of bank services shift to the more efficient banks, even if national borders must be crossed.

Industrial Organization Approach

Another set of hypotheses about the competitive potential of banks is based on industrial organization studies. Profits and the numbers of firms are inversely related; the smaller the number of firms in the industry, the higher their profit rates. The implication is that banks based in countries with high concentration ratios would be more profitable—and better able to satisfy capital expansion needs—than those in countries with lower concentration ratios. Thus the margins of banks—the spread between the interest rates they receive on loans and the interest rates they pay on deposits—would be higher in the countries in which the concentration ratios are high. High margins provide the necessary condition for high rates of profit, but not the sufficient condition; the less extensive competition may have led to higher wage rates and costs and less pressure for efficiency. To some extent, differences in margins may reflect differences in costs of reserve requirements.

A comparison of the efficiency of commercial banks in several countries requires an answer to the question, "What do commercial

banks produce?" The experts do not agree on an answer, in part because the output of banks, in contrast to that of auto companies, is not visible.[1] In the absence of clarity about the inputs and outputs, comparisons of efficiency across national frontiers are likely to be futile.

Commercial banks are one class of a family of financial intermediaries. All financial intermediaries perform similar functions — they issue liabilities to primary lenders, largely households, and use the funds to buy the securities issued by primary borrowers, largely firms and governments. The interest income paid by the borrowers exceeds that on the liabilities issued by the financial intermediaries.

The liabilities issued by financial intermediaries differ from those issued by primary borrowers in several respects; for instance, they are more liquid, in that they can be more readily exchanged into money at a fixed price. In addition, the liabilities issued by financial intermediaries are less subject to default risk, since intermediaries hold a diversified group of primary securities. Morover, the liabilities issued by some financial intermediaries are guaranteed by the government. Finally, the liabilities issued by financial intermediaries sometimes have attached associated services: life insurance policies provide a fixed payment contingent on death, while annuity and pension policies provide a variable payment contingent on living. Demand deposits are used for money payments.

Financial intermediaries are grouped by the unique types of *financial* liabilities they produce. Commercial banks produce demand deposits—by definition any institution which produces demand deposits is a commercial bank.

At any time the size of the commercial bank sector relative to the size of every other type of financial intermediary depends on the primary lenders' demand for the risk, return, and service attributes of liabilities of each type of intermediary. The reserve requirements applied to commercial banks provide an upper limit on the volume of the liabilities at any time, given the volume of their reserves created by the central bank. Moreover, the reserve requirements reduce the interest that banks can pay on their deposits, since they constrain the interest income earned by banks. Banks and non-banks acquire similar types of assets, although not necessarily in the same proportions. The interest rates that each type of intermediary can pay on its liabilities will—in the absence of regulatory constraints—depend on how successful it has been in acquiring assets whose returns are high related to their risks.

Each financial intermediary performs two different functions. On the one hand, each intermediary sells its liabilities and buys money; on the other hand, each buys loans and sells money. The more successful the intermediary is in selling liabilities, the larger volume of interest-bearing assets it can acquire. Intermediaries in marketing their liabilities attempt to optimize the risk-return aspects of their assets.

For financial intermediaries as a whole, the acquisition of liabilities of primary borrowers must equal the sale of liabilities to primary lenders. But this statement is not necessarily true for each bank, or for each life insurance company, nor is it true for banks as a group or for life insurance companies as a group, or for any other sub-set of financial institutions. At any time, some commercial banks may be more successful in selling liabilities than in finding attractive loans; these banks can "sell" or lend their excess money to other banks. If some banks have an excess supply of deposits, then other banks must have an excess supply of assets or loans. Transactions among banks would clear the market.

Once an individual bank has sold an additional deposit to a primary saver, it compares the prospective return and risk from acquiring additional primary securities with the return and the risk from lending to other banks. Most financial institutions specialize in either selling deposits or in buying loans. The implication is that there are significant economies of scale in grouping the liability transactions and the asset transactions in one institution.

Nevertheless the loans of some banks exceed

receipts from sale of deposits to primary lenders, their funds being obtained by borrowing from other banks and other large lenders; such banks are known as wholesale banks. Specialization by banks in the liability function may partly be a function of geography and of restrictions on branching; the large wholesale banks are located in the major cities where most of the large borrowers also are based. Perhaps more importantly, the wholesale banks may have an advantage in acquiring information about primary borrowers which other banks find it costly to replicate.

At every moment, each bank compares the return available on acquiring additional primary assets with the return from selling deposits to other banks. The interest rate at which deposits are traded among banks can be used as a transfer price to determine the distribution of the gross income of the bank between its two activities.

In fact, at any moment a family of transfer prices exists; these prices differ by maturity—one on Federal funds, one on short-term certificates of deposit, another on longer-term certificates of deposit, one on longer-term government bonds.[2] Moreover, the prices for each maturity may differ in the foreign money markets and in the external currency market, because risk attributes for foreign and domestic securities differ.[3] The bank must decide which interest rates are most relevant for the internal transfer price.

Conclusion

The two approaches outlined in this paper view commercial banking as an international industry. Industrial organization theory suggests that inferences about the relative efficiency of banks based in different countries may be obtained from a comparison of loan-deposit spreads. The difference between the interest rates paid on bank liabilities and the interest rates earned on new assets covers the banks' costs and provides them with the profits necessary to finance their expansion. Trade theory, however, suggests that free trade in money would cause depositors to shift funds to those banks paying the highest deposit rates, and cause borrowers to shift business to the banks charging the lowest interest rates. Banks with the higher markups would be forced out of business, eliminating observed differences in spreads across countries.

The persistence of very large differences in such spreads would indicate that "barriers to trade" in money exist, permitting assessment of the underlying efficiency of each country's banks. These differences would be independent of inflation or recession or changes in exchange rates, because interest rates paid on liabilities and assets would be equally affected. The trade theory and industrial organization approaches, thus, are complementary ways of viewing the phenomenon of international banking. In a world of integrated financial markets, an analysis of banking based on underlying cost differences could be more appropriate for future research efforts than one based on trends in lending flows or numbers of banking offices.

FOOTNOTES

1. See W. F. Mackara, "What Do Banks Produce?" **Monthly Review,** Federal Reserve Bank of Atlanta, May 1975, pp. 70-75.

2. Note the choice of the relevant transfer price is independent of how much banking risk the firm should acquire—that is, to what extent the bank should mismatch the maturities of its assets and liabilities. Once the bank decides on the appropriate mismatch, then it should trade securities whenever the market spreads differ from those it deems offer the best risk-return combination.

3. In a world without transaction costs and political risk neutrality, yields on assets denominated in one currency would differ from those on assets denominated in other currencies by the anticipated rate of change in the exchange rate; all yields in one currency would be a simple transformation of those in every other currency. Bid-ask spreads would be everywhere equal. In the real world, these spreads are not equal. The bank must choose between the transfer price in the domestic market, and that in the foreign market.