Comments

Ronald Fischer: Meral Karasulu provides a good, clear description of the Chilean banking sector and its imperfections. The paper lays out some of the potential reasons to believe that the sector may be characterized by imperfect competition. Among the most relevant are the stamp tax on credit operations, the concentration of wealth in vast conglomerates, the ownership of pension funds by the bank holding companies, and the high capital requirements for entering the sector (which were recently lowered). Two additional factors are also important: first, no new banks were allowed to enter for a long period after the crisis of the early 1980s, because the banking regulator apparently feared that excessive competition would reduce bank profitability and thus lead to excessive risk taking; second, the lack of a centralized guarantee system means that it can be very expensive for small companies and individuals to switch banks. There are thus good reasons to suspect a lack of strong competition, and the sector's profitability, measured as return on assets or on equity, is indeed among the highest in Karasulu's sample. This is so even though banking concentration is not high and new banks have entered the market since the regulator changed its restrictive policy in the late 1990s.

Karasulu uses Panzar and Rosse's methodology to study competition in the Chilean market over time, as well as to compare it with a sample of other emerging countries.[1] As Karasulu mentions, the traditional competitive analysis based on concentration ratios suffers from the fact that markets with intense competition can be concentrated since only a few firms can survive, while others that are cartelized may attract entry.[2] The Panzar-Rosse approach, on the other hand, makes very few assumptions and is based on the observation that different industrial organizational structures respond differently to changes in input prices. Competitive markets transmit input price changes into output

1. Panzar and Rosse (1987).
2. Sutton (1991).

prices better than uncompetitive markets. Under perfect long-run competition, the sum of the elasticities of revenue to input prices (the *H* statistic) equals one. The sum of these elasticities is negative, however, for monopolies or cartelized industries.[3] Finally, in the case of monopolistic competition, the values of *H* lie in the range (0,1), with higher values of *H* representing more competition.

The Panzar-Rosse methodology has been used extensively to model the airline industry, as well as financial markets, and numerous papers use this methodology to study competition in the banking sectors of different countries. It is fairly easy to construct the data required to perform the analysis in the banking sector. The main drivers of bank costs are deposit costs (that is, the interest rate), labor costs, and the cost of fixed capital (which contributes marginally in most cases). Revenues, in turn, can be represented by either interest income or total revenue.

Karasulu's cross-country regressions indicate that most countries in the sample operate under monopolistic competition, with the exception of Australia, Greece, Hungary, Ireland, Israel, and the Netherlands, which have perfectly competitive markets. According to this regression, competition is imperfect in Chile, although it is stronger than in a few countries in her sample. The author ran a pooled regression with a dummy for Chile to determine whether the Chilean market was significantly less competitive than the average country in the sample; her results confirmed this hypothesis. Finally, Karasulu shows that the net interest margin in Chile is about 1.50 to 2.25 points higher than in other countries, which is consistent with the low level of the competition index (although it could mask, at least in part, unobservable differences in credit risk). The author has some suggestions as to what causes the lack of competition, with an emphasis on the industry's high capitalization requirements. As mentioned above, other options include the switching costs associated with the stamp tax and the lack of a centralized guarantee system.[4]

Marcela Meléndez: This paper examines the conduct of Chilean banks using microeconomic data for the period 1995–2004. The author provides a rich characterization of the workings of the Chilean banking sector and includes a detailed discussion of the factors that may lead banks in Chile to exercise

3. Panzar and Rosse (1987).

4. Bikker, Spierdijk, and Finnie (2006) show that using the ratio of total revenues to total assets as a dependent variable produces a systematic bias that leads to finding more competition than actually exists. Future research should address how these results affect the findings in the present paper.

market power. She then examines Chilean banks' conduct empirically in a comparison with banks operating in other emerging markets. The paper also examines the profitability of Chilean banks relative to that of their peers, using a regression framework to link returns to both conduct indicators and concentration measures, among other explanatory variables. The work is relevant inasmuch as the development of other markets in the economy largely depends on the presence of a well-functioning financial sector that is able to adequately channel savings and investment at fair prices. It adds to a growing empirical literature focused on identifying connections between variables that matter for banking markets' performance.

Karasulu's discussion of the specificities of the Chilean banking sector provides a thorough overview of the sector's workings and serves as a perfect introduction for people who, like me, had no previous knowledge of that market. It also raises concerns about features that are common to financial sectors in other Latin American countries and to which researchers and policymakers must pay further attention—for instance, the key role that is being played by the private pension funds in the development of the Latin American financial markets. The fact that the performance of both banking sectors and capital markets is so dependent on the activity of these large institutional investors and on the regulation affecting it should be the subject of research, because we would benefit from better understanding the distortions this introduces to these markets.

The cross-country comparison centers on two empirical exercises that are derived from alternative applications of Panzar and Rosse's approach to testing competition, which features a nonstructural model that allows the researcher to endogenize market structure.[1] Karasulu estimates time-invariant competition indexes (the *H* statistic) from individual country regressions using bank-level data. Her results from these estimations identify the Chilean banking market as being monopolistically competitive, which is consistent with the findings of Levy Yeyati and Micco.[2] Karasulu uses the results from these country regressions to conclude that the Chilean banking market is less competitive than its peers. To test whether the competition index obtained for Chile is statistically lower than those of other countries, she estimates a pooled regression including interactions of the input costs variables with a dummy variable that takes the value of one when the observation corresponds to a Chilean bank

1. Panzar and Rosse (1987). This approach is increasingly being used in the empirical industrial organization literature to test competition in the banking industry, where Lerner indexes and other measures of market power are perhaps harder to apply.

2. Levy Yeyati and Micco (2003).

and zero otherwise. This regression includes country-specific macroeconomic controls, a dummy variable to control for foreign ownership, and measures of bank size, input prices, and market concentration. The results confirm the finding that the Chilean banking market is relatively less competitive than those in the comparison group. Specifically, Karasulu finds that the factor price elasticity of funds is systematically lower in Chile than in the sample as a whole, while the capital cost is systematically higher. The factor price elasticity of labor is also found to be lower than for the rest of the sample when the estimations control for market concentration.

The competition indexes are strictly based on industry characteristics. Practitioners in the industrial organization literature are therefore skeptical of using them to compare competition across industries or markets, except when they are closely related.[3] Based on this consideration, I am more comfortable with the results emerging from the pooled regression, which controls for country characteristics, than with the conclusions drawn from the individual country estimations. A key result from the exercise is the lack of a systematic relation between banking markets' concentration and the competition indexes. It adds to the empirical evidence on the particular workings of banking markets in which, contrary to the general expectation, higher market concentration does not necessarily result in more market power.

The examination of the profitability of Chilean banks relative to their peers is really a consistency check, since one would expect to see higher intermediation margins—and higher bank profits—in markets with less competition. Here again, the empirical evidence indicates a higher exercise of market power in the Chilean banking sector than in other emerging economies.

The discussion of the particularities of the Chilean banking sector places the empirical results in context and advances potential explanations for what is observed. I have concerns, however, about the policy implications. The paper is somewhat timid in this direction. The findings that "the captive presence of the pension funds with large deposits in the banking sector may be distorting the incentives for banks to compete" and that "high effective entry costs—in the form of higher capitalization ratios—despite low regulatory barriers to entry and relatively minor competition from nonbank financial intermediaries could be contributing to the low competition" are common to most Latin American banking sectors. It would be desirable to explore the extent to which they could translate into explicit recommendations on how financial regulation should be adjusted.

3. See Bresnahan (1989).

Karasulu indicates that the recent lowering of capitalization requirements has already resulted in the entry of new players into the Chilean banking sector. Should Chile go further in lowering these requirements? Is there an optimal capitalization level below which excessive risk would be introduced to the market? With respect to the lack of significant competition from nonbank players, can governments or multilateral actors play a role as facilitators? Are there regulatory barriers preventing the appearance of this sort of player? Or is the market to be left on its own? Finally, should the restrictions on the investments of private funds be modified, and if so, how? In the case of Colombia, the minimum profitability requirements affecting the pension funds' investment portfolios introduce significant distortions in the workings of the financial markets and have been identified as one of the elements hindering the development of the corporate bond market. A more detailed revision of the distortions brought about by this kind of regulation and possible ways to deal with them in the case of Chile would be an interesting follow-up to the findings of this paper.

I close with a final remark on the Panzar-Rosse approach to assessing market conduct: even if one frames the analysis in a long-run equilibrium setup, the rendering of banking markets as monopolistically competitive is a bit bothersome. It is hard to think of banking markets as markets in which free entry and exit result in average cost pricing, even in the long run. Nevertheless, given this assumption, why should the exercise of market power in these markets be much of a concern? Can the competition indexes at the levels obtained be interpreted as a signal that banks are exercising market power beyond average costs, and not strictly as a reference to markets operating under monopolistic competition? Because only then should they be used to motivate an analysis of market power as a concern in a specific market. This remark goes beyond the present paper and applies to the widespread application of this methodology to banking sector analysis in the recent empirical literature. Researchers need to continue exploring alternative measures of market power in this sector.

References

Ahumada, Luis Antonio, and Nicola Cetorelli. 2003. "The Effect of Cross-Industry Ownership on Pricing: Evidence from Bank-Pension Fund Common Ownership in Chile." Working Paper 230. Santiago: Central Bank of Chile.

Barth, James R., Gerard Caprio Jr., and Ross E. Levine. 2001. "The Regulation and Supervision of Banks around the World: A New Database." Policy Research Working Paper 2588. Washington: World Bank.

Beck, Thorsten, Asli Demirgüç-Kunt, and Ross Levine. 2005. "SMEs, Growth, and Poverty: Cross-Country Evidence." *Journal of Economic Growth* 10(3): 197–227.

Belaisch, Agnes. 2003. "Do Brazilian Banks Compete?" Working Paper 03/113. Washington: International Monetary Fund.

Berger, Allen N. 1995. "The Profit–Structure Relationship in Banking Tests of Market Power and Efficient Structure Hypothesis." *Journal of Money, Credit, and Banking* 27(2): 404–31.

Bikker, Jacob A., and K. Haaf. 2001. "Measures of Competition and Concentration in the Banking Industry: A Review of the Literature." Research Series on Supervision 27. Amsterdam: Netherlands Central Bank.

———. 2002. "Competition, Concentration and their Relationship: An Empirical Analysis of the Banking Industry." *Journal of Banking and Finance* 26(11): 2191–214.

Bikker, Jacob, Laura Spierdijk, and Paul Finnie. 2006. "Misspecification of the Panzar-Rosse Model: Assessing Competition in the Banking Industry." Working Paper 117. Amsterdam: Netherlands Central Bank.

BIS (Bank for International Settlements). 2001. "The Banking Industry in the Emerging Market Economies: Competition, Consolidation and Systemic Stability." BIS Paper 4. Basel.

Bresnahan, Timothy F. 1982. "The Oligopoly Solution Concept Is Identified." *Economics Letters* 10 (1–2): 87–92.

———. 1989. "Empirical Studies of Industries with Market Power." In *Handbook of Industrial Organization,* vol. 2, edited by Richard Schmalensee and Robert Willig. Amsterdam: North-Holland.

Claessens, Stijn, Asli Demirgüç-Kunt, and Harry Huizinga. 2001. "How Does Foreign Entry Affect Domestic Banking Markets." *Journal of Banking and Finance* 25(5): 891–911.

Claessens, Stijn, and Luc Laeven. 2005. "Financial Dependence, Banking Sector Competition, and Economic Growth." Policy Research Working Paper 3481. Washington: World Bank, Financial Sector Operations and Policy Development.

De Brant, Olivier, and E. Philip Davis. 2000. "Competition, Contestability, and Market Structure in European Banking Sectors on the Eve of EMU." *Journal of Banking and Finance* 24(6): 1045–66.

Demirgüç-Kunt, Asli, and Harry Huizinga. 1999. "Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence." *World Bank Economic Review* 13(2): 379–408.

Demsetz, Harold. 1974. "Two Systems of Belief about Monopoly." In *Industrial Concentration: The New Learning,* edited by Harvey J. Goldschmidt, H. Michael Mann, and J. Fred Weston. Boston: Little, Brown.

Detragiache, Enrica, Thierry Tressel, and Poonam Gupta. 2006. "Foreign Banks in Poor Countries: Theory and Evidence." Working Paper 06/18. Washington: International Monetary Fund.

Gelos, Gaston R., and Jorge Roldós. 2004. "Consolidation and Market Structure in Emerging Market Banking Systems." *Emerging Markets Review* 5(1): 39–59.

Hackethal, Andreas. 2004. "German Banks and Banking Structure." In *The German Financial System,* edited by Jan Pieter Krahnen and Reinhard H. Schmidt. Oxford University Press.

Hempell, Hannah S. 2002. "Testing for Competition among German Banks." Discussion Paper 04/02. Frankfurt: Deutsche Bundesbank, Research Centre.

Honohan, Patrick. 2004. "Financial Sector Policy and the Poor: Selected Findings and Issues." Working Paper 43. Washington: World Bank.

Iwata, Gyoichi. 1974. "Measurement of Conjectural Variations in Oligopoly." *Econometrica* 42(5): 947–66.

Levy Yeyati, Eduardo, and Alejandro Micco. 2003. "Concentration and Foreign Penetration in Latin American Banking Sectors: Impact on Competition and Risk." Working Paper 499. Washington: Inter-American Development Bank.

Martínez Pería, María Soledad, and Ashoka Mody. 2004. "How Foreign Participation and Market Concentration Impact Bank Spreads: Evidence from Latin America." *Journal of Money, Credit, and Banking* 36(2): 511–37.

Molyneux, Philip, D. M. Lloyd-Williams, and John Thornton. 1994. "Competitive Conditions in European Banking." *Journal of Banking and Finance* 18(3): 445–59.

Morales, Liliana, and Álvaro Yáñez. 2006. "La bancarización en Chile: concepto y medición." Serie técnica de estudios. Santiago: Superintendency of Banks and Financial Institutions.

Panzar, John C., and James N. Rosse. 1987. "Testing for 'Monopoly' Equilibrium." *Journal of Industrial Economics* 35(4): 443–56.

Sutton, John. 1991. *Sunk Costs and Market Structure: Price Competition, Advertising, and the Evolution of Concentration.* MIT Press.

Vesala, Jukka. 1995. *Testing for Competition in Banking: Behavioral Evidence from Finland.* Scientific monograph series. Helsinki: Bank of Finland.

Vives, Xavier. 2001. "Competition in the Changing World of Banking." *Oxford Review of Economic Policy* 17(4): 535–45.