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Competition in the Financial Sector: Overview of Competition Policies

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Abstract

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As in other sectors, competition in finance matters for allocative, productive and dynamic efficiency. Theory suggests, however, that unfettered competition is not first best given the special features of finance. I review these analytics and describe how to assess the degree of competition in markets for financial services. Existing research shows that the degree of competition greatly varies across markets, largely driven by barriers to entry and exit. I argue that changes in financial services industries require updated competition policies and institutional arrangements, but that practices still fall short. Furthermore, I show that developing countries face some specific competition challenges.

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I. INTRODUCTION

Competition in the financial sector matters for a number of reasons. As in other industries, the degree of competition in the financial sector matters for the efficiency of production of financial services, the quality of financial products and the degree of innovation in the sector. The view that competition in financial services is unambiguously good, however, is more naive than in other industries and vigorous rivalry may not be the first best. Specific to the financial sector is the effect of excessive competition on financial stability, long recognized in theoretical and empirical research and, most importantly, in the actual conduct of (prudential) policy towards banks. There are other complications, however, as well. It has been shown, theoretically and empirically, that the degree of competition in the financial sector can matter (negatively or positively) for the access of firms and households to financial services, in turn affecting overall economic growth.

In terms of the factors driving competition in the financial sector and the empirical measurement of competition, one needs to consider the standard industrial organization factors, such as entry/exit and contestability. But financial services provision also has many network properties, in their production (e.g., use of information networks), distribution (e.g., use of ATMs), and in their consumption (e.g., the large externalities of stock exchanges and the agglomeration effects in liquidity). This makes for complex competition structures since aspects such as the availability of networks used or the first mover advantage in introducing financial contracts become important.

Not only are many of the relationships and tradeoffs among competition, financial system performance, access to financing, stability, and finally growth, complex from a theoretical perspective, but empirical evidence on competition in the financial sector has been scarce and to the extent available often not (yet) clear. What is evident from theory and empirics, however, is that these tradeoffs mean that it is not sufficient to analyze competitiveness from a narrow concept alone or focus on one effect only. One has to consider competition as part of a broad set of objectives, including financial sector efficiency, access to financial services for various segments of users, and systemic financial sector stability, and consider possible tradeoffs among these objectives. And since competition depends on several factors, one has to consider a broad set of policy tools when trying to increase competition in the financial sector.

In all, this means that competition policy in the financial sector is quite complex and can be hard to analyze. Empirical research on competition in the financial sector is also still at an early stage. The evidence nevertheless shows that factors driving competition and competition have been important aspects of recent financial sector improvements. To date, greater competition have been achieved by traditional means: removing entry barriers, liberalizing product restrictions, abolishing restrictive market definitions, eliminating intra-sectoral restrictions, etc. Making in this way financial systems more open and contestable, i.e., having low barriers to entry and exit, has generally led to greater product differentiation, lower cost of financial intermediation, more access to financial services, and enhanced stability. The evidence for these effects is fairly universal, from the US, EU and other developed countries to many developing countries.

As globalization, technological improvements and de-regulation further progress, the gains of competition can be expected to become even more wide-spread across and within countries. At

the same time, once the easier steps have been taken, policies to achieve effective competition in all dimensions and balancing the trade-offs between competition and other concerns, become more challenging. The rapid competitive gains due to the first rounds of liberalization over the past few decades will be hard to sustain going forward. Complexity will also become greater going forward as financial services industries evolve, financial markets and products become more complex and global, and new regulatory and competition policy issues arise. The rapidly changing world of financial services provision and the many new forms of financial services provision means all the more that approaches to competition issues need to be adjusted.

This is the more important since competition policy in the financial sector is often already behind that in many other sectors and still a missing part of the financial sector development agenda in many countries. Too often, competition is seen as an afterthought, rather than being considered an essential ingredient of a financial sector development strategy. To assure markets remain and become even more competitive will require taking into account the special properties of financial markets, including the existence of many networks in finance. But here the theoretical and empirical literature is just catching up with changes. And competition policy will become more difficult institutionally to organize, both within and across countries, yet necessary given the global dimensions of many financial markets these days. Furthermore, financial systems are often entrenched, in developing countries especially, including through links between the financial and real sectors, and odious relationships with the political sector as well, all of which can make achieving effective competition complex.

Recent events in global financial markets, while too recent to draw firm conclusions, highlight some issues on which it will be necessary to reflect. The global dimensions of the financial crisis clearly confirm the need for many policies, whether aimed at stability or at improving market functioning, to operate in a consistent manner across jurisdictions, especially for systemically-important financial institutions and activities. The crisis also makes clear the need for a more holistic approach to prudential regulation, at both the institutional and macroeconomic level, to address wider systemic risks. This objective will likely require measures aimed at strengthening capital and liquidity requirements for individual institutions, avoiding the build-up of systemic risk across institutions and the economy over time, and improving national and international resources and financial sector responses to distress.

The financial crisis has also shown the need to strengthen market discipline, addressing key information gaps and encouraging more robust private governance and risk management systems. One other lesson the financial crisis calls for is to revisit the institutional infrastructure for financial services provision, including the role of rating agencies and the need for derivatives trading to move to more regulated markets. The crisis also confirms the need for competition policy to adjust and adapt to developments in financial markets. As some have suggested, in the context of regulatory failures and weaknesses in private market discipline, increased competition can lead to excessive risk-taking, implying the need for competition policy to consider broader aspects. When considering these and other changes, the new architecture will need to take into account the inherent limitations of regulation and supervision, and guards against overregulation.

The paper reviews the state of knowledge on these issues and how competition policy is and should be organized. It does so in the following manner. Section 2 provides a review of

literature, both of the nature and effects of competition in the financial sector as well as of how to go about measuring competition in general and in the financial sector specifically. The section discusses, among others, the approaches and methodology used to tests for the degree of competition in the financial markets of a particular country or market, presents some data on measures that are starting to be used for assessing financial sector competitiveness, shows how these measures relate to structural and policy variables, and what tools to use to measure competition. It also discusses the current state of affairs in competition policy and how changes in financial services industries underway affect the nature of competition. Section 3 discusses the implications for competition policy, how to approach it, and how to organize it. In the last section, the paper present its conclusions, although not many definitive. It does stress, however, that practices in many countries fall far short of the large need for better competition policy in the financial sector.

II. NATURE AND STATUS OF FINANCIAL SECTOR COMPETITION

What is special about competition in financial sector? And how does competition matter? The two questions are closely related and depend in turn on what dimensions one analyzes. For the purpose of this paper, I consider the links between competition and the following three dimensions: financial sector development (including the efficiency of financial services provision); access to financial services for households and firms (i.e., the availability, or lack thereof, of financial services at reasonable cost and convenience); and financial sector stability (i.e., the absence of systemic disturbances that have major real sector impact). Under the first link, development and efficiency, once can consider questions like: with greater competition, is the system more developed, e.g., is it larger, does it provide better quality financial products/services, in a static and dynamic way; is it more efficient, i.e., exhibits a lower cost of financial intermediation, is it less profitable; and is it closer to some competitive benchmark? Under access, once can consider whether access to financing, particularly for smaller firms and poorer individuals, but also in general for households, large firms and other agents is improved, in terms of volume and costs, with greater competition. And in terms of stability, one can consider whether the banking system has less volatility, fewer financial crises and is generally more robust and its financial integrity higher with more competition.

I consider what theory predicts on each of the three dimensions, since all are important and there can be relationships among them, making analyzing any individually not complete.² I then review the current empirical findings on the same dimensions, and some assessment of the degree of competition in various financial markets. I next review what both theory and empirics predict on what drives competition in the financial sector. I analyze specifically internationalization of financial services, which is growing rapidly and which has had an especially large impact on financial sector competition in many developing countries. Lastly, I suggest what these theory and empirical findings suggest in terms of what tools should regulators use for the application of competition policy.

² For a recent review of the theoretical literature on competition and banking, see Vives 2001.

A. Effects of Competition in the Financial Sector: Theory

Development and Efficiency, Static and Dynamic

As a first-order effect, one expects increased competition in the financial sector to lead to lower costs and enhanced efficiency of financial intermediation, greater product innovation, and improved quality. Even though financial services have some special properties, the channels are similar to other industries. In a theoretical model, Besanko and Thakor (1992), for example, allowing for the fact that financial products are heterogeneous, analyze the allocational consequences of relaxing entry barriers and find that equilibrium loan rates decline and deposit interest rates increase, even when allowing for differentiated competition. In turn, by lowering the costs of financial intermediation, and thus lowering the cost of capital for non-financial firms, more competitive banking systems lead to higher growth rates. Of course, they are not just efficiency and costs, but also the incentives of institutions and markets to innovate that are likely affected by the degree of competition.

Access to Financial Services

As a first-order effect, greater development, lower costs, enhanced efficiency, and a greater and wider supply resulting from competition will lead to greater access. The relationships between competition and banking system performance in terms of access to financing are more complex, however. The theoretical literature has analyzed how access can depend on the franchise value of financial institutions and how the general degree of competition can negatively or positively affect access. Market power in banking, for example, may, to a degree, be beneficial for access to financing (Petersen and Rajan, 1995). With too much competition, banks may be less inclined to invest in relationship lending (Rajan, 1992). At the same time, because of hold-up problems, too little competition may tie borrowers too much to an individual institution, making the borrower less willing to enter a relationship (Petersen and Rajan, 1994; and Boot and Thakor, 2000). More competition can then, even with relationship lending, lead to more access.

The quality of information can interact with the size and structure of the financial system to affect the degree of access to financial services. Financial system consolidation can lead to a greater distance and thereby to less lending to more opaque firms such as SMEs. Improvements in technology and better information that spur consolidation can be offsetting factors, however. Theory has shown some other complications. Some have highlighted that competition is partly endogenous as financial institutions invest in technology and relationships (e.g., Hauswald and Marquez, 2003). Theory has also shown that technological progress lowering production or distribution costs for financial services providers does not necessarily lead to more or better access to finance. Models often end up with ambiguous effects of technological innovations, access to information, and the dynamic pattern of entry and exit on competition, access, stability and efficiency (e.g., Dell'Ariccia and Marquez, 2004, and Marquez, 2002). Increased competition can, for example, lead to more access, but also to weaker lending standards, as observed recently in the sub-prime lending market in the US (Dell'Ariccia, Laeven and Igan, 2008) but also in other episodes.

These effects are further complicated by the fact that network effects exist in many aspects of supply, demand or distribution of financial services. In financial services production, much used

is made of information networks (e.g., credit bureaus). In distribution, networks are also extensively used (e.g., use of ATMs). Furthermore, in their consumption, many financial services display network properties (e.g., liquidity in stock exchanges). As for other network industries, this makes competition complex (see further Ausubel, 1991, and Claessens, Dobos, Klingebiel and Laeven, 2003).

Stability

The relationships between competition and stability are also not obvious. Many academics and especially policy makers have stressed the importance of franchise value for banks in maintaining incentives for prudent behavior. This in turn has led banking regulators to carefully balance entry and exit. Licensing, for example, is in part used as a prudential policy, but often with little regard for its impact on competition. This has often been a static view, however. Perotti and Suarez (2002) show in a formal model that the behavior of banks today will be affected by both current and future market structure and the degree to which authorities will allow for a contestable, i.e., open, system in the future. In such a dynamic model, current concentration does not necessarily reduce risky lending, but an expected increase in future market concentration can make banks choose to pursue safer lending today. More generally, there may not be a tradeoff between stability and increased competition as shown among others by Allen and Gale (2004), Boyd and De Nicolò (2005) and reviewed recently by Allen and Gale (2007). Allen and Gale (2004) furthermore show that financial crises, possibly related to the degree of competition, are not necessarily harmful for growth.

B. The Determinants of Competition and Assessing Competition: Theory and Empirics

I first review as what theory predicts drives competition, in general and specifically in the financial sector, and then what theory suggests on how best to measure competition and what tools can be used.

Theory of the Determinants of Competition

In terms of empirical measurement and associated factors driving competition one can consider three types of approaches: market structure and associated indicators; contestability and regulatory indicators to gauge contestability; and formal competition measures. Much attention in policy context and empirical tests is given to market structure and the actual degree of entry and exit in particular markets as determining the degree of competition. The general *Structure-Conduct-Performance* (SCP) paradigm, the dominant paradigm in industrial organization from 1950 till the 1970s, made links between structure and performance. *Structure* refers to market structure defined mainly by the concentration in the market. *Conduct* refers to the behavior of firms—competitive or collusive—in various dimensions (pricing, R&D, advertising, production, choice of technology, entry barriers, predation, etc.). And *Performance* refers to (social) efficiency, mainly defined by extent of market power, with greater market power implying lower efficiency. The paradigm was based on the hypotheses that i) Structure influences Conduct (e.g., lower concentration leads to more competitive the behavior of firms); ii) Conduct influences Performance (e.g., more competitive behavior leads to less market power and greater social

efficiency). And iii) Structure therefore influences Performance (e.g., lower concentration leads to lower market power).³

Theoretically and empirically there are a number of problems with the SCP-paradigm and its implications that, directly and indirectly, structure determines performance. For one, structure is not (necessarily) exogenous since market structure itself is affected by firms' conduct and hence by performance. Another conceptual problem is that industries with rapid technological innovation and much creative destruction, likely the financial sector, may have high concentration and market power, but this is necessary to compensate these firms for their innovation and investment and does not mean reduced social welfare. Most importantly, and different from the SCP-paradigm, the more general competition and contestability theory suggests that market structure and actual degree of entry or exit are not necessarily the most important factors in determining competition. The degree of contestability, that is, the degree of absence of entry and exit barriers, rather than actual entry, matters for competitiveness (Baumol, Panzar, and Willig, 1982). Contestable markets are characterized by operating under the threat of entry. If a firm in a market with no entry or exit barriers raises its prices above marginal cost and begins to earn abnormal profits, potential rivals will enter the market to take advantage of these profits. When the incumbent firm(s) respond(s) by returning prices to levels consistent with normal profits, the new firms will exit. In this manner, even a single-firm market can show highly competitive behavior.

The theory of contestable markets has also drawn attention to the fact that there are several sets of conditions that can yield competitive outcomes, with competitive outcomes possible even in concentrated systems since it does not mean that the firm is harming consumers by earning super-normal profits. On the other hand, collusive actions can be sustained even in the presence of many firms. The applicability of the contestability theory to specific situations can vary, however, particularly as there are very few markets which are completely free of sunk costs and entry and exit barriers. Financial sector specific theory adds to this some specific considerations. While the threat of entry or exit can also be an important determinant of the behavior of financial market participants, issues such as information asymmetries, investment in relationships, the role of technology, networks, prudential concerns, and other factors can matter as well for determining the effective degree of competition (see further Bikker and Spierdijk, 2008).

Empirical Approaches to Measure Competition

There are three approaches that have been proposed for measuring competition. The first empirical approach considers factors such as financial system concentration, the number of banks, or Herfindahl indices. It relies on the SCP paradigm, i.e., there being relationships between structure-conduct-performance, but does not directly gauge banks' behavior. The second considers regulatory indicators to gauge the degree of contestability. It takes into account entry requirements, formal and informal barriers to entry for domestic and foreign banks, activity

³ Within this general paradigm, many aspects have been investigated. For example, there exist studies of the degree to which firms deviate from a production-efficient frontier, so-called x-inefficiency (see Berger and Humphrey, 1997, for an international survey of x-inefficiency studies for financial institutions).

restrictions etc. It also considers changes over time in financial instruments, innovations, etc. as these can lead to changes in the competitive landscape. The third set uses formal competition measures, such as the so-called H-statistics, that proxies the reaction of output to input prices. These formal competition measures are theoretical well-motivated, and have often been used in other industries, but they do impose assumptions on (financial intermediaries') cost and production functions.

In terms of the first two approaches, theory has made clear that documenting an industry's structure, the degree of competition, its determinants, and its impacts can be complicated. For one, the competitiveness of an industry cannot be measured by market structure indicators alone, such as number of institutions or concentration indexes. And no specific market concentration measure is best: neither the number of firms, nor the market share of the top 3 or 5, or the often used Herfindahl index is necessarily the best. Second, traditional performance measures used in finance, such as the size of banks' net interest margins or profitability or transaction costs in stock markets, do not necessarily indicate the competitiveness of a financial system. These performance measures are also influenced by a number of factors, such as a country's macro-performance and stability, the form and degree of taxation of financial intermediation, the quality of country's information and judicial systems, and financial institution specific factors, such as leverage, the scale of operations and risk preferences. As such, these measures can be poor indicators of the degree of competition. Yet, they have often been so used as such in spite of these weaknesses. Fortunately, general structure and performance measures have declined in empirical studies in favor of more specific tests.

Indeed, the third approach emphasizing that documenting the degree of competition requires specific measures and techniques has become more used. It points out that one needs to study actual behavior—in terms of marginal revenue, pass-through cost pricing, etc.—using a model and develop from there a specific measure of competitiveness. While such theoretical well-founded tests have been conducted for many industries, it, particularly cross-country, was at an early stage a decade or so ago for the financial sector (see Cetorelli, 1999). More and more, however, formal empirical tests for competition are being applied to the financial sector, mostly to banking systems in individual countries (see Bikker and Spierdijk 2008 for a review). Data problems were previously a hindrance for the cross-country research—since little bank-level data were available outside of the main developed countries, but recently established databases have also allowed for better empirical work comparing countries.

The Pazar and Rosse Methodology

Generally, as in other sectors, the degree of competition is measured with respect to the actual behavior of (marginal) bank conduct. Broad cross-country studies using formal methodologies are Claessens and Laeven (2004) and Bikker and Spierdijk (2007). Using bank-level data and applying the Panzar and Rosse (1987; PR) methodology, the first study estimates the degree of competition in 50 countries' banking systems. Specifically, it investigates the extent to which a

change in factor input prices is reflected in (equilibrium) revenues earned by a specific bank. The PR-model is, as is typical, estimated using pooled samples for each country.⁴

Under perfect competition, an increase in input prices raises both marginal costs and total revenues by the same amount as the rise in costs. Under a monopoly, an increase in input prices will increase marginal costs, reduce equilibrium output and consequently reduce total revenues. The PR model provides a measure (“H-statistic”) of the degree of competitiveness of the industry, which is calculated from reduced form bank revenue equations as the sum of the elasticities of the total revenue of the banks with respect to the bank’s input prices. The H-measure is between 0 and 1, with less than 0 being a collusive (joint monopoly) competition, less than 1 being monopolistic competition and 1 being perfect competition. It can be shown, if the bank faces a demand with constant elasticity and a Cobb-Douglas technology, that the magnitude of H can be interpreted as an inverse measure of the degree of monopoly power, or alternatively, as a measure of the degree of competition.

The second study, Bikker and Spierdijk (2007), also uses the PR-methodology, but allows the degree of competition to vary over time and covers 101 countries. Table 1 documents by individual country the measures of the two studies. The H-statistic of Claessens and Laeven varies generally between 0.60 and 0.80, suggesting that monopolistic competition sometimes approaching full competition is the best description of the degree of competition. The Bikker and Spierdijk data show even larger variation in the degree of competitiveness across the larger sample of countries, possibly due to their estimation technique allowing for time variation.

While there does not appear to be any strong pattern among types of countries, it is interesting that some of the largest countries (in terms of number of banks and general size of their economy) have relatively low values for the H-statistics. In both studies, Japan and the US, for example, have H-statistics less than 0.5. This may in part be due to the more fragmented banking markets in these countries, where small banks operate in local markets that are less competitive. Since studies find differences between types of banks, especially in countries with a large number of banks, such as the US, studying all banks may lead to a distorted measure of the

⁴ Specifically, the model to estimate the H-statistics for banking is:

$$\ln(P_{it}) = \alpha + \beta_1 \ln(W_{1,it}) + \beta_2 \ln(W_{2,it}) + \beta_3 \ln(W_{3,it}) + \gamma_1 \ln(Y_{1,it}) + \gamma_2 \ln(Y_{2,it}) + \gamma_3 \ln(Y_{3,it}) + \delta D + \varepsilon_{it}$$

where P_{it} is the ratio of gross interest revenue to total assets (proxy for output price of loans), $W_{1,it}$ is the ratio of interest expenses to total deposits and money market funding (proxy for input price of deposits), $W_{2,it}$ is the ratio of personnel expense to total assets (proxy for input price of labor), $W_{3,it}$ is the ratio of other operating and administrative expense to total assets (proxy for input price of equipment/fixed capital). The subscript i denotes bank i , and the subscript t denotes year t .

overall competitiveness of a banking system.⁵ However, even if one computes H-statistics using data on large banks, rather than all banks for countries with many banks, results remain similar.

Other papers that use this methodology mostly also reject both perfect collusion as well as perfect competition, i.e., they find mostly evidence of monopolistic competition (e.g., Wong, Wong, Fong and Choi, 2006 for Hong Kong; Gutiérrez de Rozas, 2007 for Spain; Hempell, 2002 for Germany; Bikker and Haaf, 2001 summarize the results of some ten studies; Berger, 2000, further reviews). Tests for emerging markets are rarer, but those done (e.g., Nakane, 2001, for Brazil; Prasad and Ghosh 2005, for India; Yildirim and Philippatos 2007 for a sample of Latin America countries) also find evidence of monopolistic competition. There remain large variations across countries, however, and the ability to capture the degree of competition is still imperfect, as estimates vary considerably among studies for the same banking systems (Bikker, Spierdijk, and Finnie, 2006, review a number of studies). This is also clear from Table 1 since there can be large differences between the two measures reported for individual countries (the correlation is only 0.38, and the rank correlation only 0.29), showing some of the difficulty in measuring competitiveness.

C. Empirical Approaches to Explain Competition

Fewer studies have tried to explain the degree of competition in particular markets. Claessens and Laeven (2004) relate competitiveness (the H-measure) to indicators of countries' banking system structures and regulatory regimes. Importantly, and consistent with some other studies, they find no evidence that their competitiveness measure negatively relates to banking system concentration or the number of banks in the market. They do find systems with greater foreign bank entry, and fewer entry and activity restrictions to be more competitive. Their findings suggest that measures of market structures do not necessarily translate into effective competition, consistent with the theory that contestability rather than market structure determines effective competition. Others have studied the impact of financial liberalization on the degree of competitiveness and find generally that liberalized systems are more competitive, in the sense of having a higher H-measure.

There are some identification issues here, of course. Just like in studies finding that trade openness raises efficiency in sectors open to foreign competition, it could be that more efficient banking sectors are more likely to allow (external) competition, so that efficiency is the cause, rather than just an effect, of contestability. And there can be omitted variables, as when financial deregulation is adopted along with other efficiency-enhancing measures. Also, there can be political economy arguments creating reverse causality or omitted factors—for example, when insiders prefer closed, but inefficient financial systems. It means that studies assessing the impact of openness on financial system and aggregate economic performance may have a hard time identifying the direction of causality and disentangling the effects of financial reforms from

⁵ For example, De Bandt and Davis (2000) find monopoly behavior for small banks in France and Germany, and monopolistic competition for small banks in Italy and large banks in all three countries. This suggests that in these countries, small banks have more market power, perhaps as they cater more to local markets.

those of other measures. These caveats apply to most of the financial liberalization and reform analyses, including those referred to here.

Other Empirical Regularities

There is a broad literature that has documented many empirical regularities between financial system performance and structural factors within and across countries. This literature has related actual financial markets behavior to factors deemed to be related to competition, including not only structure, but also entry barriers, including on foreign ownership, and the severity of activity restrictions, since those can limit intra-industry competition. Especially for banking systems, a number of empirical studies have found that the ownership of the entrants and incumbents, and the size and the degree of financial conglomeration (that is, the mixture of banking and other forms of financial services, such as insurance and investment banking) matter in a number of ways.

Many of these studies, however, do not use a structural, contestability approach to measure the actual degree of competitive conduct and as such can not indicate whether the underlying behavior is based on competitive or say oligopolistic behavior. Furthermore, often the focus has been on the banking system only, neglecting other forms of financial intermediation that have become more important directly in financial intermediation (capital markets, non-bank financial institutions, insurance companies) or that play a role in determining banking system competitiveness. Nevertheless, this literature suggests that the degree of competition has consequences for financial sector performance and sheds some light on competition issues. It can be classified in individual country and regional studies, cross-country studies, and studies on the specific effects of internationalization.

Country and Regional Studies

Evidence of competition to matter is most convincingly available from liberalization steps, i.e., when reform “unambiguously” introduced more competition. This has notably been the case in the US with the abolishment of restrictions on intra- and inter-state banking. Strahan (2003), a major contributor himself, reviews this large literature and notes how it has been able to document large real effects of US branching deregulation.⁶ Besides documenting cross-sectional regularities, many studies have investigated the effects of changes in structure and especially consolidation in financial systems. (For an early review, see Berger, Demsetz and Strahan, 1999). Similar experiences have been documented for the EU following the Single Banking Directives and other measures aimed at creating a more integrated and competitive financial markets (see for example, CEPR 2005, for a review). And for most emerging markets similar effects have been documented (see BIS, 2006, for a collection of country experiences).

⁶ He summarizes it as follows: “This paper focuses on how one dimension of this broad-based deregulation—the removal of limits on bank entry and expansion—affected economic performance. In a nutshell, the results suggest that this regulatory change was followed by better performance of the real economy. State economies grew faster and had higher rates of new business formation after this deregulation. At the same time, macroeconomic stability improved. By opening up markets and allowing the banking system to integrate across the nation, deregulation made local economies less sensitive to the fortunes of their local banks.”

These experiences have also highlighted the symbiotic relationships between increased competition and changes in regulation: as competition intensifies, regulators are forced to evaluate remaining rules by markets participants, leading to more focused rules. Foreign banks have especially been found to stimulate improvements in the quality of local regulation and supervision (Levine, 1996). As such, foreign bank entry and other forms of international financial liberalization need not necessarily wait until the local institutional environment is fully developed. And greater competition can highlight deficiencies that raise the costs of financial intermediation or hinder access to financial services, and as such be an impetus to reform.

There have thus been large and rapid competitive gains in developed countries due to intra-country and regional deregulation, and much progress in developing countries' financial systems that opened up and experienced large entry, especially in Central and Eastern Europe and Latin America. Experiences have also shown, however, that gains will be hard to maintain in the future, largely as it involved the easy steps of liberalization and opening up. The tasks now are to deepen the competitive impact of liberalization. In most countries, major gains have come first and foremost to the wholesale capital and corporate finance markets. And even this has been with some limits since the competitive effects, even after eliminating barriers can remain limited to some wholesale markets, regions or segments. Even without (many) formal barriers, competition in many other markets remains imperfect and the gains from competition can be limited to certain financial services (segments).

Extending the gains to other types of consumers of financial services has not proven easy. Even in the most developed countries, with good financial institutions and solid institutional infrastructures, the degree of effective competition in consumer and retail services still lags that in other financial services segments. In the EMU, for example, following the Euro introduction, retail deposit and mortgage interest rates have converged—beyond what was due to the elimination of exchange rate risk, but other financial services still show large price and cost differences (CEPR, 2005). Indeed in the EU, there remain very large differences in the cost of a typical basket of retail banking services. The World Retail Banking Report (2005), for example, estimate that for 19 countries in Europe, North America, Eastern Europe, and the Far East the cost of a basket varied from €34 to €252, a 1-to-7.4 range, with the high and the low being two EMU-countries. And beyond the traditional loan and deposit services, many wholesale products still show large price differences, possibly due to imperfect competition.⁷

Similar analysis for developing countries (Beck et al. 2008) shows even larger differences, especially when scaled by income level. They show, for example, that over 700 dollars are required to open a bank account in Cameroon, an amount higher than the GDP per capita of that country. And they highlight that the annual costs to maintain an account in developing countries can amount to as much as 7% of GDP per capita. While not due to lack of competition alone, they do find that barriers are higher in countries where there are more stringent restrictions on

⁷ Even within fully integrated whole-sale markets (no currency risks, limited legal and regulatory differences, good information, etc.), such as the U.S. and increasingly the EU/EMU, there still is, for example, a familiarity bias, e.g., more investment and entry closer to the home of the investor.

bank activities and entry, when banking systems are predominantly government-owned, whereas more foreign bank participation is associated with lower barriers.

Many countries have given improving competition in these segments therefore a greater priority (e.g., the Financial Sector Action Plan 2005-2010 of the European Commission launched in 2005; the UK following the 2001 Cruickshank report). This has shown that to further facilitate competition it is not just a matter of opening up or liberalizing more, but rather that many (subtle) barriers still need to be removed. The Cruickshank report in the UK showed that the barriers to lowering costs for consumers and SMEs are often subtle, involving combinations of high costs of switching bank accounts, hidden fees, and limited transparency. The 2007 EU extensive competition inquiry in retail banking found a number of competition concerns in the markets for payment cards, payment systems and retail banking products, with barriers not easy to eliminate. The recent poor experience with sub-prime lending in the US, although mostly an issue of lack of consumer protection and failure to conduct proper regulation and supervision, has brought to the fore as well how unfettered competition does not prevent misuse and poor outcomes.

Experiences have also brought some risks to light. Increased competition can have adverse effects on access to financial services, as it can undermine the incentives of banks to invest in information acquisition and thereby lower their lending to information-intensive borrowers. More generally, more formal lending arrangements often associated with consolidation, increased distance between lenders and borrowers, greater foreign bank entry, greater use of technology and more competition—as has happened in many markets—may in theory have adverse impact on access for some classes of borrowers. There is indeed evidence for the US, EU and some emerging markets that consolidation has led to a greater distance and thereby to less lending to more opaque SMEs (Berger, Miller, Petersen, Rajan and Stein, 2005; Carow, Kane and Marayaman 2004, Karceski, Ongena and Smith 2005, Sapienza 2002, Degryse, Masschelein and Mitchell, 2005; Boot and Schmeits, 2005 review this literature).

Evidence of this happening on a large scale in developed countries has been limited though and there have been clearly offsetting trends as well.⁸ But for developing countries and emerging markets especially, these risks may be higher. Due to institutional weaknesses, including poor information and institutional infrastructure and weak contracting environment, and more general higher degrees of inequality, the access of SMEs and households in developing countries is often already less than desirable. In these markets, the possibility exists of bifurcated markets: large (international) banks may concentrate on large corporations, serving them using domestic and international platforms with a wide variety of products; and on consumers, providing them with financial services based on advanced scoring techniques and the like. The left out, middle segment under such a scenario could be the SMEs. As competition intensifies, profitability may go down and banks may have little incentives to invest in longer-term, relationships-based

⁸ In part due to technology, banks are better able today to combine soft and hard information in efficient manners, and some banks have become very profitable specializing in SME-lending. Also, larger multiple-service banks can have a comparative advantage in offering a wide range of products and services on a large scale, through the use of new technologies, business models, and risk management systems, making them effective in the SME markets.

lending and information collection necessary for lending to this segment (for a model along these lines, see Sengupta, 2007).

Improving access and promoting financial inclusion can therefore require some specific measures, not just complementary to those increasing competition, but partly to offset possible negative effects of competition. Whether improvements in the information institutional infrastructure and the contracting environment can compensate fast enough, such that SMEs and the like (still) have sufficient access to financial services, is an open question. Empirical evidence on this has been limited to date, but early evidence is positive (see de la Torre, Soledad Martínez Pería, and Schmukler, 2008).

Cross-country Studies

A number of recent papers have investigated across countries the effects on financial sector performance of (changes in) financial regulations and specific structural or other factors relating to how competitive the environment is. Factors analyzed include entry and exit barriers, activity restrictions, limits on information sharing, and other barriers. Here the empirical findings are fairly clear. In terms of development and efficiency, deregulation leading to increased competition has led to lower costs of capital for borrowers and higher rates of return for lenders, i.e., lower margins and lower costs of financial intermediation, spurring growth. Barth, Caprio and Levine (2001) document for 107 countries various regulations in place in 1999 on commercial banks, including various entry and exit restrictions and practices. Using this data, Barth, Caprio and Levine (2003) show, among others, that tighter entry requirements are negatively linked with bank efficiency, leading to higher interest rate margins and overhead expenditures. These results are consistent with both tighter entry restrictions limiting competition and the contestability of a market determining bank efficiency.

Using bank-level data for 77 countries, Demirgüç-Kunt, Laeven, and Levine (2004) find that bank concentration, which as noted needs not proxy for the degree of competition, has a negative effect on banking system efficiency, except in rich countries with well-developed financial systems and more economic freedoms. Furthermore, limiting entry of new banks and implicit and explicit restrictions on bank activities are associated with higher bank margins. The fact that too much competition can undermine stability and lead to financial crises has been often argued (see Allen and Gale, 2004 for a review), however, has been difficult to document systematically (for example, Beck, Demirguc-Kunt and Levine, 2002).⁹ Finally, since overall growth combines a number of aspects—efficiency, access and stability—the relationship between competition in the financial sector and growth can be insightful. Claessens and Laeven (2005) relate their competition measure to industrial growth in 16 banking systems. They find that greater competition in countries' banking systems allows financially dependent industries to grow faster, thus providing comprehensive evidence that more competition in the financial sector serves the broader economy well.

⁹ Boyd, De Nicolo and Jalal (2006) find for the US no trade-off between bank competition and stability, and that bank competition fosters the willingness of banks to lend. See also Čihák, Schaeck, and Wolfe (2006) and Čihák and Schaeck (2007).

Internationalization

There is also much evidence on the competitive effects of international openness and capital account liberalization, particularly relevant for developing countries. Overall, the competitive effects of cross-border capital flows have been found to be generally favorable. In terms of development and efficiency, competition through cross-border capital flows has been shown to lead to lower cost of capital for borrowers and higher (risk-adjusted) rates of return for lenders. Evidence has shown that opening up internationally can spur growth, including through improved financial intermediation (Bekaert, Harvey and Lundblad, 2005, and Henry 2006 review this literature; Claessens 2006 reviews the competitive effects of cross-border banking). Greater cross-border capital flows have been found, though, to increase access more for selected groups of borrowers, e.g., large corporations that already had preferential access, especially in developing countries. Tressel and Verdier (2007) find that in countries with weaker overall governance, politically connected firms benefit relatively more from international financial integration than other firms do. The growth benefits are consequently not always there. Kose et al. (2008) highlight the need for a minimum set of initial conditions—good macro-economic policies, financial and institutional development—for countries to benefit from financial globalization. And while the effects on stability have generally been found to be favorable—as international financial integration allows for greater international specialization and diversification, international capital flows can add to risks, among others, through contagion and greater risk of financial crises (IMF, 2007).

Foreign bank entry can be an alternative to cross-border capital flows to reach a market. The entry of foreign banks has been found to have generally favorable competitive effects on the development and efficiency of domestic, host banking systems (Chopra, 2007 provides an extensive review of the literature). These generally positive results have occurred through various channels, resulting from both direct financial intermediation and from competitive pressures being put on existing banks. There is little evidence of increased volatility associated with foreign bank entry; rather risks seem to be diversified better. Barth, Caprio and Levine (2003) show, for example, that allowing foreign bank participation tends to reduce bank fragility. The qualitative aspects of competitive foreign bank entry—new and better products—have by nature been harder to document, but have possibly been most important.

The effects of entry of foreign banks have been found, though, to depend on some conditions, and in some cases there can be negative consequences. Detragiache, Poonam, and Tressel, (forthcoming) find that foreign bank entry in poor countries is associated with lower (growth in) private credit. Beck and Soledad Martinez Peria (2007) find contrasting patterns for different classes of borrowers for Mexico (see also Schulz, 2006 which reviews foreign bank entry in Mexico). More generally, while evidence of immiserizing effects of internationalization is limited, achieving the full gains from entry often requires some (minimal) convergence of regulations, legal and other institutional infrastructure. Furthermore, interactions between capital account liberalization, financial services liberalization and domestic deregulation can affect the gains.

Complexity is, however, increasingly due to the changing nature of financial services provision. Financial services industries are continuously changing, not just due to the removal of barriers and increased role of non-bank financial institutions, but also due to increased globalization and

technological progress, which are all affecting the degree and type of competition. Even in market segments where competition has been intense and benefits in terms in access and costs have been very favorable, such as wholesale and capital markets, new competition policy challenges has arisen, nationally and internationally. The consolidation of financial services industries, the emergence of large, global players, the large investments in information technology and brand names necessary to operate effectively and to gain scale, and the presence of large sunk costs make it difficult to assure full competition, even abstracting from the special characteristics of financial services. The increased importance of networks is also affecting the nature and degree of competition. As such, the positive experiences documented here may not prevail unless policies adjust as well.

D. Tools to Analyze

The literature reviewed makes clear that the tools used by policy makers for identifying and addressing competition issues in the financial sector need to be specific. It is also clear that tools will need to be adjusted in light of changes in financial services industries. Measures typically used to date for measuring lack of competition (e.g., Herfindahl or concentration indexes of banks or branches within a geographic area) are clearly quite limited, even a few decades ago and are now even more so given changes in financial services industries. For example, rigid rules and guidelines, e.g., certain cutoffs for Herfindahl or concentration indexes, will not suffice. Rather, it is necessary to rely on solid analyses of degree of competitive behavior. Yet, this ends up being especially complicated since the more sophisticated analytical and empirical tools developed for measuring competition in other industries are hard to apply to financial services industries. The unclear production function for financial services, the tendency to produce and sell bundles of services, the weaker and more volatile data, the presence of network properties, etc. make assessing the degree of competitive behavior complex. A few examples illustrate the difficulties.

To measure effectively using the tools from the traditional industrial organization literature (such as pass-through coefficients) (changes in) competition in banking, the most traditional financial service for which much data is available, is already complex. Data are often limited and span few observations. Most tests require at least 50 bank-year observations. Since in many developing countries the number of banks with good financial information is low, one cannot conduct year-by-year estimates of the degree of competition, or only subject to large confidence intervals, making comparisons over time hard. Using data from a larger sample of countries, e.g., all Latin American countries or EU-15, creates other difficulties, such as comparability.

Networks are another complication that can give rise to special competition measurement issues. Financial services provision involves the use of an ever greater number of networks, such as payments, distribution and information systems. This means barriers to entry can arise due to a lack of access for some financial services providers to essential services. In banking, for example, network barriers can be closely related to which financial institutions have access to the payments system, typically banks only. ATM and other distribution networks can further be limited to banks, or only be available at higher costs to non-bank financial institutions. Obvious network effects arise when some banks have large nation-wide coverage in branches or ATMs, as it can allow them to service costumers more cheaply.

A recent development in developing countries especially is banking through networks of agents, where say retail chains with large network of stores serve as correspondent agents for banks (examples include Bolivia, Brazil, Colombia, India, Mexico, Pakistan, Peru, and South Africa: see further Mas and Siedek, 2008). This links competition in the retail sector with that in the financial sector. Also, two-sided networks effects exist in payment cards markets, since larger point-of-sale (POS) networks are more valuable to both cardholders and merchants. This leads to complex measurement issues, for which the credit card industries provide an interesting example (see Pindyck 2007).

Another example of a network is that access to credit and other information on borrowers and other clients is often limited to (a subset of) incumbent banks. In addition, network externalities—especially in capital markets, e.g., the agglomeration effects of liquidity—can complicate the application of competition policy. Ownership and governance structures can play a role as well. In many stock exchanges, derivatives and other formal trading markets, ownership and governance structures are changing from mutual to for profit ownership and with fewer owners. This can make traditional means of ensuring competition work poorly, or at least, differently,¹⁰ and new competition approaches can be required. There are also forces towards vertical integration, especially in capital markets (e.g., the integration of trading systems with clearing and settlement), while other forces push towards more separation in other aspects (e.g., clarity in functions) or horizontal consolidation (e.g., economies of scale). Each of these raises (new) forms of possible anti-competitive behavior.

An example of the complexity in defining a market is payments services. In payments services, as in many other financial services these days, the issue arises what constitutes the relevant product market. Payment cards include credit cards, debit cards and charge (or stored value) cards. While different in terms of underlying technology, pricing schemes and some auxiliary services, these cards are similar in their cash substitute function, in which case competition analysis should cover all type of cards. Alternatively, however, payment cards can be seen as part of a bundle of different services like ATM cash withdrawal, payment service at point-of-sale (POS) terminals, etc. In which case, payment cards should be analyzed as part of the competition in bundles of household financial services, including deposit services. This issue is relevant not just in developed countries, but also in developing countries where cards are rapidly becoming substitute to traditional banking services. For example, in some markets cards with pre-paid balances have been introduced that can be used for (small) payments without the need for a bank account. These and others forms of branchless banking (e.g., mobile banking using phones, see Ivatury and Mas, 2008) introduce new competition issues.

An example from the capital markets is the increasing trend toward internalization of trading within financial institutions, institutional investors and other financial intermediaries. While this can save transactions costs for the final consumer, it makes for less overall transparency and can lead to anti-competitive outcomes. Yet, data are more difficult to obtain and analysis to establish anti-competitive behavior is more complex.

¹⁰ For example, a private provider of an essential service will have different incentives to serve all in need than a mutual owned provider where all uses are also members/owners

In addition to these complications, market and product definitions have become (more) difficult. It is somewhat trite, but nevertheless very important from a competition policy point of view to state that many financial markets today are global in nature, making any application of competition policy to national markets only of lesser value than in the past. In addition, the definition of a specific financial service (and its market) has become more difficult. Today, for example, there are fewer differences than in the past between the markets for pension services and for asset management services; after all, many people can save in both ways and, provided tax rules are largely harmonized between the two, will do so. And with many non-financial institutions providing (near) banking and other financial services, the boundary between banks and non-bank financial institutions has become more blurred.

E. Current Status

The upshot of these complications and changes in financial services industries is that, for a same degree of liberalization, competition may be less assured today than in the past. The increasing presence of high fixed costs and large sunk costs in the production of whole-sale financial services, can mean significant first mover and scale advantages, possibly leading to natural monopoly and market power. Externalities, say in e-finance in the adoption of payments using mobile phones, can make the adoption of new technologies exhibit critical mass properties. In consumer finance, switching costs may have increased—for example, because automatic payments are increasingly linked to one’s specific bank account number. This means in turn that customers can not and do not easily change provider, leading to more complex competition. There is indeed some evidence from studies on banking systems that the progress in increasing competition may have slowed down from the early 2000s on, with even some indications of a decline in competition in some markets (Bikker and Spierdijk, 2007). The robustness of this finding is yet to be confirmed, and the exact causes are unclear, and in any case, are likely to be multiple.

The difficulty to document (changes in) competition with current tools shows that the tools to measure the (lack of) competition policy in financial services’ industries need to be enhanced or even be newly designed to address new issues and changes. This will often require developing and applying new, economically fully justified models, which will take time and can be complex. Short of doing so, however, much can be done. Much information on the competitive structure can still be discerned by focusing on price setting for specific products or financial functions, e.g., what are the fees charged for consumer retail products or for processing individual pension premiums or payments. In addition, more focus can be given to the pricing and availability of inputs necessary to produce financial services, e.g., do all types of financial institutions have access on the same basis to the retail payments system? This type of information can also be better disclosed such that users can act on it.

III. IMPLICATION FOR COMPETITION POLICY IN THE FINANCIAL SECTOR

There was already little analysis of the design and conduct of competition policy in the financial sector. And the “special nature” of finance, with its emphasis on stability, always meant that competition policy was considered more complicated in the financial services industry. Changes in financial services industries create their own set of new competition issues and there are surely

no easy answers to how reflect these in policy. As such it is hard to be definitive on how competition policy should be conducted in the financial sector. What is clear that the two aspects that have to be considered fresh in competition policy include the *approaches* and the *institutional arrangements*.

A. Approaches

One can think of three possible, and largely complementary approaches to conducting competition policy. One is assuring that entry/exit rules allow for contestable markets in terms of financial institutions and products. Two is leveling the playing field across financial services providers and financial products such that there is effective intra-sectoral competition. And three is assuring that the institutional environment (payments system, credit bureaus, etc) is contestable. The first has been the traditional approach and the norm. As analyzed above, it has been quite effective, and will have to remain the essential cornerstone of competition policy in the financial sector, as in other sectors. But, as noted, on its own it may have reached its limits.

The second, leveling the playing field, means harmonization (or convergence), both among financial services providers (banks, insurance companies, pension funds, asset management, etc.), markets—national, regional and global—and between different, but functionally equivalent types of products—whether called banking, insurance, or capital markets products. Harmonization’s goal should be that, within particular markets, products are not regulated differently depending on what type of financial institution provides the service. And products that offer the same functionality of service, but may be “labeled” differently, i.e., fall under different regulatory approaches, need to be treated similarly. Harmonization (or convergence) includes addressing differences in taxes, capital adequacy requirements, transparency/disclosure, etc. across sectors and products. This will be useful not just to increase competition, but also to avoid regulatory arbitrage and to reduce differences in the net overall regulatory burden of products. The increased creation of complex financial products that straddle various markets and institutions makes the need for a common regulatory approach all the more necessary.

Harmonization across financial service sectors and products is a long-standing issue. On one hand, the big barriers across financial service sectors have been removed: only in some countries, but increasingly less so, are there still (large) regulatory barriers between commercial banks, investment banks, insurance companies and other financial institutions. The fact that these large barriers have been removed, however, does not make the issue of harmonization moot since often many smaller barriers remain. Some differences will be due to some “path dependence;” for example, some products emerged as insurance products but migrated to becoming savings products. Others arise from the existence of subtle barriers, e.g., some products may be linked to the payments system for which access is limited. And others again exist because of linkages with other economic policies, e.g., tax preferences may be linked to pension products but not to savings. Furthermore, many financial products come bundled (e.g., a checking account has both savings, payments and often as well credit—overdraft—functions linked to it), making it hard to compare regulatory burdens of individual products with each other (e.g., the costs of complying with Anti-Money Laundering and Combating the Financing of Terrorism (AML/CFT) may be assigned to a checking account or may be spread over various products).

In all cases, there is a need to go more in depth. Yet, designing an ex-ante approach to perfectly level the playing field is conceptually and in practice very difficult. The current approach, which is largely reactive—as producers and consumers are faced with differences, they may approach the various regulators and appeal for harmonization—has therefore benefits. It has also risks, however. There can be a race to the bottom as the lowest treatment becomes the norm for all products. It also opens up the possibility of lobbying for favorable treatments. This can go counter to the valid reasons for differences in regulatory treatments based on, say, prudential concerns or consumer protection. A proactive approach by authorities and competition agencies can therefore still be useful.

This can be complemented by given consumers more information. Better price information and more disclosure on the costs of various financial services can help consumers identify uncompetitive products and/or start formal complaints. Many countries have centralized places where, say, interest rates on deposit and standard loan contracts can be found. Experiences show though that this remains of limited effectiveness when done alone. Market solutions can greatly and often more effectively foster competition than government initiatives alone, witness the many firms offering price comparators. Regardless, and similar to what is needed for assessing the degree of competition, agencies could require better data on prices and costs at the level of individual products and make this data available. This would be a very important starting point for users of financial services that often lack empirical bases.

The third approach, assuring that the institutional environment is contestable, is complex as well. This would mean that the various inputs required for the production and distribution of financial services, including network services (for example, payments and check system, credit bureaus, other networks, etc), need to be available to all interested in using them, be fairly and uniformly priced, and be efficiently provided. For no part of a specific financial service production and distribution chain should there be any undue barriers or unfair pricing. These steps are considered basic requirements in most other network industries, where (private) firms are producing and delivering services (e.g., phone, other telecommunications, energy, and water), using common networks (e.g., telecommunication lines, power lines, railroads, pipelines, etc.).

With the often subtle barriers in financial services industries, however, these steps and policy recommendations to foster more effective competition are not easy. In many markets, policy actions and recommendations have largely been in the form of putting more pressures on the financial industry, including by relying on codes of conduct, to reduce extensive barriers, converge standards, limit collusive practices, and encourage consumer mobility by lowering switching costs. Some strong general policy intervention can at times be necessary, however, to force more rapid adjustments, create standardization or remove barriers. Some example illustrate the benefits of strong actions.

Over the past decade many governments have required various retail payments systems initially developed by (groups of) individual banks within a nation to be integrated and available to all consumers. This greatly increased not only the quality of payments services, but also often lowered costs. The EU recently required charges for financial transfers among Euro-zone countries to be equal to those for domestic transfers (subject to some conditions), which illustrates the benefits of strong actions. Another option is mandating easy portability of one's

bank account number, which is being introduced in some EU countries. Mandating by government rule a level playing field can be equally necessary in capital markets to assure fair trading and pricing for small as well as large investors. In many markets, traders are required to always use the best price.¹¹

Important to assuring a contestable institutional infrastructure in finance will be the formulation and application of standards, but here policy makers will face trade-offs. As the payments system examples show, in networks, compatibility of systems is mostly based on standards. Standards can also help avoid coordination problems in firms' technology choice, and can help consumers forecast whether the specific technology will be widespread, leading to reduced uncertainty and less risk of consumer lock-in, and thereby avoid non-adoption (waiting). In several cases after the industry agreed on a common standard, the adoption of the good or service indeed increased sharply. In financial services, one good example has been the Society for Worldwide Interbank Financial Telecommunication (SWIFT) protocol for transacting international payments introduced in 1977. At the same time, with standards, users can be forced to make a choice. Furthermore, joining more than one network is often ruled out by contract. Exclusivity arrangements can lead to the predominance of a large network, even when more differentiated networks with more consumer choice could proliferate. Anti-competitive behavior can then easily follow. Policy makers face then a trade-offs between on one hand encouraging market development by supporting (a particular) standard(s) and achieving critical mass with the best technology, versus at the same time stimulating competition and not favoring incumbents.

In these and other areas, competition policy approaches in the financial sector can perhaps learn from those used in other network industries, many of which have adopted relatively sophisticated competition policies. For example, in many infrastructure industries, the ownership and/or management of the network has been separated in recent years from the provision of services to assure fairer competition. Access policies and pricing of network services are often subject to government regulatory review. In these other industries, some rules for operating on the network may be standardized through direct government actions or through self-regulatory agencies assigned with this task, and not left to the (private sector) operators or owners (alone).

Some of these other network industries have also come to grip with the issue of assuring access to basic services for a wide class of consumers. Through mechanisms such "universal service obligations," uniform price rules for essential inputs in producing services or key outputs, selected subsidies and other (tax) incentives, policy makers have been able to assure (near) universal access in these other network industries, at least in the most developed countries. These models are also being applied in developing countries. These approaches may equally apply to those financial services with large network properties. For example, in payment services, standard uniform pricing rules could imposed, similar to uniform rates for certain basic postal, phone, telecommunications, water or electricity services.

¹¹ In the US, this is embodied in the SEC "order protection rule": no matter where a customer order is routed, it should receive the best price that is immediately and automatically available anywhere in the national market system. This principle promotes competition among individual market centers by ensuring that dominant markets cannot ignore smaller markets displaying the best price.

B. Institutional Arrangements

The institutional arrangements for competition policy often will need to change as well. For one, competition policy need to be separated more clearly from prudential oversight. Some countries have already taken competition policy out of the central bank or supervisory authority, but in many countries the responsibility for competition policy still lies with the prudential authority. This creates conflict of interests (for a review of the arguments, see Carletti and Hartmann, 2002). Separation does not mean that the prudential authority would have no say in competition: the prudential authority could have some (veto) rights in any specific decisions or general policy changes. Furthermore, the competition authority could still rely on analyses by the prudential authority, say, in case technical expertise is scarce in the competition authority. But clearer separation does address the conflict of interests' issue that has hindered effective competition policy in the financial sector.

Second, there is much more need to coordinate better, and preferably bring together, competition policy functions now often dispersed among various agencies within a country (e.g., separate for banking and non-bank financial institutions, or with prudential regulators, or among both specialized and general competition policy agencies). Reducing this dispersion will avoid the inconsistent application of competition policy across financial institutions and products that are functionally equivalent. It will also allow for the buildup of skills necessary for proper competition policy analysis. Of course, in many countries, there is also need to improve the skill base in the judicial system where competition cases may be finally settled or arbitrated. It will also be important to consider the interactions between competition policy and consumer protection policies specific to the financial sector.

This concerns three sets of issues: assuring markets work better for all final consumers—what is sometimes called assuring a proper business conduct; protecting individual consumers—which can be considered a narrow version of consumer protection; and assuring consumers obtain the greatest benefits from financial services provision, for example, through proper information and education—which makes for an even wider concept of consumer protection. Competition policy is relevant for all these issues, as both too little and too much competition can hurt consumers through each of these channels.

The costs and benefits of single versus multiple supervisory agencies have been debated for some time¹² and no simple answers exist here on the best balance, from the point of view of financial stability or from the perspective of efficiency of financial services provision. It does relate, however, to the issues of competition and harmonization across financial services and financial services providers. Financial sector competition policy design thus has to consider the organization of the supervisory agencies. The move towards single supervisory authorities across the world—countries as diverse as Estonia, Kazakhstan, South Korea, Nicaragua, and the UK

¹² The issue of consolidated supervision is less debated.

have adopted it in the last decade—presumably could help with reducing unnecessary differences arising from multiple regulatory regimes.¹³

Superficially, differences in the degree of de-jure or de-facto harmonization (or lack thereof) among financial instruments are not obvious between various supervisory regimes. Even where there is a single supervisory authority, it has not done away with all (or even many) of the regulatory harmonization issues across sectors or products. Presumably, competitive pressures from producers and users and the lobbying strength of these constituencies relative to regulators will be the most important factors driving the (de-facto) reduction in barriers. In that respect, a more fragmented structure of regulation and supervision may well lead to more de-facto harmonization and convergence as financial services industries are stronger positioned to argue for regulatory changes and agencies “compete” with each other.¹⁴ Nevertheless, whether any of these institutional arrangements are superior from the point of view of efficient financial services provision has not been researched in depth and may remain unclear in any case given the difficulty of attribution. And the organization of a supervisory authority in a single country may be of little relevance when competition for some financial services already is on a global basis.

The changing nature of financial services provision also means that other aspects affect the competitive environment. For example, the competitive structure in telecommunication markets may affect the market for electronic (or remote) finance, as in case of mobile payments. And, obviously, there is a much greater need today for international cooperation among various national agencies in the application of competition policy. Harmonization and convergence across markets, already a very complex undertaking within countries, will be compounded regionally or globally. The EU-experience, which has been engaged for quite some time now in a process of financial integration and convergence, shows the tenacity needed to create a single market for financial services. It shows that requiring some uniformity in minimal regulations is not sufficient since inconsistencies with national rules and laws still arise, as other policy areas need to be adjusted, which take much time and effort.

These national, regional and global experiences also show how many conceptually difficult questions can arise with convergence. For example, while many banks operate across borders without barriers, liquidity support and lender of last resort facilities are still organized nationally.

¹³ Although there is this trend, it is not general. Some countries have recently adopted the model of integrating systemic stability and all—banking, insurance and pension—individual financial institutions prudential oversight, in one agency, but separate from the agency for market conduct supervision. Others have left systemic stability with the central bank, but organized prudential and market conduct under two separate agencies. Yet others have made no changes and still have separate prudential banking, securities markets and insurance supervisors operating in one country (and sometimes multiple of each, e.g., the US).

¹⁴ Obviously, this is highly context and country dependent, and ignores many other dimensions. For example, with strong financial institutions and weak regulators, a greater influence of private interests could lead in some countries to lax and low-cost standards, with perhaps greater competitiveness, but with more risk of financial instability. In other environments, capture of the regulator may lead to rent-seeking by (selected) financial institutions, but with limited risks.

This creates inconsistencies with policies for dealing with financial insolvency.¹⁵ While this topic largely concerns financial stability and is beyond this paper (there is large literature here; see the papers collected in Caprio, Evanoff and Kaufman, 2006), these differences can also have competitive implications. For example, banks from some countries may have more generous access to the local safety net than banks from other countries do. Of course, these issues also arise within countries, as when state-owned banks attract deposits at low interest rate because they are (perceived to be) covered more generously by the safety net, as has happened often in developing countries. And they arise both ex-ante and ex-post, as when weak banks receive liquidity and/or solvency support.¹⁶ These and other issues mean that competition agencies will have to be both reactive and proactive in their investigations. Today, agencies often only respond to events such as large scale mergers and acquisitions, but undertake little analysis of competitive conditions in existing markets. An approach targeted at key areas of concern of possible anti-competitive behavior would be useful.

Lastly, harmonization and convergence depend these days to a great extent on international standards, of which the ones developed by the BCBS, IOSCO, IAIS and CPSS are the most visible. This has become a large body of “soft law”.¹⁷ The ambition levels of these standards vary, from suggestions to achieve a minimum common denominator among existing national requirements, which is most often the case, to going beyond existing national requirements. Although the standards are voluntary in nature and implementation is left to countries themselves, some of the standards can be quite intrusive. In most cases, functional convergence and arbitrage would make remaining cross-border regulatory differences of little consequence in hindering competition. Some major initiatives, however, like Basel II and other rules affecting (cross-border) banking may end up hindering effective competition in some respects.¹⁸

¹⁵ Although liquidity management may be done centrally by the foreign bank in its home country, branches of foreign banks are typically eligible to receive liquidity support from the local host central bank. In case of insolvency of the head bank, however, the home country authorities are responsible, which can involve home government resources in case the whole bank fails. In single currency regions, like the EMU, there is an additional need for coordination between member countries' liquidity support and ECB's monetary policy.

¹⁶ This has happened in many financial crises (see Claessens, Klingebiel and Laeven (2003) for a overview of measures used in restructuring), but in the past has not led to competitive questions. The recent cases of the liquidity support for Northern Rock in the UK, the solvency support for IKB in Germany and the “bail-out” of Bear Stearns, however, have attracted some attention for their potential ant-competitive implications. Also, the (on-going) large scale liquidity support during the recent financial crisis from the US Federal Reserve Board, the ECB and the Bank of England could raise such questions.

¹⁷ There are issues of the legitimacy and governance of the standards setting bodies, which are not discussed here.

¹⁸ The Basel II rules, for example, encourage international banks to use the same risk management approaches across national jurisdictions, which creates a level playing field and can help with competition. At the same time, too uniform application could lead credit risks to be priced too rich in some countries (e.g., emerging markets) and too thin in other countries. Adapting the approaches to capture the risks in various markets appropriately is necessary, but would negate some of the gains of uniformity.

IV. CONCLUSION

I review the state of knowledge on competition in the financial sector and how competition policy is and should be organized. I show that competition matters as in other industries, but that there are some specific analytical issues. Notably is the effect of excessive competition on financial stability, but also that the degree of competition matters for the access of firms and households to financial services. As a consequence, the view that competition in financial services is unambiguously good is more naive than in other industries. And it is not sufficient to analyze competitiveness from a narrow concept alone or focus on one effect only. One has to consider a broader set of objectives, including efficiency, access to services to various segments of users, and systemic financial sector stability, and possible tradeoffs among these objective. In terms of the factors driving competition in the financial sector and empirical measurement of competition, I highlight that one needs to consider standard industrial organization factors, such as entry and exit and contestability, but also that financial services provision has many network properties in production, distribution, and consumption, making for complex competition structures.

Besides the theoretical complexity, empirical evidence on competition in the financial sector is scarce and often not (yet) clear. Much of the current literature relates performance indicators to countries' financial system structures and regulatory regimes without formal measures of competitiveness. And the contestability view of competition is not the one typically applied. Rather, the market structure-conduct-performance paradigm is at best used. What is available, however, suggests that competition has spurred improvements, including greater product differentiation, lower cost of financial intermediation, more access to services, and enhanced stability. This evidence is fairly universal, from developed countries to many developing countries. In terms of factors driving competition, to date, it has been achieved by traditional means, i.e., making systems more open and contestable, i.e., having low barriers to entry and exit, with in developing countries internationalization of financial services often driving changes. As globalization, technological improvements and de-regulation further progress, the gains of competition can be expected to become even more wide-spread across and within countries.

At the same time, the review shows that once the easier steps have been taken, policies to achieve effective competition in all dimensions, and balancing the trade-offs between competition and other concerns, become more challenging. As financial services industries evolve, and as financial markets and products become more complex and global, new regulatory and competition policy issues arise. This means that approaches to competition issues need to adjust, important since competition policy in the financial sector is often already behind. But the theoretical and empirical literature is just catching up with the special issues and changes in financial services industries.

To move forward, therefore, besides improving the measurement of competition, much can be learned from policies already standard in many other industries, especially network industries. I make some suggestions on what approaches, as well as institutional arrangements and tools best fit a modern view of competition policy in the financial sector. I also suggest that policy makers can greatly enhance available data so that users will have the information needed to assess the costs of different financial services. Finally, with rapid changing financial services industries, there is a need to remain agile and adjust competition policies and procedures.

REFERENCES

- Allen, Franklin, and Douglas Gale, 2004, "Competition and Financial Stability," *Journal of Money, Credit and Banking*, No. 363, Vol. 2, pp. 453-80.
- , 2007, "Understanding Financial Crises," *Clarendon Lectures in Finance*, Oxford University Press, Oxford.
- Ausubel, Lawrence, 1991, "The Failure of Competition in the Credit Card Market," *American Economic Review*, No. 81, Vol. 1, pp. 50-81, March.
- Balto, D. A., 2000, "Creating a Payment System Network: The Tie that Binds or an Honorable Peace?" *The Business Lawyer*, Vol. 55, pp. 1391-408, May.
- Bank for International Settlement, 2006, "The Banking System in Emerging Economies: How Much Progress has Been Made?" BIS Papers No 28, Basle.
- Barth, James R., Gerard Caprio Jr., and Ross Levine, 2001, "The Regulation and Supervision of Banks around the World: A New Database." In *Integrating Emerging Market Countries into the Global Financial System*, ed. by Robert E. Litan and Richard Herring, 183-241. Brookings-Wharton Papers on Financial Services, Brookings Institution Press.
- , 2004, "Bank Regulation and Supervision: What Works Best?" *Journal of Financial Intermediation*, Vol. 132, pp. 205-48.
- , 2006, "Rethinking Bank Regulation: When Angels Govern." Cambridge University Press.
- Baumol, William J., John C. Panzar, and Robert D. Willig, 1982, "Contestable Markets and the Theory of Industry Structure." San Diego, CA: Harcourt Brace Jovanovich.
- Beck, Thorsten, Asli Demirgüç-Kunt, and Ross Levine, 2006, "Bank Concentration, Competition, and Crises: First Results," *Journal of Banking and Finance*, No. 30, pp. 1581-603.
- Beck, Thorsten, Asli Demirgüç-Kunt, and Vojislav Maksimovic, 2004, "Bank Competition, Financing Constraints and Access to Credit," *Journal of Money Credit and Banking*, No. 363, No. 2, pp. 627-48.
- Beck, Thorsten Asli Demirguc-Kunt, and Maria Soledad Martinez Peria, 2008, "Banking Services for Everyone? Barriers to Bank Access and Use Around the World," forthcoming, *World Bank Economic Review*.
- Beck, Thorsten, and Maria Soledad Martinez Peria, 2007, "Foreign Bank Acquisitions and Outreach: Evidence from Mexico." World Bank Policy Research Working Paper 4467, Washington, D.C.

- Bekaert, Geert, and Campbell Harvey, 2003, "Emerging Markets Finance," *Journal of Empirical Finance*, No.10, Vol. 1-2, pp. 3-56.
- Bekaert, Geert, Campbell Harvey, and Christian Lundblad, 2005, "Does Financial Liberalization Spur Growth," *Journal of Financial Economics*, Vol. 77, pp. 3-56.
- Berger, Allen N., 2000, "Efficiency in Banking: Professional Perspectives," in *Financial Institutions Management*, A. Saunders, McGraw-Hill, pp. 300-301.
- Berger, Allen N., 2006, "Why is Foreign Bank Penetration So Low in Developed Nations?" in Gerard Caprio, Jr., Douglas D. Evanoff, and George G. Kaufman, eds. *Cross-Border Banking: Regulatory Challenges*, pp. 125-149. World Scientific Studies in International Economics.
- Berger, Allen N., Rebecca S. Demsetz, and Philip E. Strahan, 1999, "The Consolidation of the Financial Services Industry: Causes, Consequences, and Implications for the Future." *Journal of Banking and Finance*, No. 23, pp. 135-94.
- Berger, Allen N. and Humphrey, B. C. 1997. Efficiency in financial institutions: International survey and directions for future research, *European Journal of Operational Research*, 98, pp. 175-212.
- Berger, Allen N., Nathan H. Miller, Mitchell A. Petersen, Raghuram Rajan, and Jeremy Stein, 2005, "Does Function Follow Organizational Form? Evidence from the Lending Practices of Large and Small Banks," *Journal of Financial Economics*, No. 76, Pp. 237-69.
- Besanko, David A., and Anjan V. Thakor, 1992, "Banking Deregulation: Allocational Consequences of Relaxing Entry Barriers." *Journal of Banking and Finance*, Vol. 16, pp. 909-32.
- Bikker, Jacob A., and Johannes M. Groeneveld, 2000, "Competition and Concentration in the EU Banking Industry." *Kredit und Kapital*, No. 33. pp. 62-98.
- Bikker, Jacob A., and Katharina Haaf, 2000, "Measures of Competition and Concentration in the Banking Industry: A Review of the Literature," Research Series Supervision No. 27, De Nederlandsche Bank. *Economic & Financial Modelling*, No. 9, pp. 53-98. Reprinted in: J.A. Bikker, 2004, *Competition and efficiency in a unified European banking market*, Edward Elgar.
- , 2001, "Competition, Concentration and Their Relationship: An Empirical Analysis of the Banking Industry." DNB Staff Report No. 68, De Nederlandsche Bank, July.
- Bikker, Jacob A., and Laura Spierdijk, 2007, "How Banking Competition Changed over Time," mimeo, De Nederlandsche Bank, Amsterdam, December.

- , 2008, “Measuring and Explaining Competition in the Financial Sector,” mimeo, De Nederlandsche Bank.
- , and Finnie, P., 2006, “Misspecification in the Panzar-Rosse model: Assessing Competition in the Banking Industry.” DNB Working Paper No. 114, De Nederlandsche Bank, Amsterdam.
- , 2007, “Market Structure, Contestability and Institutional Environment: The Determinants of Banking Competition,” DNB Working Paper No.156, De Nederlandsche Bank, Amsterdam.
- Boot, Arnoud, 2000, “Relationship Banking: What DO We Know?” *Journal of Financial Intermediation*, No. 9, pp. 7-25.
- Boot, Arnoud W.A., and Anjolein Schmeits, 2005, “The Competitive Challenge in Banking.” Amsterdam Center for Law & Economics ACLE, Working Paper No. 2005-08.
- Boot, Arnoud, and Anjan V. Thakor, 2000, “Can Relationship Banking Survive Competition?” *Journal of Finance*, No. 55, Vol. 2, pp. 679-713.
- Boyd, John H., and Gianni De Nicolò, 2005, “The Theory of Bank Risk-Taking and Competition Revisited,” *Journal of Finance*, No. 60, Vol. 3, pp. 1329-343.
- Boyd, John H., Gianni De Nicolò, and Abu M. Jalal, 2006, “Bank Risk-Taking and Competition Revisited: New Theory and New Evidence,” IMF Working Paper WP/06/297.
- Caprio, Gerard, Jr., Douglas Darrell Evanoff, George G. Kaufman, eds., 2006, “Cross-Border Banking: Regulatory Challenges,” The Federal Reserve Bank of Chicago and the World Bank, World Scientific Studies in International Economics.
- Carletti, Elena, and Philipp Hartmann, 2002, “Competition and Stability: What’s Special About Banking?” ECB Working Paper No. 146, May.
- Carow, K.A., Edward Kane, and R. Narayanan, 2004, “How Have Borrowers Fared in Banking Mega-Mergers?” Unpublished manuscript, Boston College.
- CEPR, 2005, Barros, Pedro Pita, Erik Berglof, Paolo Fulghieri, Jordi Gual, Colin Mayer, Xavier Vives, 2005, “Integration of European Banking: The Way Forward. Monitoring European Deregulation,” No 3. Centre for Economic Policy Research CEPR and Fundacion BBVA. London, Spain. March.
- Cetorelli, Nicola, 1999, “Competitive Analysis in Banking: Appraisal of the Methodologies.” *Economic Perspectives*, Federal Reserve Bank of Chicago, First Quarter, pp. 2-15.
- Čihák, Martin, and Klaus Schaeck, 2007, “Banking Competition and Capital Ratios.” IMF Working Paper No. 07/216, Washington, D.C.

- , and Simon Wolfe, 2006, “Are More Competitive Banking Systems More Stable?” IMF Working Paper No. 06/143, Washington, D.C.
- Claessens, Stijn, 2006a, “Competitive Implications of Cross-Border Banking,” in *Cross-Border Banking: Regulatory Challenges*, Gerard Caprio, Douglas D. Evanoff and George G. Kaufman, eds. World Scientific Publishing Co. Pvt. Ltd, New Jersey, pp. 151-82.
- , 2006b, “Current Challenges in Financial Regulation.” Policy Research Working Paper 4103, World Bank, Washington, D.C.
- Claessens, Stijn, Asli Demirgüç-Kunt, and Harry Huizinga, 2001, “How Does Foreign Entry Affect Domestic Banking Markets?” *Journal of Banking and Finance*, No. 25, pp. 891-911.
- Claessens, Stijn, Gergely Dobos, Daniela Klingebiel, and Luc Laeven, 2003, “The Growing Importance of Networks in Finance and Its Effects on Competition,” in Anna Nagurney ed., *Innovations in Financial and Economic Networks*, Edward Elgar Publishers, Northampton, MA, USA, pp. 110-35.
- Claessens, Stijn, Daniela Klingebiel, and Luc Laeven, 2003, “Financial Restructuring in Banking and Corporate Sector Crises, What Policies to Pursue?” in Michael Dooley and Jeffrey Frankel eds., *Currency Crises Management*, NBER/University of Chicago Press, pp. 147-80.
- Claessens, Stijn, and Luc Laeven, 2004, “What Drives Banking Competition? Some International Evidence,” *Journal of Money Credit and Banking*, No. 36, Vol. 3, June, Part 2, pp. 563-83.
- Claessens, Stijn, and Luc Laeven, 2005, “Financial Dependence, Banking Sector Competition, and Economic Growth,” *Journal of the European Economic Association*, March, No. 31, pp. 179-201.
- Chopra, Ajai, 2007, “Opening up to Foreign Banks: Harnessing the Benefits and Avoiding the Pitfalls,” mimeo, IMF.
- Cruickshank, Don, 2000, *Review of Banking Services in the UK, Competition in UK Banking: A Report to the Chancellor of the Exchequer*, at <http://www.hm-treasury.gov.uk>
- De Bandt, 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*, No. 24, pp. 1045-066.
- De la Torre, Augusto, María Soledad Martínez Pería, Sergio Schmukler, 2008, “Bank Involvement With SMEs: Beyond Relationship Lending,” World Bank, Washington, D.C.

- Degryse, Hans, Nancy Masschelein, and Janet Mitchell, 2005, "SMEs and Bank Lending Relationships: The Impact of Mergers," CEPR Working Paper No. 5061.
- Dell'Ariccia, Giovanni, and Robert Marquez, 2004, "Information and Bank Credit Allocation," *Journal of Financial Economics*, No. 71, pp. 185-214.
- Dell'Ariccia, Giovanni, Luc Laeven and Deniz Igan, 2008, "Credit Booms and Lending Standards: Evidence from the Subprime Mortgage Market," IMF Working Paper, Working Paper No. 08/106, Washington, D.C.
- Demirgüç-Kunt, Asli, Luc Laeven, and Ross Levine, 2004, "Regulations, Market Structure, Institutions, and the Cost of Financial Intermediation." *Journal of Money, Credit, and Banking*, No. 36, Vol. 3, pp. 593-622, June.
- Detragiache, Enrica, Poonam Gupta, and Thierry Tresselt, 2007, "Foreign Banks in Poor Countries: Theory and Evidence." Forthcoming *Journal of Finance*. Also IMF Working Paper No. 06/18, Washington, DC.
- European Central Bank, 2005, Indicators of Financial Integration in the Euro area, September.
- European Commission, 2005, White Paper on Financial Services Policy 2005-2010, Brussels, December.
- Gutiérrez de Rozas, Luis, 2007, Testing for Competition in the Spanish Banking Industry: The Panzar-Rosse Approach Revisited. Banco de España Research Paper No. WP-0726. Available at SSRN: <http://ssrn.com/abstract=1005116>
- Hauswald, Robert, and Robert Marquez, 2003, "Information Technology and Financial Services Competition," *The Review of Financial Studies*, No.16, Vol. 3, pp. 921-48.
- Hauswald, Robert, and Robert Marquez, 2005, "Competition and Strategic Information Acquisitions in Credit Markets," *Review of Financial Studies*, No.19, Vol. 3, pp. 967-1000.
- Hempell, Hannah S., 2002, "Testing for Competition Among German Banks. Economic Research Centre Discussion Paper No. 04/02." Available at SSRN: <http://ssrn.com/abstract=304343> or DOI: 10.2139/ssrn.304343.
- Henry, Peter B., 2006, "Capital Account Liberalization: Theory, Evidence, And Speculation." NBER Working Paper 12698, Cambridge, MA.
- International Monetary Fund, 2007, "Reaping the Benefits of Financial Globalization." Available online at www.imf.org/external/np/res/docs/2007/0607.htm. International Monetary Fund, Washington, D.C.

- Ivatury, Gautam, and Ignacio Mas, 2008, "The Early Experience with Branchless Banking," April 1, CGAP Focus Note 46, Washington, D.C.
- Karceski, Jason, Steven Ongena, and David C. Smith, 2005, "The Impact of Bank Consolidation on Commercial Borrower Welfare," *Journal of Finance*, No. 60, pp. 2043-082.
- Kose, M. Ayhan, Eswar Prasad, Kenneth Rogoff, and Shang-Jin Wei, 2008, "Financial Globalization and Macroeconomic Policies," forthcoming, *Handbook of Development Economics*, D. Rodrik and M. Rosenzweig, eds.
- Levine, Ross, 1996, "Foreign Banks, Financial Development, and Economic Growth," in *International Financial Markets*, ed. by Claude Barfield. American Enterprise Institute Press, Washington.
- Laeven, Luc, and Ross Levine, 2007, "Is There a Diversification Discount in Financial Conglomerates?" *Journal of Financial Economics*, forthcoming.
- Marquez, Robert, 2002, "Competition, Adverse Selection, and Information Dispersion in the Banking Industry," *Review of Financial Studies*, No. 15, No. 3, pp. 901-26.
- Mas, Ignacio, and Hannah Siedek, 2008, "Banking through Networks of Retail Agents," May 1, CGAP Focus Note 47, Washington, D.C.
- Mian, Atif, 2003, "Foreign, Private Domestic, and Government Banks: New Evidence from Emerging Markets." Unpublished manuscript. University of Chicago.
- Mian, Atif, 2006, "Distance Constraints: The Limits of Foreign Lending in Poor Economies," *Journal of Finance*. No.61, Vol. 2, pp. 1465-505.
- Mishkin, Frederic S., 2006, "The Next Great Globalization: How Disadvantaged Nations Can Harness Their Financial Systems to Get Rich." Princeton University Press, Princeton.
- Nakane, Marcio I., 2001, "A Test of Competition in Brazilian Banking." Banco Central do Brasil Working Paper No. 12. Available at SSRN: <http://ssrn.com/abstract=273208> or DOI: 10.2139/ssrn.273208
- Panzar, John C., and James N. Rosse, 1987, "Testing for 'Monopoly' Equilibrium," *Journal of Industrial Economics*, Vol. 35, pp. 443-56.
- Petersen, Mitchell A., and Raghuram G. Rajan, 1994, "The Benefits of Lending Relationships: Evidence from Small Business Data," *Journal of Finance*, No. 49, pp.1367-400.
- Petersen, Mitchell A., and Raghuram G. Rajan, 1995, "The Effect of Credit Market Competition on Lending Relationships." *Quarterly Journal of Economics*, No.110, pp. 407-43.

- Perotti, Enrico C., and Suarez, Javier, 2002, "Last bank standing: What do I gain if you fail?" *European Economic Review*, No. 469, pp. 1599-622, October.
- Pindyck, Robert S., 2007, "Governance, Issuance Restrictions, and Competition in Payment Card Networks." MIT Sloan Research Paper No. 4651-07. <http://ssrn.com/abstract=996722>.
- Prasad, A., and Ghosh, Saibal, 2005, "Competition in Indian Banking." IMF Working Paper No. 05/141 Available at SSRN: <http://ssrn.com/abstract=888010>, Washington, D.C.
- Rajan, Raghuram, 1992, "Insiders and Outsiders: The Choice between Informed and Arm's-Length Debt," *Journal of Finance*, No. 474, pp. 1367-400.
- Rochet, J.-C. and Tirole, J., 2001a, "Cooperation Among Competitors: Some Economics of Payment Card Networks." Institut d'Economie Industrielle IDEI, Université de Toulouse 1, mimeographed.
- Rochet, J.-C. and Tirole, J., 2001b, "Platform Competition in Two-sided Markets," Institut d'Economie Industrielle IDEI, Université de Toulouse 1, mimeographed.
- Schulz, Heiner, 2006, "Foreign Banks in Mexico: New Conquistadors or Agents of Change?" Wharton Financial Institutions Center Working Paper No. 06-11. Available at SSRN: <http://ssrn.com/abstract=917149>.
- Sapienza, Paola, 2002, "The Effects of Banking Mergers on Loan Contracts," *Journal of Finance*, No. 57, pp. 1891-921.
- Sengupta, Rajdeep, 2007, "Foreign Entry and Bank Competition," *Journal of Financial Economics*, No. 84, pp. 502-28.
- Strahan, Philip, 2003, "The Real Effects of US Banking Deregulation," *Federal Reserve Bank of St. Louis Review*, July/August 2003, No. 85, Vol. 4, pp. 111-28.
- Tresselt, Thierry, and Thierry Verdier, 2007, "Does Financial Globalization Discipline Politically Connected Firms?" Working Paper, IMF, Washington, D.C.
- Vives, Xavier, 2001, "Competition in the Changing World of Banking." *Oxford Review of Economic Policy*, No.17, pp. 535-45.
- Wong, Jim, T.C. Wong, Tom Fong, and Ka-fai Choi, 2006, "Competition in Hong Kong's Banking Sector: A Panzar-Rosse Assessment." <http://ssrn.com/abstract=1032034>.
- World Retail Banking Report, 2005, Produced by Capgemini, ING, and the European Financial Management & Marketing Association EFMA.
- Yildirim, H. Semih, and George C. Philippatos, 2007, "Restructuring, Consolidation, and Competition in Latin American Banking Markets," *Journal of Banking and Finance*, No. 31, Vol. 3, pp. 629-39.

Table 1. PR-Measures (H-statistics) of Competitiveness of Banking Systems Around the World

<i>country</i>	<i>Bikker and Spierdijk H (at end of the period)</i>	<i>Claessens and Laeven H average</i>
Algeria	0.34	
Andorra	0.88	
Argentina	0.55	0.73
Armenia	0.43	
Australia	0.29	0.8
Austria	-0.05	0.66
Azerbaijan	0	
Bahamas	0.6	
Bahrain	0.41	
Bangladesh	0.87	0.69
Belgium	0.73	0.73
Bermuda	0.87	
Bolivia	0.99	
Botswana	0.23	
Brazil	0.55	0.83
Canada	0.2	0.67
Cayman Islands	0.96	
Chile	0.93	0.66
China PR	1.57	
Colombia	0.78	0.66
Costa Rica	0.78	0.92
Croatia	0.04	0.56
Cyprus	-0.09	
Czech Republic	0.82	0.73
Denmark	0.27	0.5
Dominican Republic	0.23	0.72
Ecuador	0.67	0.68
El Salvador	0.45	
Estonia	0.11	
Finland	-0.07	
France	0.82	0.69
Germany	0.8	0.58
Ghana	0.61	
Greece	0.47	0.76
Hong Kong	-0.04	0.7
Honduras		0.81
Hungary	0.79	0.75
Iceland	0.55	
India	0.49	0.53
Indonesia	-0.06	0.62
Ireland	1.12	
Israel	0.15	
Italy	0.08	0.6
Ivory Coast	-0.04	
Japan	0.44	0.47
Jordan	0.33	
Kazakhstan	0.28	
Kenya	0.62	0.58
Korea	1.03	
Kuwait	0.36	
Latvia	0.52	0.66

<i>country</i>	<i>Bikker and Spierdijk H (at end of the period)</i>	<i>Claessens and Laeven H average</i>
Lithuania	0.4	
Luxembourg	0.37	0.82
Macau	0.23	
Macedonia	-0.01	
Malaysia	0.7	0.68
Malta	0.3	
Mauritius	0.58	
Mexico	0.37	0.78
Moldova	0.58	
Monaco	0.41	
Morocco	0.32	
Mozambique	0.61	
Nepal	0.9	
Netherlands	0.92	0.86
New Zealand	-0.25	
Nigeria	0.74	0.67
Norway	0.5	0.57
Oman	0.35	
Pakistan	0.54	0.48
Panama	0.56	0.74
Paraguay	0.75	0.6
Peru	1.37	0.72
Philippines	0.28	0.66
Poland	0.03	0.77
Portugal	-0.02	0.67
Romania	0.59	
Russian Federation	0.41	0.54
Saudi Arabia	0.51	
Senegal	0.18	
Singapore	0.51	
Slovakia	0.16	
Slovenia	0.29	
South Africa	2.03	0.85
Spain	0.52	0.53
Sri Lanka	0.67	
Sweden	-0.08	
Switzerland	0.74	0.67
Taiwan	0.94	
Thailand	0.63	
Trinidad Tobago	0.21	
Turkey	0.43	0.46
Ukraine	0.44	0.68
United Arab Emirates	0.46	
United Kingdom	0.76	0.74
United States	0.46	0.41
Uruguay	0.53	
Venezuela	0.74	0.74
Vietnam	0.74	
Zambia	0.53	

NOTES: The table displays two measures. The Bikker and Spierdijk measure allows for variation over time and the reported H-statistic for each country is the one estimated for the end of the sample period. The samples used vary considerable across countries. The Claessens and Laeven measure is the estimated average H-statistic for each country in their sample calculated for the years 1994-2001 using the Panzar-Rosse (1987) approach. In their case, the H-statistics are based on a sample that includes observations from countries with a total number of at least 50 bank-year observations and observations on at least 20 banks.