OTHER LINES OF BUSINESS / MARKETS

A bank is effectively a bundle of activities, using the balance sheet for activities such as lending, and providing services that do not use the balance sheet directly. These services are underwriting, payments, trust activity, custodial activities, etc. Additionally, banks may compete for deposits. Especially with the evolution of the financial industry, both regulated and unregulated, concentration in these markets should be considered separately. The non-lending activities, such as trust services, custodial activities, etc., are often conducted in special-purpose charters.

There is some literature that focuses on the *quality* of services provided. Dick (2007) introduces quality of services and tests whether competition occurs mainly through endogenous quality. As Dick states, "The introduction of quality in the study of competition alters the interpretation of certain empirical correlations between the number of firms, market concentration, and conduct used in antitrust policy. For instance, the empirical finding that markets with fewer banks tend to have lower deposit rates and higher loan rates has been historically taken to imply a less competitive conduct by banks and therefore have a negative effect on consumers. However, once quality is introduced, there is no unambiguous implication for consumer welfare from the empirical correlation between prices and the number of banks in a market. Some consumers might be happier paying a higher price to a bank in exchange for higher quality service. Thus, our finding that quality is relevant in banking suggests that quality should be incorporated into the analysis of consumer welfare and therefore antitrust analysis."

Some research also examined the effects of banking market structure in the United States on bank risk, often based on the hypothesis that the banks try to protect the franchise value created by the market power associated with high concentration by keeping their risks relatively low (e.g., Keeley 1990). For example, one recent study found that banks in more concentrated local U.S. markets have smaller portfolio shares in construction and land development loans, a relatively risky type of lending (Bergstresser 2001). In addition, studies of the performance effects of M&A activity and geographic diversification of U.S. banks often found that much of the performance benefits are due to risk diversification benefits, which allow the institutions to take on more credit risk and leverage risk to earn higher returns (e.g., Hughes et al., 1996, 1999, Akhavein, Berger, and Humphrey, 1997, Demsetz and Strahan, 1997). Thus, when large U.S. banks face an improved risk-expected return trade-off, they often appear to choose to increase expected returns.

OTHER MEASURES INSTEAD OF HHI TO ASSESS BANK COMPETITION

It is important to note that bank concentration measures, such as the Herfindahl-Hirschman Index (HHI), may not be the best measures of bank competition. In the past, competition in the banking sector has been assessed and measured using market concentration measures, such as the n-bank concentration ratio or the HHI, which are associated with the traditional Structure-Conduct-Performance (SCP) Industrial Organization approach originally developed by Bain (1956). However, the SCP approach is problematic, since it does not account for the conduct of the banks in the market and the impact of the performance of the banks on market structure, which is

assumed to be exogenous. That is, the SCP approach does not measure competition directly but infers it indirectly from concentration proxies (Berger et al. (2004), De-Ramon and Straughan (2016), Dubovik and Kalara (2018), Degryse et al. (2009), Leon (2015)). Concentration measures are generally not good predictors of competition, as they ignore the concept of market contestability, whereby the behavior of banks in contestable markets is determined by the threat of entry and exit. Banks are pressured to behave competitively in a contestable market even if the market is concentrated (See, e.g., World Bank (2018)).

Several direct, non-structural measures of competition associated with the New Empirical Industrial Organization (NEIO) have been proposed as alternatives to the concentration measures. These competition measures are performance-based and include the Panzar-Rosse H-statistic, the Lerner Index, and the Boone Indicator.

Bain, J., 1956, *Barriers to New Competition*, Harvard University Press, Cambridge, MA.

Berger, A., A. Demirguc-Kunt, R. Levines, and J. Haubrich, 2004, "Bank Concentration and Competition: An Evolution in the Making," *Journal of Money, Credit, and Banking*, 36, 433-451.

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De-Ramon, S., and M. Straughan, 2016, "Competition Indicators for the UK Deposit-taking Sector, Bank for International Settlements.

Dubovik, A., and N. Kalara, 2018, "Can we measure banking sector competition robustly?" CPB Netherlands Bureau for Economic Policy Analysis, CPB Discussion paper No. 386.

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The World Bank, 2016, "Banking competition," IBRD-IDA, Washington, DC.

RURAL MEASURES OF COMPETITION

An interesting recent paper from the FRB examines anti-trust issues in mergers in rural areas. To summarize, when rural banks are acquired, rural consumers may be hurt because the "transaction costs" for rural borrowers versus urban borrowers are higher to begin with. Provision of services (as opposed to lending) may be much more important in these rural markets.

Benson, David, Serafin Grundl, and Richard Windle (2020). "How do Rural and Urban Retail Banking Customers Differ?," FEDS Notes. Washington: Board of Governors of the Federal Reserve System, June 12, 2020, https://doi.org/10.17016/2380-7172.2513.

Paper by Cohen and Mazzeo (2005), who find that banks in rural areas invest in denser branch networks when they face competition from multimarket banks, whereas they choose to have fewer branches when the competition is made up of single-market banks or thrifts.

Cohen, Andrew, and Michael Mazzeo. (2010) "Investment Strategies and Market Structure: An Empirical Analysis of Bank Branching Decisions." Journal of Financial Services Research

COMPETITION BETWEEN LARGE AND SMALL BANKS / LENDING TO SMALL FIRMS

Small banks compete with large banks largely in commercial lending, particularly in areas like CRE (see, e.g., Marsh and Sengupta (2017)). There are also smaller banks specializing in niches, such as, e.g., City National in LA, which lends to and provides asset management services to the entertainment industry. A large bank acquiring two out of the three banks specializing in that industry could easily acquire significant market power and become a monopoly.

Nguyen (2014, 2019) shows that merger-induced branch closings during the 2000s have large adverse effects on credit supply to local small businesses. He finds that closings lead to a persistent decline in local small business lending, with annual originations falling by $453,000 after a branch closing, off a baseline of $4.7 million, and remain depressed for up to six years. These effects are extremely localized, dissipating within six miles, and are especially severe during the financial crisis.

The literature has also documented that shorter distance to the lender reduces the loan rates, particularly for smaller firms. The explanations are based on information opacity where the soft information is relatively more important. Competition in the geographic market also matters since both the willingness to lend and the loan rates are affected by the competition. Smaller distances increase the precision of soft information, such as motivation of the borrower's owners and workers and the owner's management ability, as documented in Agarwal and Hauswald (2010). Second, smaller distances reduce transportation costs incurred by firms when using bank services as well as banks' cost of monitoring a borrower as in Degryse and Ongena (2005). Degryse and Ongena (2005) studied the clients of a large Belgian bank and found that Loan rates decrease with the distance between the firm and the lending bank and increase with the distance between the firm and competing banks.

Ono, Saito, Sakai and Uesugi (2016) using Japanese data find that when bank mergers/branch consolidations cause an increase in lending distance, firms change their main banks. Also, the average lending distance for firms that switched to new main banks significantly decreased afterwards. However, they do not find that the increased distance raises the borrower's default probability. This may be unique to Japan.

Glancy (2015) proposes a new measure of concentration, or bank market power, which accounts for banks' locations within markets and emphasizes local concentration. He argues that the conventional MSA-level Herfindahl index is a flawed measure of competition because it fails to account for the location of banks within the MSA. Thus, while it may address the ability of banks to collude on pricing, it fails to capture how the location of banks within a market can affect market power stemming from spatial frictions in lending. To address this weakness, Glancy conducts an empirical analysis using his Local Herfindahl index and finds that bank lending rates depend most strongly on the availability of competitors within five miles of their branches, indicating a limited ability to substitute towards distant banks.

Craig and Dinger (2013) revisit the risk effects of bank competition and propose a new approach to the empirical estimation of the relation between deposit market competition and bank risk. Since banks can substitute between retail and wholesale funding, the authors relate deposit market competition to wholesale market conditions and examine their joint effect on the risk of bank assets. The empirical analysis is based on a unique comprehensive dataset which combines retail deposit rates data with data on bank characteristics and with data on local deposit market features for sample of 589 U.S. banks from 1997 to 2006. Their results lend empirical support to the notion of a risk-enhancing effect of deposit market competition.

With specific regard to competition between large and small banks for retail deposits, Amel and Stahl (2016) use a panel dataset on branch-level deposit rates to explore whether banks continue to pursue meaningful price competition at the geographically local level. They examine the rates offered on three-month CDs for three types of banks—large banks with more than $10 billion in deposits; community banks with less than $10 billion in deposits and with at least 70% of their deposits coming from one local banking market; and other, more geographically dispersed, small banks with less than $10 billion in deposits. They find that banks compete mainly with like banks; i.e., community banks compete mainly with community banks, while big banks compete mainly with big banks. An exception, however, is the behavior of big banks in their "primary" markets, in which they hold more than 10% of their deposits. In those markets, big banks not only compete with other big banks, but also with community banks.

Amel, D. and J. Stahl, 2016, "Pricing Behavior of Banks in Local Banking Markets: Evidence from Survey Data of Deposit Rates," Paper prepared for presentation at the International Industrial Organization Conference, Philadelphia, PA, April 15-17.

Marsh, W., and R. Sengupta, 2017, "Competition and Bank Fragility," The Federal reserve Bank of Kansas City, Research Working Papers, RWP 17-06.

Craig, B. and V. Dinger 2013, "Bank Mergers and the Dynamics of Deposit Interest Rates," Deutsche Bundesbank and FRB of Cleveland, Working Paper.

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Ono, Arito, Yukiko Saito, Koji Sakai, and Iichiro Uesugi, 2016, Does Geographical Proximity Matter in Small Business Lending? Evidence from Changes in Main Bank Relationships. Working Paper.