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Assessing bank competition for consumer loans ☆

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ABSTRACT

Based on frontier analysis, we derive inferences of bank consumer loan competition from estimating a revenue-cost 'competition efficiency' (CE) frontier. The competitiveness of the $400 billion U.S. bank consumer loan market is then assessed by comparing results from our frontier CE measure with other competition measures, such as HHI, Lerner Index, and H-Statistic. These measures are weakly related to one another and only half of them identify banks with the highest loan price as also being the least competitive. This is the opposite of what is expected. Using the frontier CE measure, the most and least competitive banks are not located in the most populous states and the largest banks are underrepresented. Overall, the HHI should not be used to indicate competition.

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1. Introduction

Bank loans generate more than half of all U.S. bank revenues and differ between business and consumer loans in both size and borrower sophistication. Consumers are viewed as less informed in financial matters and so are the focus of most state and federal legislation, as well as regulatory concern. Consumer loans in this paper comprise loans to individuals for household, family, and other personal expenditures—a $400 billion dollar market. Concerns about financial services offered to consumers, including all types of consumer loans, led Congress to establish the Consumer Financial Protection Bureau (CFPB) when it passed the 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act. Identifying and correcting potentially unfair or anticompetitive behavior may ultimately increase consumer welfare and raise total economic surplus.

This paper's principal contribution is methodological and takes the form of proposing a new competition measure—our competition efficiency (CE) measure—that is based on frontier analysis. This measure looks at an individual bank's loan spread-to-cost ratio and "statistically subtracts" influences that are unrelated to output market competition—such as factor prices, productivity, scale of operation, bank-specific risk—leaving an estimate of the unexplained portion of the loan spread-to-cost ratio across banks. Once the influence of normal error on this residual is removed, we are left with the presumed average effect of competition on the loan spread-to-cost ratio. This value is then used to form a relative index across banks which defines the "competition efficiency" frontier. The theoretic framework that underlies our frontier approach to measuring competition borrows from Boone (2008a) who derived a robust competition measure based on relative profit differences.

Competition policy that has had some success in more oligopolistic industries than banking, has been to identify and later look more closely at manufactured products where prices seem to be "too high" according to some mark-up measure (e.g., Lerner Index) or remain very stable even though costs are fluctuating or major material input costs are falling (e.g., H-Statistic). The use of the HHI by banking regulators to limit market concentration through mergers and acquisitions is an example of attempting to prevent implicit price collusion (local price leadership) and maintain a competitive environment that will keep prices from becoming "too high" via market power or price collusion. For antitrust authorities it is important to know which competition measure

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may best reflect the price conduct aspect of bank competition for consumer loans. Using our frontier CE measure, we focus on trying to identify banks with relatively higher consumer loan prices—after controlling for cost and productivity differences—and report information on their market characteristics, such as where they are located, the income level in their markets, the degree of branch ownership concentration, and other descriptives.[1]

In this paper, we estimate and compare our frontier CE measure with five, more or less, standard competition measures—HHI, H-Statistic, Lerner Index, an inefficiency-adjusted Lerner Index (L), and a Mark-up. In addition, we analyze the ability of all these six competition measures to actually identify banks with relatively low versus high loan output prices. This is often viewed as a useful indicator of the strength versus weakness of market competition so that the greater the match, the greater the possible accuracy of the measure. As a first screening device, this type of bank-level information may be helpful for antitrust authorities when it comes to assessing the competitive conditions of a specific banking market and the banks operating in it. European regulators have similar concerns about lack of competition and high prices for banking services (European Commission, 2007; Liikanen, 2012).

Our analysis shows that these competition measures, while often significantly statistically related to each other for US banks, are only weakly economically related to one another. Measured by adjusted R-squared, 16 out of the 21 bivariate correlations among our competition measures are less than .10 while all correlations with HHI are .01 or less. Thus, the competition indicators appear to measure different aspects of competition. Overall, given the poor performance but still widely used HHI in identifying bank competition, it would be useful for antitrust authorities to obtain a "second opinion" by computing an additional competition indicator—our frontier CE measure may be a good candidate to adequately assess the price conduct aspect of loan competition.

The remainder is as follows. Based on a theoretic model of the banking industry, in Section 2 we define and estimate our frontier CE measure using quarterly data on 2644 U.S. banks making consumer loans over 2008–2010—a period of financial stress for both banks and many consumers. Section 3 describes the other five competition measures and illustrates the degree to which each competition measure generally, and at their frequency tails, are related to one another. Characteristics of the most and least competitive banks for each competition measure are outlined in Section 4. This illustrates how the average loan price, bank profitability, and industry asset share vary when moving from most to least competitive institutions for each competition measure. For some measures, price and profitability falls (rather than rises) as we move from the most competitive to the least competitive banks, not an encouraging result. Section 5 looks at the association of each measure with consumer loan price conduct that would give a first indication about potentially competitive versus anticompetitive behavior. Our frontier CE measure is then used in Section 6 to show which states appear to have the greatest concentration of most/least competitive banks and note the average per capita income level of the communities they serve. Section 7 presents our conclusions and their implication for policy.

2. A new measure: competition efficiency frontier

Using a different methodology based on efficient frontier analysis, it is possible to derive inferences of bank consumer loan competition from estimating a revenue-cost competition frontier. We also suggest that standard competition measures incompletely adjust for important cost/productivity differences among banks and incorporate these additional cost influences into our analysis (Bolt and Humphrey, 2010, 2015). The theoretic framework that underlies our frontier approach to measuring competition borrows both from Boone (2008a,b) who derived a robust competition measure based on relative profit differences, and Maudos and Fernandez de Guevara (2004) and Uchida and Tsutsui (2005), who analyzed key factors that drive optimal interest rate spreads in a model of bank competition. But first we turn to the data.

2.1. Data

We use quarterly data on 2644 U.S. banks making consumer loans over 2008–2010. Our analysis is restricted to banks with \$100 million or more in assets in 2010 which accounted for 89% of the types of consumer loans we cover. Consumer loans in this paper comprise personal loans, student loans, auto loans, and other installment loans or revolving credit plans. Data are not available to separate these different types of consumer loans across banks. We exclude loans secured by real estate (mortgages) and credit card loans (as Visa, MasterCard, and other issuer organizations, rather than individual banks, set credit card interchange fees by type of merchant). Deposit account overdrafts are not classified as a consumer loan. The final sample includes 380 large banks each with assets over \$1 billion and 2264 banks with assets between \$100 million and \$1 billion.[2]

Note that we focus on competition among banks for consumer loans rather than on competition among all suppliers of consumer loans. Studies have shown that bank consumer loans are markedly less expensive than payday loans, pawn shop loans, or auto title loans (Caskey, 2005; Stegman, 2007). Suppliers of non-bank consumer loans justify their higher price by noting the higher credit risk and nonpayment experience they incur and, as a result, suggest they do not make excessive profits given the risks they face. This has found some support in the empirical literature (Flannery and Samolyk, 2005; Skiba and Tobacman, 2007). Non-bank lenders also argue that were it not for them, the low income and risky loan market segment would not generally be served by banks. From this perspective, the bank and non-bank consumer loan markets are essentially segmented by borrower risk. In addition, data on costs, profitability and prices of consumer loans for non-banks are not available to be compared with regularly reported bank consumer loan data.

The bank data we use come from the Call Reports during 2008–2010. These data are only provided at the aggregate bank level. We match the Call Report data with information about the locations of bank branches and deposits held by each bank using the FDIC's Summary of Deposits. Only bank deposits data is available at the individual branch level. This allows us to calculate an HHI's for each Metropolitan Statistical Area (MSA) and a deposit-based weighted HHI for each individual bank.[3]

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[1] Banking regulators and consumer non-profits tend to focus their attention on consumer complaints, which largely deal with the seeming unfairness of or inadequate information on charges associated with particular banking services. Some very recent examples relate to unclear or misleading statements in lending documents (CFPB, 2013c), the existence of certain credit card fees and retroactive interest charges (Agarwal et al., 2014), and the (largely) past practice of ordering account overdraft events so as to maximize the number of separate overdrafts an account holder pays for CFPB (2013b). However, not much data on consumer complaints is available.

[2] Various screens were applied to eliminate shell banks, special purpose banks, banks with no loans, or no deposits, or no full time employees, etc., or that contained variables beyond five standard deviations from the mean and are clearly unrepresentative of the banking industry in general. Although there are some 3800 small banks with assets less than \$100 million, they were excluded from the analysis as they only accounted for 11% of consumer loans and their mean size was less than that of a single branch office of a large bank.

[3] MSA refers to both the larger (urban) standard MSAs as well as the smaller (rural) non-MSA counties covered in the FDIC's annual Summary of Deposits. The U.S. currently counts 956 MSAs, and a local banking market is usually defined by one of these MSAs.

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