

[illegible]

Bank Competition and Financial Stability

This work is published on the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Please cite this publication as:

OECD (2011), *Bank Competition and Financial Stability*, OECD Publishing.
<http://dx.doi.org/10.1787/9789264120563-en>

ISBN 978-92-64-12055-6 (print)
ISBN 978-92-64-12056-3 (PDF)

Corrigenda to OECD publications may be found on line at: www.oecd.org/publishing/corrigenda.

© OECD 2011

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to rights@oecd.org. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at info@copyright.com or the Centre français d'exploitation du droit de copie (CFC) at contact@cfcopies.com.

Foreword

This report examines the interplay between banking competition and financial stability, taking into account the experiences in the recent global crisis and the policy response to it. This report has been prepared by members of the Directorate of Financial and Enterprise Affairs at the OECD in Paris for the G20 Workshop “The New Financial Landscape”, sponsored by the Australian Treasury and the Reserve Bank of Australia.

Chapter 1 of the report draws on the deliberations of the OECD Competition Committee. Chapter 2 expands on a paper first presented to the OECD Committee on Financial Markets (CMF) and published in *OECD Journal: Financial Market Trends*, but does not reflect a consensus view of that committee. Chapter 3 also draws on work presented to the CMF and expands upon it.

The contributors to the report are Adrian Blundell-Wignall, Stephen Lumpkin, Sebastian Schich, and Patrick Slovik.

Table of Contents

Abbreviations and acronyms	7
Introduction.....	9
Chapter 1. Competition in retail banking and financial stability	13
1.1 Overview	14
1.2. Measuring competition and market structure	14
1.3. Improving competition in retail banking without worsening stability.....	19
1.4. Recommendations	23
1.5. Intervention and exit strategies.....	27
1.6. Prudential regulation	28
1.7. Concluding remarks.....	29
Notes	30
Chapter 2. Competition in derivative markets and financial stability	35
2.1. Overview	36
2.2. Derivative markets.....	37
2.3. Concentration trends in derivative markets	40
2.4. Derivatives and regulatory reform.....	51
2.5. High leverage in the increasingly concentrated GSIFIs	53
2.6. Rising interconnectedness risk as the derivatives market becomes more concentrated.....	56
2.7. Policy options	61
Notes	64
Chapter 3. Bank competition and government guarantees	67
3.1. Motivation	68
3.2. The policy response to this crisis.....	69
3.3. A somewhat more entrenched perception of implicit government support?.....	76
Notes	80
Bibliography.....	81

Tables

2.1.	Expected GSIFI ROEs post regulatory reform	50
2.2.	Netting & concentration	59
3.1.	Deposit guarantee coverage level changes including political commitments	72

Figures

0.1.	Spreads in the transition from traditional to capital market banking	11
1.1.	Total assets of the largest 3 banks as a share of GDP	18
2.1.	Global notional derivatives versus primary securities	37
2.2.	Composition of primary securities	38
2.3.	Composition of derivative securities	39
2.4.	Herfindahl Index: interest rate derivatives, bank-to-non-bank clients	41
2.5.	Herfindahl index: interest rate derivatives, bank-to-bank clients	42
2.6.	Interest rate derivatives bank-to-non-bank, number of equal share dominant firm equivalents	42
2.7.	Interest rate derivatives bank-to-bank, number of equal share dominant firm equivalents	43
2.8.	Herfindahl index: exchange rate derivatives, bank-to-non-bank clients	44
2.9.	Herfindahl index: exchange rate derivatives, bank-to-bank clients	44
2.10.	Herfindahl index: equity derivatives, bank-to-non-bank clients	45
2.11.	Herfindahl index: equity derivatives, bank-to-bank	46
2.12.	Herfindahl index: equity derivatives, bank-to-non-bank clients	46
2.13.	Herfindahl index: equity derivatives, bank-to-bank clients	47
2.14.	Comparing recent US and European leverage	54
2.15.	Leverage and RWA/TA compared: assorted GSIFIs	55
2.16.	Interest rate swap example	56
3.1.	Elements of the financial safety net	70
3.2.	Spread at launch of government-guaranteed bonds and issuer rating	75
3.3.	Estimates of potential contingent sovereign liabilities	78
3.4.	Changes in stand-alone and all-in ratings of large international banks	79

Abbreviations and acronyms

BIS	Bank for International Settlements
CCPs	Central Counterparty Clearing Houses
CDO	Collateralised Debt Obligation
CDS	Credit Default Swaps
CMF	OECD Committee on Financial Markets
CRAs	Credit Rating Agencies
CVA	Credit Valuation Adjustment
ETF	Exchange-Traded Fund
GDP	Gross Domestic Product
GSIFIs	Global Systemically Important Financial Institutions
IFRS	International Financial Reporting Standards
IRC	Incremental Risk Charge
IRS	Interest Rate Swap
LGD	Loss Given Default
MR	Market Risk
NOHC	Non-operating Holding Company
OTC	Over-the-counter
PD	Probability of Default

ROE	Return on Equity
RWA	Risk-Weighted Assets
SCP	Structure-Conduct-Performance
SEFs	Swap Execution Facilities
TA	Total Assets
TBTF	Too Big To Fail
GAAP	Generally Accepted Accounting Principles
VaR	Value at Risk

Introduction

In recent years the OECD has produced a number of articles focusing on the need for the reform of bank capital rules, banking structures and competition within the financial system.¹ All of these papers have focused on the need to strike a balance between sometimes conflicting policy objectives, where banks:

- Have sufficient capital to absorb major shocks and thereby avoid the deadweight losses of a failing bank on the economy; but not so high as to discourage intermediation at a reasonable price.
- Are large enough to be diversified between asset classes and regionally, but with a structure of individual businesses that can be allowed to fail (closed by regulators) without materially contaminating other businesses within or outside the group. This helps to avoid under-pricing of risk that results from “too big to fail” status.
- Are competitive enough to provide a range of services at a reasonable price for consumers, but are not prone to periods of excess competition, where risk is under priced (for example, to gain market share) and competitors fail as a result with systemic consequences.

The functioning of economies and their growth over time relies upon financial intermediation services to link users and providers of capital and to allow consumption decisions to be smoothed over time. Competition, in the absence of market imperfections, should bring about efficient outcomes in this regard. Under competition, the market mechanism works by

1. See OECD, *The Financial Crisis: Reform and Exit Strategies*, Paris 2009. A. Blundell-Wignall, et. al. “The Elephant in the Room: the Need to Deal With What Banks Do”, *OECD Journal: Financial Market Trends*, vol. 2009/2. A. Blundell-Wignall et.al. “Thinking Beyond Basel III: Necessary Solutions for Capital and Liquidity”, *OECD Journal: Financial Market Trends*, vol. 2010/1 (www.oecd.org/daf/fmt).

encouraging new players to enter more profitable market segments, driving out excess returns, while the market for corporate control drives out firms that are operationally inefficient or unable to innovate.

In the past two decades, following the sequential liberalisation of financial regulations and massive innovations in financial products, the financial system has operated in a manner that has seen two major bubbles emerge – the technology stock market in the 1990s and the property-related boom that led to the recent global financial crisis -- and subsequently collapse with significant deadweight losses for the economy. In effect, the period has witnessed a major rise in financial instability. The failure of the financial system to achieve the allocative efficiency goal (where funds would flow to the projects that generate the best value for the economy) contributed to the worst period of economic growth in some major Western countries for the entire post-war period.

This report examines the interplay between banking competition and financial stability. It makes the following related points:

- Achieving the right balance between banking competition and financial stability remains elusive.
- The pre-crisis regulatory landscape set in motion changes in business models and activities in response to competition that proved not to be conducive to financial stability. The recent regulatory responses have not been adequate to address some of the fundamental problems affecting banking sectors and thus the risks to stability.
- The policy response to the financial crisis, consisting largely of the provision of the function of the guarantor of last resort for financial institutions, has further entrenched the perception that large and important financial institutions enjoy an implicit guarantee.

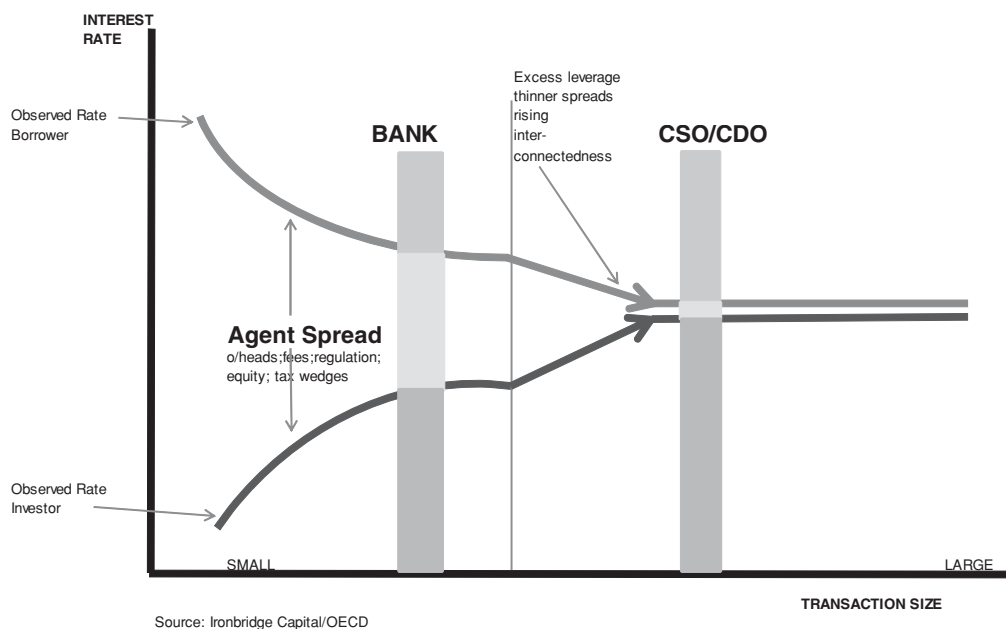
Chapter 1 of this report draws heavily on the discussions of the OECD Competition Committee, which in the present context have been primarily concerned with retail and commercial banking operations. That work, based on studies mostly pre-dating the crisis, has tried to explore some of the complex interactions between competition and stability, but with very ambiguous conclusions: competition can both improve stability and worsen it. Achieving the right balance between these competing policy aims has remained elusive.

The analysis of competition, banking and stability becomes much more difficult however when large global systemically important financial institutions (GSIFIs) are considered. These banks combine retail and commercial banking with investment bank activities, where product

innovation utilising derivatives and gambling in high-risk trades has become a key driver of profitability. These issues are taken up in Chapter 2 of this report.

Financial deregulation and the more widespread use of derivatives has facilitated a move to complete markets in bank credit. This move was associated with securitisation and the ability to transform the risk and return characteristics of all traditional bank assets on par with other capital markets securities. This situation is illustrated conceptually for the example of collateralised debt obligation (CDO) innovation (Figure 0.1). Incomplete markets for (housing) credit with wide spreads and private information are transformed via securitisation with CDS contracts providing insurance – and credit rating agencies (CRAs) playing an important role in the packaging and sale of products – to capital market instruments with low spreads. This would seem to improve competition objectives of reducing spreads. At the same time, however, the GSIFIs are able to leverage the low spreads to raise returns and become more interconnected through derivatives.

Figure 0.1. **Spreads in the transition from traditional to capital market banking**



More generally, the business model of GSIFI banks has shifted and they are too big and (too inter-connected) to fail (TBTF). Such banks are able to gamble more, taking on tail risk – benefitting if the strategy works and leaving the downside to the taxpayer or deposit guarantee arrangements. The incentive for GSIFIs to hold sufficient capital and to act prudently is reduced. The depositors are not aware of the risks that such banks take and in any case don't need to care given explicit and implicit guarantees. Institutional clients prefer to deal with such GSIFIs, given the implicit cross-subsidisation in credit spreads in counterparty collateral and liquidity considerations and the benefits of larger bilateral netting arrangements. Derivative markets, as a consequence, become highly concentrated with little transparency in pricing. The need to deal with these issues remains one of the most urgent tasks facing policy makers today.

Chapter 3 of the report discusses deposit insurance and other guarantees, and the implications for competition in banking. It notes that measures introduced to avoid systemic fallout from the crisis in many cases took the form of various guarantees, which had the effect of distorting competition in affected banking markets. It also argues that this policy approach may have further entrenched the perception of systematically important financial institutions enjoying an *implicit* guarantee. To reduce the perception of such implicit support, financial institutions need to be allowed to fail. Thus, a key policy prerogative is to facilitate the orderly failure of financial institutions, whatever their size, interconnectedness and complexity.

Chapter 1

Competition in retail banking and financial stability

Studies exploring the complex interactions between competition and stability in retail and commercial banking come to the ambiguous conclusion that competition can be both good and bad for stability. Policy measures that strike an acceptable balance remain elusive.

1.1 Overview

Chapter 1 of this report focuses on the OECD Competition Committee's deliberations on competition in traditional retail banking (see box). Section 1.2 defines what is meant by competition in banking. Section 1.3 looks at issues that relate to improving competition without necessarily harming financial stability. The focus here is on issues related to barriers to entry. Section 1.4 sets out some recommendations on reducing barriers to entry. This section also considers the special case of credit rating agencies. The Competition Committee also discussed the competition issues associated with policy measures introduced during the crisis, and how they might be reversed – the so-called exit strategies. These are summarised in section 1.5. Deliberations on the competition-stability trade-off are summarised in section 1.6. Concluding remarks are made in section 1.7.

1.2. Measuring competition and market structure

Banking systems in many countries display oligopolistic structures, but the structure does not necessarily mean they do not lead to competitive outcomes. There are three broad approaches to defining and assessing competition:

- The structure-conduct-performance (SCP) paradigm;
- Contestability, which focuses on behaviour dependent on potential entry;
- Price responsiveness to cost shifts.

Structure-conduct-performance

The SCP approach links the structure of a market to the conduct of firms in that market and thereby to performance. In particular, the SCP paradigm posits that there is an increasing relationship between the level of market concentration and market power, exercised either individually or collectively through collusion. Either way, market efficiency would be presumed to suffer.

Competition committee roundtables

The OECD Competition Committee has sifted through many of the complex issues concerning banking, competition and stability in discussions under its Roundtable Series on Competition Policy. A broad range of topics have been discussed over the years, covering particular products (e.g. payment cards, 2006)¹ and sectors [e.g. insurance (1998)² and competition and regulation in retail banking (2006)³], along with various structural issues (e.g. mergers in financial services, 2000)⁴. More recently, the Competition Committee has debated competition issues in the context of the financial crisis. Relevant topics discussed in this context include competition and financial markets (2009)⁵, competition and corporate governance (2009)⁶ and competition, concentration and stability in the banking sector (2010)⁷.

A number of key findings emerge from the specific roundtable discussions on Exit Strategies (2010)⁸; Concentration and Stability in the Banking Sector (2010); Failing Firm Defence (2009)⁹; Competition and Financial Markets (2009); Competition and Regulation in Retail Banking (2006); Mergers in Financial Services (2000); and Enhancing the Role of Competition in the Regulation of Banks (1998)¹⁰. The roundtables do not attempt to specify a particular definition of competition in financial services, but they do discuss the types of behaviours, practices, features, etc. that would be consistent with competition or viewed from a negative perspective inconsistent with competition. Competition encourages the provision of efficient and innovative financial services. Where it is lacking, consumers encounter more limited choices and higher fees and charges among other detriments.

1. Competition and the Efficient Usage of Payment cards (2006)
www.oecd.org/dataoecd/0/30/39531653.pdf.
2. Competition and Related Regulation Issues in the Insurance Industry (1998)
www.oecd.org/dataoecd/34/25/1920099.pdf.
3. Competition and Regulation in Retail Banking (2006)
www.oecd.org/dataoecd/44/18/39753683.pdf.
4. Mergers in Financial Services (2000) www.oecd.org/dataoecd/34/22/1920060.pdf.
5. Competition and Financial Markets (2009) www.oecd.org/dataoecd/9/22/43067294.pdf.
6. Competition and Corporate Governance (2009)
www.oecd.org/dataoecd/28/17/46824205.pdf.
7. Competition, Concentration and Stability in the Banking Sector (2010)
www.oecd.org/dataoecd/52/46/46040053.pdf
8. Exit Strategies (2010) www.oecd.org/dataoecd/52/23/42538385.pdf.
9. Failing Firm Defence (1996) www.oecd.org/dataoecd/35/6/1920253.pdf.
10. Enhancing the Role of Competition in the Regulation of Banks (1998)
www.oecd.org/dataoecd/34/58/1920512.pdf.

The idea behind the SCP paradigm is rather straightforward. Pure competition is the only market structure in which the firms competing lack any degree of market power. Pure monopolists, in contrast, and firms operating under conditions of oligopoly or monopolistic competition appreciate that their own output decisions can have a non-trivial influence on price. The SCP paradigm is based on the assumption that the latter group will in fact exercise their market power.

Various measures of market structure have been devised and are widely used in empirical work. For example, banks' holdings of assets and deposits are typically used to construct measures of concentration in the banking sector,¹ expressed for instance as the share of the largest three or five institutions. Increases in concentration ratios are generally interpreted as indications of increased consolidation. The interpretation given to decreases in a concentration ratio is less straightforward. A decline in the ratio might reflect a decline in the share of the largest institutions, owing perhaps to new entrants capturing some customers. But it could also be the case that consolidation has in fact increased, but concentrated among smaller institutions.

Contestability²

A second approach assesses competitive conditions not in terms of concentration but rather in terms of the theory of contestable markets, which has drawn attention to the fact that ease of competitive entry can deter the exercise of market power. A key point made is that concentration, among other structural indicators, is not a good proxy for competition in financial services. A market can have a high degree of concentration by conventional measures but nonetheless be thought competitive if the existing firms are actively competing with each other and with prospective new entrants. While firms with market power may earn rents, they need not do so. Even in the case of monopoly, the extent to which output can be restricted to influence price will depend on the extent of the presence of barriers to entry and, more generally, on the degree of 'contestability' of that particular market segment. Thus, contrary to the predictions of the SCP paradigm, more concentrated market structures might still experience desirable outcomes from a consumer welfare perspective.³

Competition policy, which is concerned principally with limiting the creation, enhancement and exploitation of market power, takes this possibility explicitly into account. While antitrust authorities use structural measures to make an initial assessment of competition, these measures are only a first step in analysing whether concentration in a given market will create or enhance the exercise of market power. This assessment requires

that the existence of entry barriers, as well as activity restrictions and other supply and demand-side rigidities are taken into account in evaluating financial firms' behaviour, both in a static and a dynamic sense.

Direct measures of competition

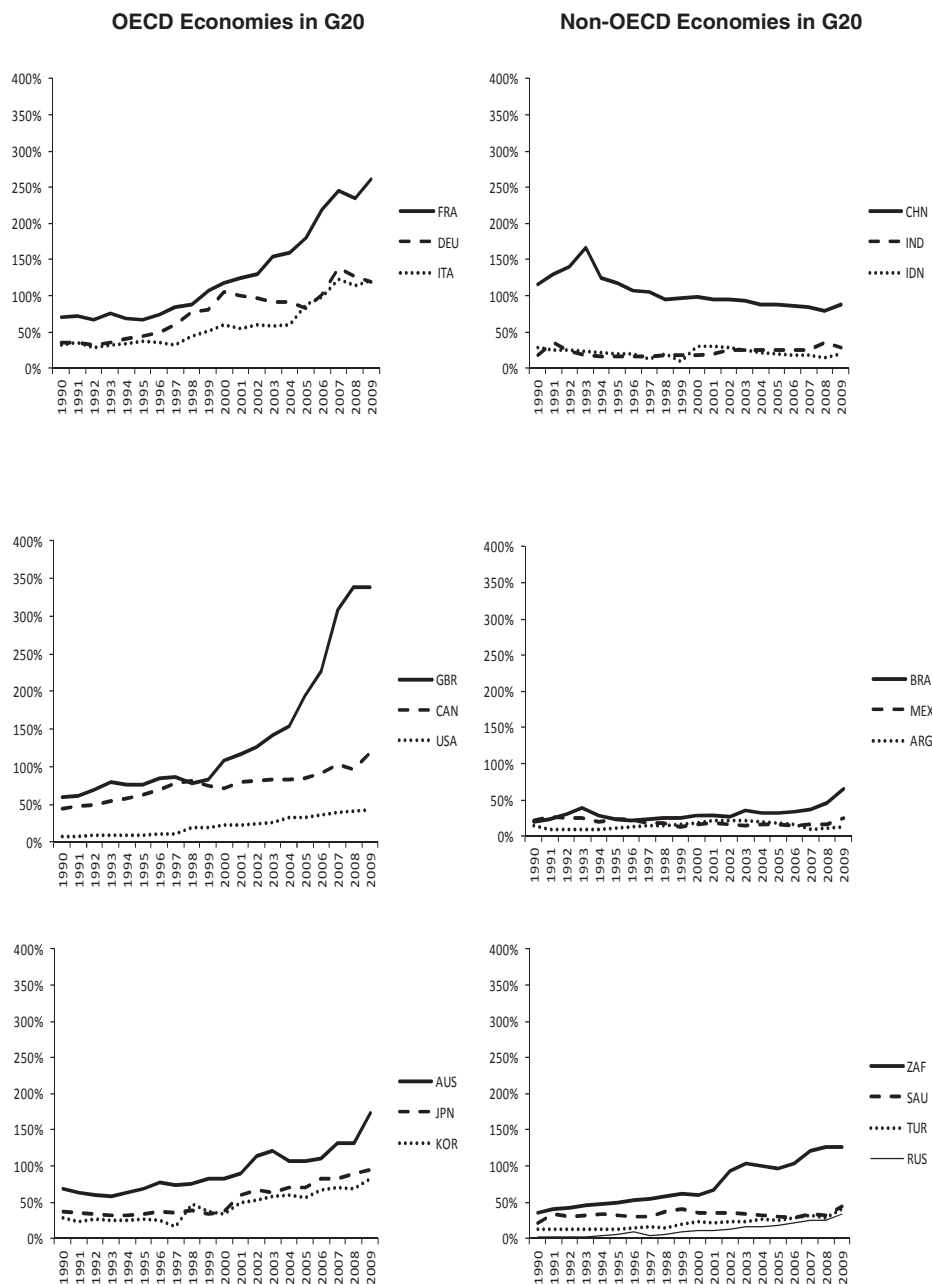
A third approach to assessing competition in financial services measures the intensity of competition directly, by measuring the responses of prices or outputs to changes in costs.

Many recent studies of banking use the so-called H-statistic based on the Panzar and Rosse methodology, which proxies the reaction of output to input prices.⁴ This methodology uses firm-level data. It investigates the extent to which a change in factor input prices is reflected in (equilibrium) revenues earned by a specific firm. The basic idea is that profit-maximising firms in equilibrium will choose prices and quantities such that marginal cost equals their perceived marginal revenue. Under perfect competition, an increase in input prices would raise both marginal cost and total revenue by the same amount as the rise in costs. For a monopolist, however, an increase in input prices would increase marginal cost, but reduce equilibrium output and consequently reduce total revenues. The model provides a measure (the "H-statistic") of the degree of competition, with a value of zero (or less) implying a collusive (joint monopoly) outcome, a value of one suggesting perfect competition, and intermediate values implying monopolistic competition.

Some papers using the H-statistic approach report no link between concentration and competition.⁵ However a series of recent papers have argued that such results are flawed by misspecification problems.⁶ For example, the H-statistic imposes restrictive assumptions on banks' cost functions. Its conclusion that increases in input prices in imperfectly competitive markets cause total revenue and marginal costs not to move together is only valid if the industry in question is in equilibrium, which in practice may rarely be the case. Its single measure also neglects differences among banks like size, product or geographic differentiation. Still, this approach is increasingly used in empirical research because it measures banks' behaviour and thus competition directly. The studies based on correctly specified models show that competition has declined over time as concentration has risen, improving the market power of large banks, and that the presence of plentiful small banks does not reduce that power.

This latter finding may be related to the inability of small banks to compete at all in the area of sophisticated products – particularly those products related to derivatives.

Figure 1.1. Total assets of the largest three banks as a share of GDP



Source: The Banker Database.

In any case, the financial crisis illustrates the urgent need to address the trade-offs between market structure, competition and stability. Some of the competitive practices (or lack thereof) may have exacerbated the crisis, while the stability policies used to deal with the crisis may in fact have adverse consequences for competition going forward.

As shown in Figure 1.1, total assets of the largest banks (as a share of GDP) increased rapidly in major OECD economies ahead of the financial crisis. In contrast, in large non-OECD economies (which were affected by the crisis to a lesser degree) the ratio was stable and in some cases even decreased ahead of the financial crisis (e.g. China). The differences in the levels of systemic importance are also important for financial stability. Large banks have a much higher share of GDP in OECD economies than in non-OECD economies.

1.3. Improving competition in retail banking without worsening stability

There is broad agreement among competition agencies from OECD countries that the purpose of competition policy is to protect competition, not competitors.⁷ In this context, competition authorities seek to help secure the benefits of effective competition to the economy. In finance, as in most sectors of the economy, the benefits of full, effective competition are enhanced efficiency, the provision of a broader range and better products to final consumers, more innovation, and lower prices. But markets in many segments of financial services among OECD countries are structurally oligopolistic. It can be argued on competition grounds, in fact, that the oligopolistic structure of banking likely contributed to the financial crisis. That structure meant that many banks were perceived as systemically important, which impeded market discipline and led to moral hazard, with excessive risk taking being underwritten by perceived guarantees. Issues concerning competition and guarantees are set out in Chapter 3. Other things equal, a less oligopolistic market structure would be preferable. The worry among prudential authorities is what the implications of increased competition would be for stability. If competition between banks increases does that make them weaker so trust in the system is eventually undermined?

Economic growth requires that economic resources are reallocated from activities that are no longer profitable to more productive uses. Some risk-taking is necessary to sustain economic activity, which typically means tolerating failures. The failure of individual projects and at times of entire firms is a necessary aspect of a competitive economy. But the financial sector is special. Failures in banking can be particularly problematic. An

individual bank's failure to internalise risks imposes an externality on all other banks, as excessive risk-taking that precipitates a run on the bank in question can produce more generalised fears among depositors and spread contagiously to other banks, including healthy ones. The systemic element in banking is large.

Thus, in contrast to other sectors of the economy where competition and market discipline may be all that is needed to achieve desirable outcomes, history confirms time and again that regulation is a necessary ingredient for well functioning financial systems. The challenge for financial authorities is how to design and implement regulations that ensure stability of the financial system as a whole, without sacrificing competition and efficiency in the system. Over-regulation tends to impede competition, stifle innovation, and render the system inefficient or unprofitable, which may make it less safe in the future. But left to itself, the financial system can become unstable, largely because banks, funded in large part by withdrawal-on-demand liabilities and holding longer term risky assets, are themselves inherently unstable, and that instability can generate sizeable negative spill-over effects.⁸

The high fiscal and social costs of major financial instability are such that policymakers will want to err on the side of stability in their approach to the sector. But risk-taking is necessary for economic growth, so the application of safety and soundness regulation needs to be circumscribed somewhat to permit institutions and markets to operate as intended, but not so much as to allow serious problems to develop. This tension is at the core of banking sector regulation. It is also one of the factors affecting competition in the sector.

In general, the OECD Competition Committee has concluded that remedies focusing on barriers to entry would improve competitive outcomes in retail banking without necessarily worsening stability. The main issues to deal with in this area include:

- Inelastic consumer demand related to reputation, regulation and branch network effects, lack of transparency in pricing, complexity, etc.
- Information asymmetries in corporate borrowing

Inelastic consumer demand and switching costs

Entry barriers may result from regulatory restrictions (e.g. the requirements to open an account), or from the behaviour of consumers themselves. There are two relevant aspects of consumer behaviour: 1) the nature of their search; and 2) their response to any price or quality

differences their search uncovers; *i.e.* their willingness to switch from one provider to another.

If for whatever reason consumers find it costly to switch from one service provider to another, and prefer long-term relationships with the existing service provider, then the bank gains a measure of market power over customers and some protection against rival providers.⁹ In the extreme case where consumers in general are very reluctant to switch providers, competition among firms focuses only on new customers or newly established businesses, who may initially be offered very favourable terms in the competition for their business. These terms will become less generous over time as the consumers become locked-in. Firms would also feel less compelled to invest in technology or adopt new processes to become a low-cost provider of financial services if in the final analysis consumers are relatively price insensitive and prefer long-term relationships with a given provider.

Consumers are less interested in conducting a search where ‘brand loyalty’ and ‘trust’ are perceived as important. Other factors include:

- Inertia owing to a lack of sufficient knowledge and understanding of financial concepts which reduces confidence in their ability to choose suitable financial products.
- The presence of branch networks which increases convenience factors and engenders brand loyalty.
- Given the importance of the relationship relative to the products themselves, a small reduction in any given institution’s price may attract only the most mercurial customers from its competitors. Indeed the incidence of switching by retail bank customers, generally defined to include individuals (other than those with high net worth) and small to medium-sized enterprises, is quite rare.

Switching costs (the cost of searching and changing banks) tend to be high because financial products have intrinsic features that can serve to complicate the search process, increasing both the duration of search that needs to be undertaken and the cost.¹⁰ These include:

- Product complexity and lack of transparency in pricing.
- Service providers obscuring key product characteristics through excessive advertising and marketing (product differentiation). Such steps make it difficult for consumers to compare products.
- Transactional switching costs such as high up-front fees and charges, low surrender values, and lock-in penalties.

Information asymmetry

There is also evidence that retail customers sacrifice the capitalised value of a long-term relationship with a given service provider if they switch to another bank which does not know them. The rationale in this case is the “adverse selection” problem the new provider faces. Crucial information (e.g. on credit worthiness of borrowers) is often asymmetrically distributed and may be costly to obtain. Because the bank-customer relationship is based on privileged information, a new bank does not necessarily know in advance the quality of a new prospective customer. Owing to the information asymmetry, a high quality customer switching from a given institution with which it has an established relationship to a new institution may encounter unfavourable terms – ones typically offered to lower quality borrowers.¹¹

The difficulties in switching have the effect of locking customers into a form of captive relationship. The implications are non-trivial. Research has shown, for example, that more than a quarter of a retail customer’s value to its bank can be attributed to switching costs.¹² Moreover, about a third of the average bank’s market share owes to its established customer relationships. Importantly, these developments also have implications for economic performance.

The access of retail customers to finance, SMEs in particular, is crucial for economic growth, given that much growth in employment and GDP comes from the development of new firms. Banking competition and low entry barriers can play a role in improving the conditions for access to finance, such as by fostering lower interest rates and better terms for loans. But even this area is ambiguous. Some well cited papers show that market power is associated with easier access to credit and better terms for small new and unknown firms. The rationale is that a large bank has the resources to create private information about the borrower that is unavailable to others, and is able to lend over time on better terms and conditions (reducing the high default premium/rationing in the absence of that information) than a competitor would in establishing a new relationship with the borrower. In this way the bank shares in the firm’s future success in a way it could not do in a competitive market without long-term customer relationships.¹³

1.4. Recommendations

Barriers to entry

Several broad results emerged from the OECD roundtable discussions on how to improve the competitive environment of retail banking without harming the goals of prudential regulation. For one, policymakers can often do more to facilitate switching and encourage competition. Ways to help reduce switching costs include:

- *Taking steps to ensure higher levels of consumer education and financial literacy regarding financial alternatives.* Appropriate information about prices and increased transparency are needed to ensure consumers have the potential to correctly compare offerings from different financial institutions.¹⁴ Such steps may help to promote greater willingness of consumers to switch from one institution to another and reduce bank rents deriving from switching costs, which should facilitate more competitive market conditions.
- *Supporting the development of “switching packs” that simplify the administrative steps for switching.* Switching packs or other “switching arrangements” can reduce the administrative burden and hence the costs of switching. These arrangements typically are the result of the installation of a self-regulatory code among banks that helps customers switch banks. The switching arrangements also imply that banks perform a considerable part of the administrative burden by preparing “switching packs” to help ensure a smooth transition from one account to another.
- *Promoting the development of financial information sharing platforms, including where necessary modifying privacy laws in a way that maintains the goal of protecting privacy while also allowing consumers to receive the benefits of credit ratings.* In the presence of asymmetric information, individuals and SMEs may not be able to communicate their credit quality credibly to outside banks or other providers of external finance. Asymmetric information between banks about borrower quality is therefore an important determinant of banking competition. Credit information sharing is an increasingly common way for banks (and other institutions for whom customer financial condition and reliability is important) to share and tap information about borrowers – and a helpful tool for reducing losses on unprofitable borrowers. Credit information sharing may alleviate some of the rents from information

asymmetries as long as the informational release contains sufficient, credible and up-to-date information, and is accessible to all parties.¹⁵ That is, credit information will reduce the difference in information between a customer's current bank and other potential financial service suppliers. Also, information sharing can operate as a borrower discipline device, and may reduce the possibilities for borrowers to become over-indebted by tapping loans at several banks simultaneously. Too stringent privacy protection may leave other financial institutions with insufficient information to make competitive loan offers and have the effect that customers become captive to their existing banks.

Corporate governance

Corporate governance affects competition and firms' incentives. This issue also emerged as a major concern in the context of the economic crisis – failure can be triggered in the market if incentives are not aligned for the long term and instead focus on short-term goals. In corporate finance, and thus also in banking, there is a misalignment in the objectives of debt holders and firm managers as the attitude of the two parties toward risks diverges. Whereas debt holders bear the downside risk, the manager acting in the shareholders' interests benefits from upside potential. Thus, the manager has strong incentives to engage in activities that have very high payoffs but perhaps very low success probabilities.¹⁶

While this agency problem is present in all leveraged firms, two features of the banking system make it more severe among banks. First, the opacity and the long maturity of banks' assets make it easier to cover any misallocation of resources, at least in the short run. Second, the wide dispersion of bank debt among small, uninformed (and often fully insured) investors prevents any effective discipline on banks from the side of depositors.¹⁷ Thus, because banks can behave less prudently without being easily detected or being forced to pay additional funding costs, they have stronger incentives to take risk than firms in other industries. Examples of fraud and excessive risk are numerous in the history of financial systems as the current crisis has also shown.¹⁸

Corporate governance can be seen as a 'competition booster'. Good governance is especially needed when competition is weak as it helps the market for corporate control function properly. Similarly to competition, contestable ownership structures combined with or complemented by robust internal governance mechanisms induce efficiency. Recommendations from the Corporate Governance Committee in the specific area of corporate governance issues related to the crisis focus on the following topics:

- Governance of remuneration
- Implementation of effective risk management
- Quality of board practices, and
- Exercise of shareholder rights

The special case of credit rating agencies

Ratings from private credit bureaus or rating agencies are a special category of financial information. They represent an opinion on the relative ability and willingness of parties with debt obligations to meet their financial commitments. They perform three complementary functions: (i) to measure the credit risk of an obligor and help to resolve the fundamental information asymmetry between issuers and investors, (ii) to provide a means of comparison of embedded credit risk across issuers, instruments, countries and over time; and (iii) to provide market participants with a common standard or language to use in referring to credit risk.

Credit ratings are experience goods; the simple fact that a default does not occur within a given timeframe does not necessarily mean that a good rating should have been given. Rather, the quality of a rating is only revealed *ex post*. Thus, in principle, a reputation for quality built on a long track record is the crucial competitive advantage for a rating agency. Investors also tend to value comparability and consistency of ratings across geographical segments and instruments. Ratings from a given rating agency provide a common standard to interpret risk, which investors prefer to spending large resources to interpret many different standards. On the supply side, corporate issuers will tend to value the ratings most trusted by investors, which facilitates their placement of issues and provides for the lowest issuance spread. For all these various reasons, the market for fundamental credit ratings cannot sustain a large number of agencies and tends towards a natural oligopoly.

Given the difficulty of entry into the market, the competitive dynamics are extremely important if investors are to reap the benefits of high quality ratings. Increased competition alone is not an unambiguously positive development, as it can create a bias in favour of inflated ratings under certain circumstances. The nature of the business model of rating agencies is an important factor in this regard. There are two possible business models that rating agencies can use: the subscription-based or investor-pays model versus the issuer-pays model, in which fees are primarily paid by the issuers whose securities the agencies rate.

Prior to the 1970s, the first model was the standard; rating agencies provided ratings free of charge to issuers and sold their publications to investors for a fee. This arrangement has the advantage of ensuring the independence of the rating agency from the issuer being rated. The disadvantage, from the perspective of the agencies, is the inability to prevent a rating, once-issued, from being shared (the publications could simply be copied). Indeed, there is evidence to suggest that the model failed to generate sufficient revenues over time to sustain the costs of the ratings activity and eventually led the major agencies to opt for the issuer-pays approach. Issuers have a greater willingness to pay for ratings than investors, given the substantial benefits they receive from the publication of “independent” ratings and the resultant access to public debt markets and improved cost of capital. Unfortunately, this approach has inherent conflicts of interest, which became problematic in the run-up to the financial crisis.

The growth and development of the market in structured finance and associated increase in securitisation activity occurred at a time when Fitch Ratings was becoming a viable competitor to Standard & Poor’s and Moody’s, in effect, breaking up the duopoly the two had previously enjoyed. The increased competition resulted in significant ratings grade inflation as the agencies competed for market share. Importantly, the ratings inflation was attributable not to the valuation models used by the agencies, but rather to systematic departures from those models, as the agencies made discretionary upward adjustments in ratings in efforts to retain or capture business, a direct consequence of the issuer-pays business model and increased concentration among investment banks. Issuers could credibly threaten to take their business elsewhere.¹⁹

In addition to the problems of ratings inflation, ratings have tended to have asymmetric and sometimes disproportionate effects on markets. That is, a downgrade in an otherwise calm market can trigger a disproportionately large reaction while, more generally, announced upgrades tend to have a less positive effect than the negative effects of downgrades. In addition, ratings tend to be pro-cyclical.

While the failures of the market for credit rating agencies were not the actual cause of the financial crisis, they do indicate the need for fundamental reform in the market and of the business models used.

Recommendations

- Regardless of the particular model adopted, increased due diligence is required by credit rating agencies to ensure that the information going into the valuation models they use is verified and substantiated.

- A switch to a model in which the investors plays an active role should be encouraged in order to reduce conflicts of interest and promote independence of the rating agencies.
- Barriers to entry in the market can be reduced by eliminating or at least decreasing regulatory reliance on ratings.
- It might also be advisable to consider altering factors that encourage the adoption of pension fund mandates and loan covenants that contain explicit reference to particular ratings levels.

1.5. Intervention and exit strategies

In response to the systemic problems in the crisis, governments made various large-scale interventions in the banking system. Measures included brokering mergers of large financial institutions, making liquidity injections, direct asset purchases, and capital injections as well as setting up guarantee schemes to cover the liabilities of financial institutions. Such measures, though perhaps necessary for stability in the short run, have the potential to harm competition in the longer term, which would hinder recovery.²⁰ Restrictions to competition would not contribute to greater resilience of financial institutions to financial distress. Instead, they would just have a negative effect on efficiency. A merger that is part of a rescue package for a financially unstable institution should therefore be seen as an emergency measure, to be used only when necessary to avoid insolvency and the precipitation of a wider systemic crisis.

It may be possible, however, to design exit strategies from anti-competitive mergers that have been supported in some way by a state. These strategies can be implemented when ‘normal’ times return. Governments must ensure that short-term measures used to rescue and restructure the financial system (such as recapitalization, nationalization, mergers and state aid) do not restrict competition in the long term. There is no obvious way to offset the potential anti-competitive effects of these transactions due to the highly oligopolistic structure of the banking sector in many countries. Care must be taken in unwinding the extraordinary measures and easing the sector back toward normality. Like the initial interventions, the sale of stakes in financial firms by the state back to the private sector and the lifting of guarantees have great potential to distort competition. Exit strategies that protect and promote competition are therefore essential, both when designing interventions and when phasing them out.²¹

Encouraging new entry may therefore be better achieved in the longer run by reducing regulatory barriers: for example, by removing unnecessarily

anti-competitive regulation and making the entry process as easy and inexpensive as possible, especially in markets where mega mergers have been allowed as an emergency measure.

1.6. Prudential regulation

Financial regulation attempts to improve stability but may also influence competitive outcomes. For competitive benefits to flow through the whole economy, an appropriate regulatory and competitive framework for the financial system needs to be identified and implemented. In practice, however, some retail banking regulations tend to soften competition. Examples include restrictions on the entry of new banks, or limitations on the free deployment of competitive tools by banks. Other regulations restrict banking activities in space and scope, putting limitations on banks' potential to diversify and exploit scale/scope economies. Finally there are prudential regulations that alter the competitive position of banks vis-à-vis non-bank financial institutions.

The interrelation between regulation of financial services and competition is complex. Questions have often been raised as to whether these two goals are mutually exclusive or can be achieved at the same time.²² Two opposing views can be distinguished in the theoretical literature:

- The “charter value” view noted earlier points to a negative relationship between competition and stability;²³
- A second view points to a positive influence of competition on stability, through a complex chain in which increased competition leads to lower interest rates on loans, which result in higher returns on investment for entrepreneurs and reduce the risk of default.²⁴

The empirical evidence provides a series of ambiguous and contrasting results, depending on the sample and period analyzed, and the proxies used for competition and financial stability.

The view of competition authorities is that competition and stability can co-exist in the financial sector. In fact, more competitive market structures promote financial stability by reducing the number of banks that are “too big to fail”. But this outcome can be obtained only if supported by an appropriate regulatory and supervisory framework. Regulation should help to reduce the potential for any detrimental effects of competition on financial stability, in particular, by making banks less inclined to take on excessive risks. By the same token, poorly designed regulation can distort banks' incentives even further. Theory predicts that higher charter values

and thus less competition would give banks more incentive to contain risk. However, if higher charter values are a result of an inefficient regulatory policy such as the bailout of inefficient institutions, then banks would still have incentives to take risk.²⁵

The recent crisis clearly demonstrated that regulation affects the resilience of financial institutions. Among more developed countries, those with strong regulatory and institutional frameworks were less prone to financial distress. Where serious problems did emerge, there were failures in financial market regulation, not a failure of competition. Regulation did not achieve the correct balance between risk and the search for return. Leverage based on unsustainable asset prices led to solvency problems for borrowers and in the end for the banks involved in lending and securitizing assets. Banks did not have enough capital to cover the resulting losses, and some faced extreme liquidity (funding) crises.

1.7. Concluding remarks

Specific characteristics of financial intermediation, such as information asymmetries in corporate borrowing, switching costs in retail banking, or network externalities in payment systems, take the financial industry outside the traditional structure-conduct-performance paradigm. In addition, measures of structure and concentration do not measure competition among financial institutions accurately.

Competition in banking is inherently imperfect and many frictions and barriers to entry may generate rents. In retail banking, switching costs for customers are very important, and reputation and branch networks act as entry barriers. In corporate banking established lending relationships and asymmetric information give financial institutions some market power vis-à-vis both firms and investors.²⁶

Competition and stability can co-exist in the financial sector: Competition helps make the financial sector more efficient and ensure that rescue and stimulus packages benefit final consumers. The results of the empirical studies linking competition and stability are ambiguous, however. Structural and non-structural measures of competition are found to be both positively and negatively associated with financial stability, depending on the country and the sample analyzed and the measure of financial stability used.

In the final analysis, the design of financial regulation matters at least as much as market structure for the stability of the banking sector.

Notes

1. The Herfindahl-Hirschman Index (HHI) is another widely used measure of concentration.
2. See the background note and summary of the discussion in the Roundtable on Competition, Concentration and Stability in the Banking Sector.
3. The SCP paradigm has well-known weaknesses. Structure may not be exogenous, but instead it might be the result of firms' behaviour. A more concentrated market structure could be the result of better, more efficient performance, contrary to the predictions of the SCP paradigm.
4. Other studies use the Lerner index, which expresses market power as the difference between the market price and the marginal cost divided by the output price. The index ranges from a high of 1 to a low of 0, with higher numbers implying greater market power. It has the problem that it requires information on prices and marginal costs, which is very difficult to gather.
5. For example, Beck, T, A. Demircuc-Kunt and R Levine (2005), "Bank Concentration and Fragility: Impact and Mechanics", *NBER Working Papers*. Schaeck, K., M. Cihak and S. Wolfe (2006), "Are More Competitive Banking Systems More Stable?", *IMF Working Paper*. and Schaeck, K., and M. Cihak (2007), "Banking Competition and Capital ratios", *IMF Working Paper*.
6. See Bikker, J. and K. Haaf (2002), "Competition, Concentration and Their Relationship: An Empirical Analysis of the banking Industry", *Research Series No. 30, De Nederlandsche Bank*. Bikker, J., L. Spierdijk and P. Finnie (2006), "The Impact of Bank Size on Market Power", *De Nederlandsche Bank Working Paper*. Bikker J. and L. Spierdijk (2008), "How Banking Competition Changed Over Time", *De Nederlandsche Bank Working Paper*. Bikker, J. S. Shaffer and L. Spierdijk (2009), "Assessing Competition with the Panzar Rosse Model: the Role of Scale, Costs and Equilibrium", *Working Papers 09-27, Utrecht School of Economics*.

7. See the discussion on Predatory Foreclosure, OECD (2005). www.oecd.org/dataoecd/26/53/34646189.pdf
8. Two channels of contagion are often cited: 1) contagion originating from direct linkages between banks in the interbank markets or payment systems; and 2) contagion originating from the indirect balance-sheet linkages between banks originating from the interdependency of their portfolios.
9. However, the potential of such rivals to poach the firm's customers by sharing the switching costs might constrain the firm in its exercise of this power. See, for example, the discussion in Moshe Kim, Doron Kliger and Bent Vale "Estimating switching costs: the case of banking" *Journal of Financial Intermediation* 12 (2003) pp. 25-56.
10. The costs of search include the opportunity cost of the time and effort expended in the search process, which is likely to be higher the more complex is the product. The costs also vary according to whether "internal" search mechanisms (i.e. information obtained from previous experience with a product or prior search activities) are involved versus "external" search activities.
11. See, for example, A. Berger and G. Udell (1995), "Relationship Lending and Lines of Credit in Small Firm Finance", *Journal of Business*, Vol. 68 (July).
12. Moshe Kim, Doron Kliger and Bent Vale "Estimating switching costs: the case of banking" *Journal of Financial Intermediation* 12 (2003) pp. 25-56.
13. See Petersen, M.A. and R.G. Rajan (1995), "The Effect of Credit Market Competition on Lending Relationships", *Quarterly Journal of Economics*, vol. 110, pp407-443. Rajan, R.G. and L. Zingales, (1998), "Financial Dependence and Growth", *American Economic Review*, vol. 88, No. 3, pp 559-586. Cetorelli, N. and M. Gambera (2001), "Banking Market Structure, Financial Dependence and Growth: International Evidence for Industry Data", *Journal of Finance*, vol. 56, No. 2, pp 617-648.
14. However, consumers only have incentives to take proper account of the information disclosed by various service providers in situations in which they bear some risk of loss, such as when they are not fully insured. Appropriate behaviour on the part of consumers cannot be created by fiat, but full protection of consumers has the potential to increase moral hazard.
15. Not all forms of information sharing would be pro-competitive. For example, sharing information about loan rates to particular customers could promote or support co-ordinated action among banks. In contrast, providing information based on frequency of missed payments and overdrafts of particular customers would not equally support cartel

activity, because the bank's price to the customer would not be observable.

16. See, for example, the seminal paper by Jensen, M. and W. Meckling (1976) "Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure," *Journal of Financial Economics*, 3, pp. 305-360.
17. See for example Flannery, M.J. and S. Nikolova (2004) "Market discipline of U.S. financial firms: recent evidence and research issues" in W.C. Hunter, G.G. Kaufman, C. Borio and K. Tsatsaronis, Editors, *Market Discipline across Countries and Industries*, Cambridge University Press for a review on the effectiveness of market discipline on banks.
18. See, for example, the evidence found in Boyd, J. and M. Gertler (1993) "U.S. Commercial Banking: Trends, Cycles and Policy", NBER working paper No. 4404; and Edwards, F. and F. Mishkin (1995) "The Decline of Traditional Banking: Implications for Financial Stability and Regulatory Policy", *FRBNY Economic Review*, 1, pp. 27- 45.
19. Moreover, as the investment banks did not want adverse information reaching the rating agencies, factual verification of the key elements in the rating agencies' valuation models declined.
20. Similarly, the creation and promotion of national champions also distorts competition. The disadvantages include having the state deciding which firms should or should not succeed and taxpayers' money being used, in effect, to distort competition, a distortion paid in part through competitors' taxes. In addition, national champions are very often dominant in the domestic market, a condition that enhances the likelihood of competition being distorted by national champion policies.
21. In other words, rescue measures should have conditions built into them that will cause financial institutions to prefer private sources of investment to public ones when economic conditions start returning to normal.
22. Prior to the reforms of the 1980s, the view was that competition worsens stability in the sense that intense competition was seen as favouring excessive risk taking on the asset side and thus leading to a higher likelihood of individual bank failure.
23. The rationale behind the hypothesis is that higher profits induce banks to limit their risk exposure in order to avoid failure and enjoy high returns. Competition puts pressure on margins and reduces a bank's charter value, thus giving the bank an incentive to take more risk.
24. The theoretical literature makes no distinction between competition and concentration, however.

25. See, for example, Nagarajan, S. and C.W. Sealey (1995) "Forebearance, deposit insurance pricing and incentive compatible bank regulation", *Journal of Banking and Finance*, 19, pp. 1109-1130.
26. See Degryse, H. and S. Ongena for evidence of this market power in banking. : "Competition and Regulation in the Banking Sector: A Review of the Empirical Evidence on the sources of bank rents," in A. Thakor and A. Boot (eds.), *Handbook of Financial Intermediation and Banking*, Elsevier, 483-542.

Chapter 2

Competition in derivative markets and financial stability

Today, the large banks that encompass the global derivatives business combine retail and commercial banking with investment bank activities. Product innovation utilising derivatives and gambling in high-risk trades has become a key driver of profitability within banks but this leaves them exposed to huge risks which in turn pose a threat to global financial stability. Policy makers urgently need to address this issue.

2.1. Overview

In very broad terms, there are two quite different types of financial products:

1. Those primary instruments associated with consumption, savings and fixed capital formation that create wealth (usually associated with loans for trade credit and working capital, and securities – equity and debt); and
2. Those associated with wealth transfer between economic agents in the attempt: to hedge risks; to arbitrage prices, to gamble; and to reduce tax, regulatory and agency costs (management fees, custody, brokerage, etc).

The markets associated with the first set of activities – bank credit, debt securities and equities – finance productivity-enhancing innovation and investment. The second set of activities are concerned with the vast derivatives markets – futures, forwards, options, and swaps, which usually are set with respect to the prices of reference assets typically associated with primary securities, credit, commodities and currencies. The size of derivative markets dwarfs those for primary instruments. Derivatives are used by virtually all participants in global financial markets: banks, insurers, pension funds, asset managers, governments, companies and even the retail sector.

Derivatives have all of the bankruptcy characteristics of debt without creating any new underlying net investment for the economy. Derivatives simply shift risk; they do not eliminate aggregate risk. When one party to a derivatives transaction makes a huge gain, another institution is making a huge loss – and that loss (if marked to market transparently) may cause a financial firm to fail. Systemic financial stability risk rises, because derivatives both raise leverage and require each participant in the chain of counterparties to be able to perform their obligations in order for others to be able to perform their own. In this way derivatives raise systemic risk, without adding any new equity or debt capital for the economy.

Derivatives markets have become more concentrated and less competitive, a trend which is exacerbated by regulatory change, so that rising leverage and counterparty risk in global systemically important financial institutions (GSIFIs) is also less diversified (hence reinforcing TBTF). The evolution of the derivatives market is explored in section 2.2. Trends in concentration and competitiveness in the various derivatives markets are explored in section 2.3. Derivatives and the regulatory reform process are summarised in section 2.4. The leverage risk related to

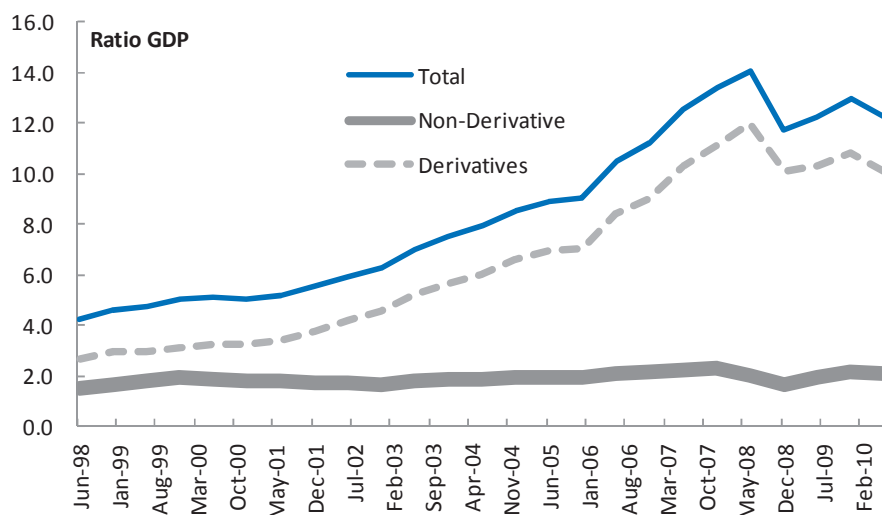
derivatives in increasingly concentrated GSIFIs is analysed in section 2.5. The interaction between concentration and interconnectedness (counterparty) risk is discussed in section 2.6. This discussion focuses on both netting and the impact of Central Clearing Counterparties (CCPs). Finally, some policy options are discussed in section 2.7.

2.2. Derivative markets

Derivatives are associated with wealth transfer (the shifting of promises embedded in underlying securities and resources, often many times over). Over-the-counter (OTC) derivatives certainly result in strong revenue and profits for GSIFIs, and this profit typically arises as a transfer from other agents in opaque OTC markets where bid-ask spreads are wide and/or by reducing tax and regulatory costs.

Figure 2.1 shows the notional global value of derivatives as a share of global GDP alongside primary global financial instruments. The total of derivatives plus primary securities rises to 14 times world GDP in 2008, before dipping back to 12 times in 2010, following the financial crisis. Global primary financial assets (equity market capitalization, debt securities and bank assets), by contrast, remained within a range of 1.5 to 2 times world GDP over the period 1998 to 2010.

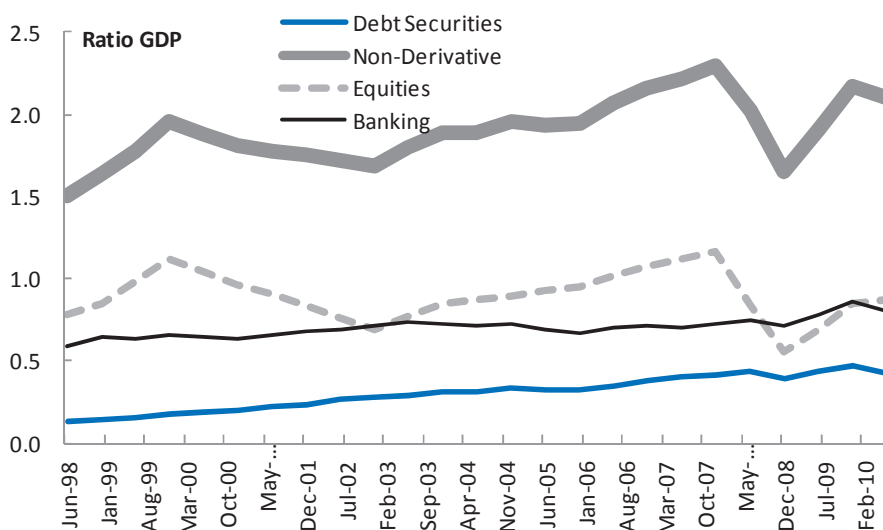
Figure 2.1. Global notional derivatives versus primary securities



Source: Authors' calculations based on data from Bank for International Settlements (BIS), Datastream, World Federation of Stock Exchanges.

Figure 2.2 shows the basic components of primary securities. They rose from 1.5 times GDP in 1998 to 2 times by 2000, led by the equity boom in tech stocks. While equity values fell thereafter, the steady growth of banking and securities as a share of GDP offsets this effect by 2010.

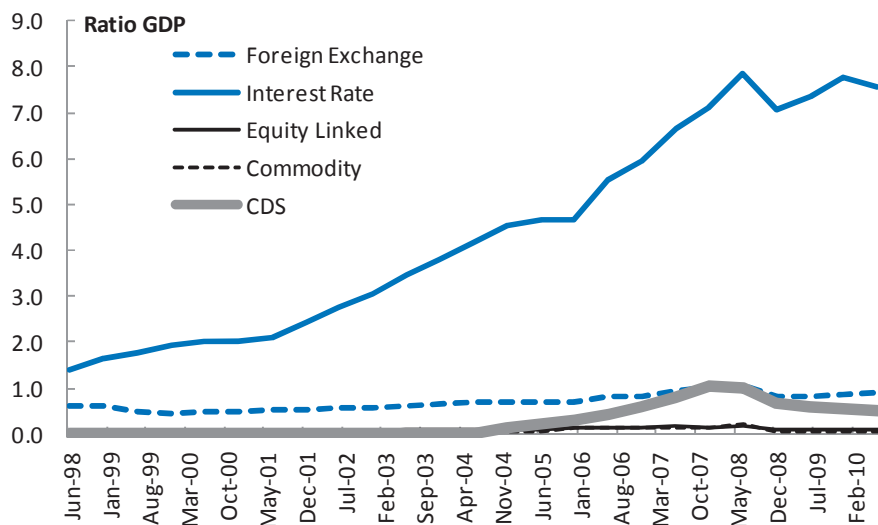
Figure 2.2. **Composition of primary securities**



Source: Authors' calculations based on data from Bank for International Settlements (BIS), Datastream, World Federation of Stock Exchanges.

The notional value of derivatives, in contrast, has had spectacular growth, rising from USD 81 trillion in 1998, less than three times world GDP, to USD 605 trillion (around 10 times GDP) by 2010. Most of the derivatives are over-the-counter (OTC), with only USD 28 trillion (or 3.8% of the total) traded on exchanges. Over this same period the gross market (current settlement) value of all derivatives rose from 8.5% to 41% of world GDP.¹

Figure 2.3 shows the composition of the notional outstanding value of derivatives, which is dominated by interest rate contracts (swaps, options, futures and forwards) currently at USD 452 trillion. Credit Default Swaps (CDS), which played such a major role in the global financial crisis, rose sharply after 2004 to USD 58 trillion, before declining by about half their value after the financial crisis. Currently derivative instruments are made up of: interest rates USD 452 trillion, exchange rates USD 53 trillion, CDS USD 30 trillion, commodities USD 28 trillion and equity-linked derivatives USD 6 trillion.

Figure 2.3. **Composition of derivative securities**

Source: Authors' calculations based on data from Bank for International Settlements (BIS), Datastream, World Federation of Stock Exchanges.

Explaining these trends

Some of this layering of derivatives is for legitimate end-user hedging purposes (e.g. stabilising income streams, and energy and interest costs). But it is difficult to believe that such activities would have increased at an exponential rate versus the reference primary securities on which they are based. Other explanations include some less than socially useful activities, including:

- *Regulatory arbitrage*: Basel capital rules work from the ideas of ex-ante riskiness of assets which can be weighted and added across different risk 'buckets' for the purpose of capital adequacy calculations. But with complete markets in securities and credit, the riskiness of securities can readily be transformed and shifted to where capital charges are lower. An entire industry has built up around this business and some of the spectacular failures in the crisis were directly related to this activity.
- *Tax arbitrage*: the tax treatment of investors and financial products are also very uneven, and derivatives are well suited to take advantage of the opportunities that this presents. Income streams

and tax benefits can be shuffled between agents to achieve the best mix of after-tax returns. Structured tax-efficient products have the advantages of: convenience, tailoring products to suit individual client objectives; opaque pricing with respect to the source of return (income or capital gain); use of bank balance sheets' attractive funding costs; and leverage to increase the profit impact of trading a given spread.

- *Gambling*: where potentially highly profitable but high tail risk investments are made and churned. GSIFI participants benefit from ready low-cost liquidity and cross-subsidisation from the too-big-to-fail (TBTF) status of these firms (a part of the under-pricing of risk).

2.3. Concentration trends in derivative markets

The nature of competition in product segments is such that early movers in new products that exploit the above-mentioned arbitrage opportunities gain revenue share quickly, which then induces entry into the business from other banks. New products are characterised by rapid entry into new revenue streams, which reduces concentration and eventually leads to lower profits or even losses. Consequent exit from the industry leads to a more oligopolistic structure, and the improvement of GSIFI margins for the winners of this process. There are both trends and cyclical movements in concentration and competition, which have implications for financial stability. In the following sections these trends and dynamics are explored for credit, interest rate, exchange rate and equity derivative markets, respectively.

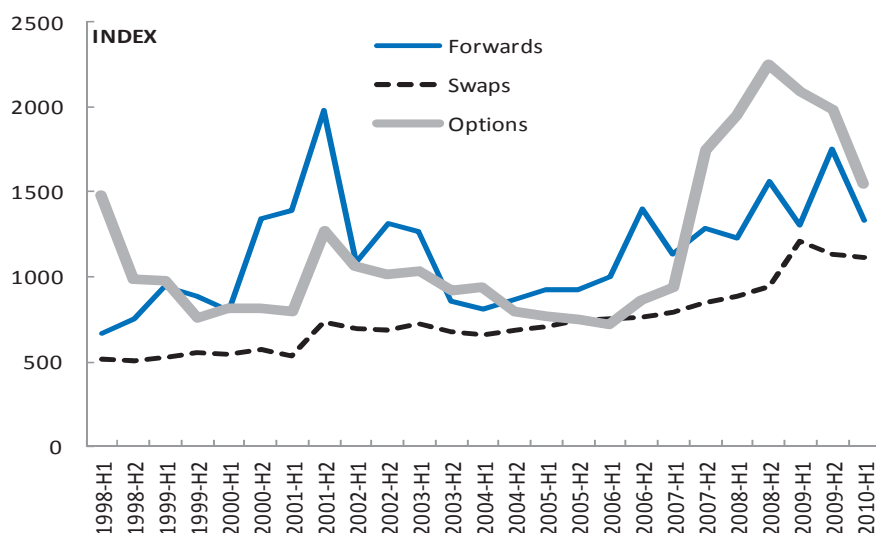
Credit derivatives and structured products

The boom in credit derivatives and structured products after the tech bust saw concentration fall as entry was important for market share and the stock performance of GSIFIs. The CDO/CLO/CDS-based structured product boom also led to new entry from smaller and certainly less experienced players. Risk was being under priced and leverage rose sharply, with the CDS boom and credit rating agencies playing a strong role in both. Subsequently, concentration has begun to rise again as firms have left the industry or reduced their shares. This occurred in the fixed-income area prior to the crisis, with CDOs and CLOs playing a key role – UBS for example was a late entrant in CDOs and suffered the collapse without enjoying a long period of gains.² As the structured product boom and bust showed, this entry forces margins down and increases leverage to the point where some players fail.

Interest rate derivatives

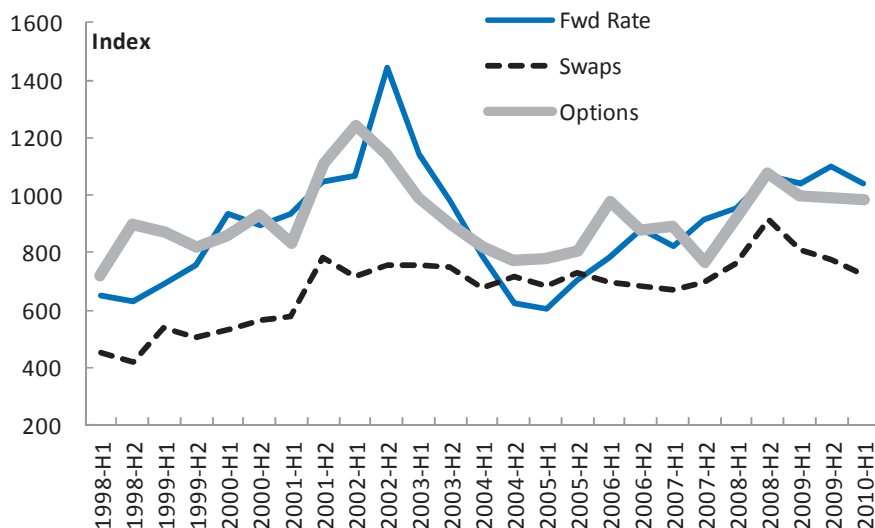
Figure 2.4 shows recent trends in the Herfindahl index³ for interest rate derivatives – forward rate agreements, swaps and options – between BIS reporting banks and non-reporting bank clients.⁴ This gives some sense of the trends in competitiveness with respect to the consumers of interest rate derivative financial services. There was a sharp pick up in concentration following the end of the 1990s, when the Gramm-Leach-Bliley Act removed the Glass-Steagall Act, and firms re-positioned in the lucrative US market.⁵

Figure 2.4. **Herfindahl index: interest rate derivatives, bank-to-non-bank clients**

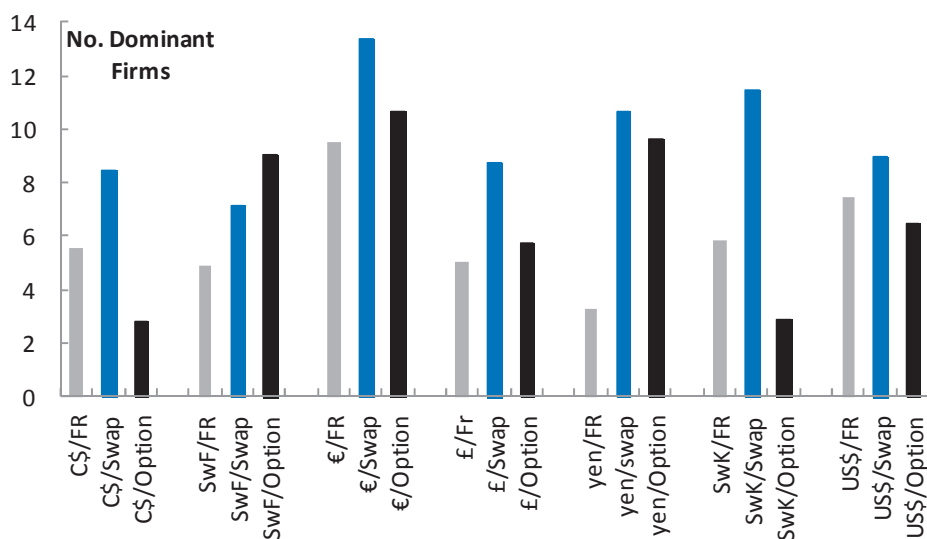


Source: Bank for International Settlements (BIS).

Similar patterns emerge when the trends for contracts between reporting banks are examined, as shown in Figure 2.5. These patterns give some idea of which way concentration is moving in the inter-bank market, where financial stability concerns related to interdependence arise. There was a sharp pick up in concentration during the M&A period post Glass-Steagall. The crisis has led to exit from the market and concentration, as a consequence, has risen subsequently.

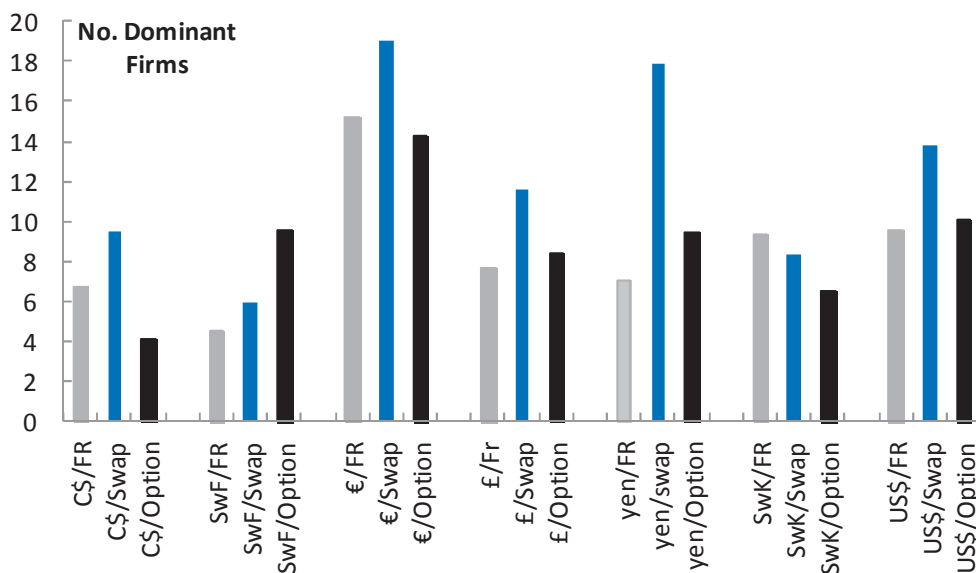
Figure 2.5. **Herfindahl index: interest rate derivatives, bank-to-bank clients**

Source: Bank for International Settlements (BIS).

Figure 2.6. **Interest rate derivatives bank-to-non-bank, number of equal share dominant firm equivalents**

Source: Authors' calculations based on Bank for International Settlements (BIS) data.

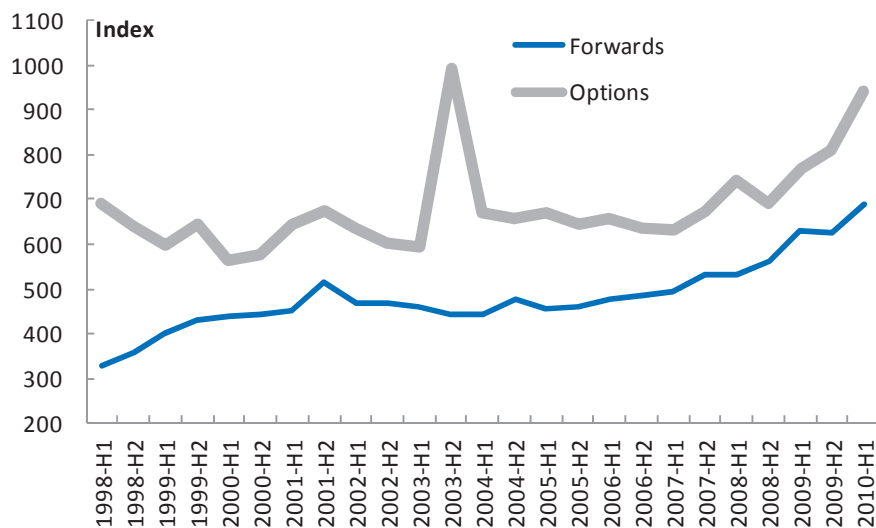
Figure 2.7. **Interest rate derivatives bank-to-bank, number of equal share dominant firm equivalents**



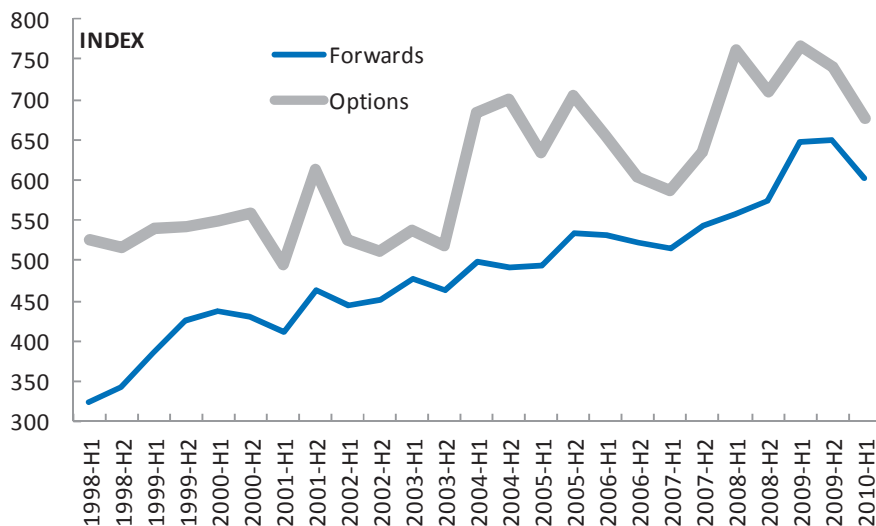
Source: Authors' calculations based on Bank for International Settlements (BIS) data.

Foreign exchange derivatives

There have been similar concentration trends in the other derivative markets controlled by GSIFIs. Figure 2.8 shows Herfindahl indexes for foreign exchange derivatives, for forward rate agreements and options in the dealings of BIS reporting banks and their non-bank clients. Concentration has risen since the crisis led to the exit of weaker players and as regulatory and other barriers to entry have risen. While 30 equal-size dominant firms served the forward rate market and 14 served the options market at the start of the period (1998), this declined to 14 and 10 firms respectively by 2010.

Figure 2.8. **Herfindahl index: exchange rate derivatives, bank-to-non-bank clients**

Source: Bank for International Settlements (BIS).

Figure 2.9. **Herfindahl index: exchange rate derivatives, bank-to-bank clients**

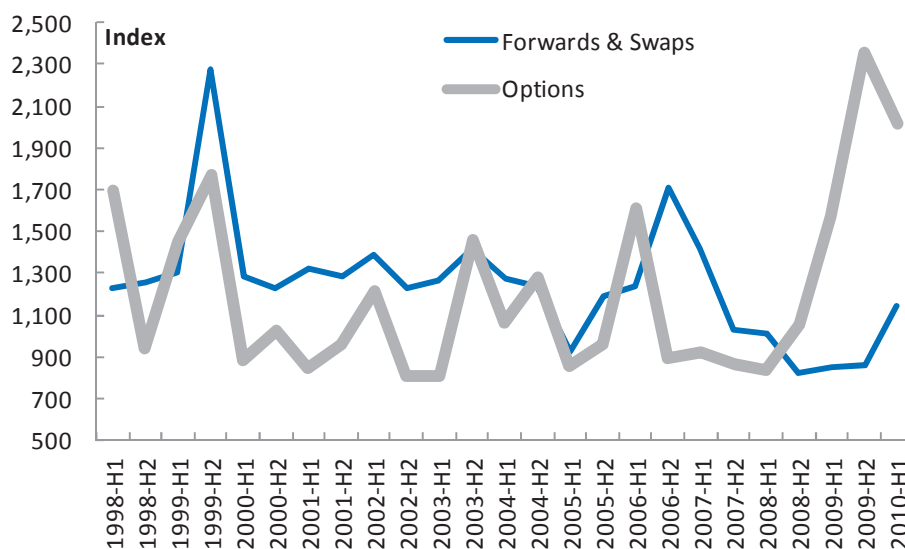
Source: Bank for International Settlements (BIS).

Figure 2.9 shows the same trends for the bank-to-bank foreign exchange derivative contracts. Here there has been an unmistakable upward trend in the concentration ratio. While 31 equal-size dominant firms served the forward rate market and 19 served the options market at the start of the period (1998), this declined to 16 and 15 firms respectively by 2010.

Equity derivatives

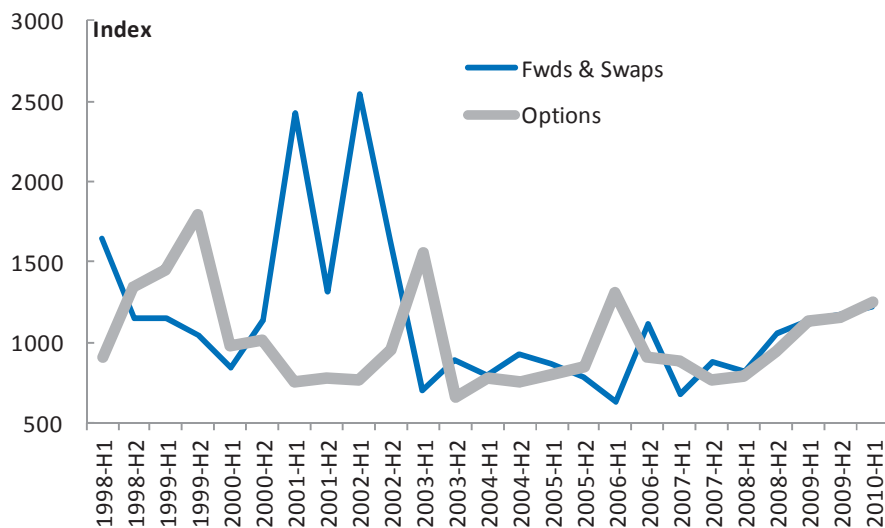
Figure 2.10 shows Herfindahl indexes for equity derivatives: for forward rate agreements and swaps (taken together) and for options, for the bank-to-non-bank market. No trends are evident in the concentration in the provision of these services between BIS reporting banks and their clients, except for a large jump up in concentration of option services after the financial crisis.

Figure 2.10. **Herfindahl index: equity derivatives, bank-to-non-bank clients**

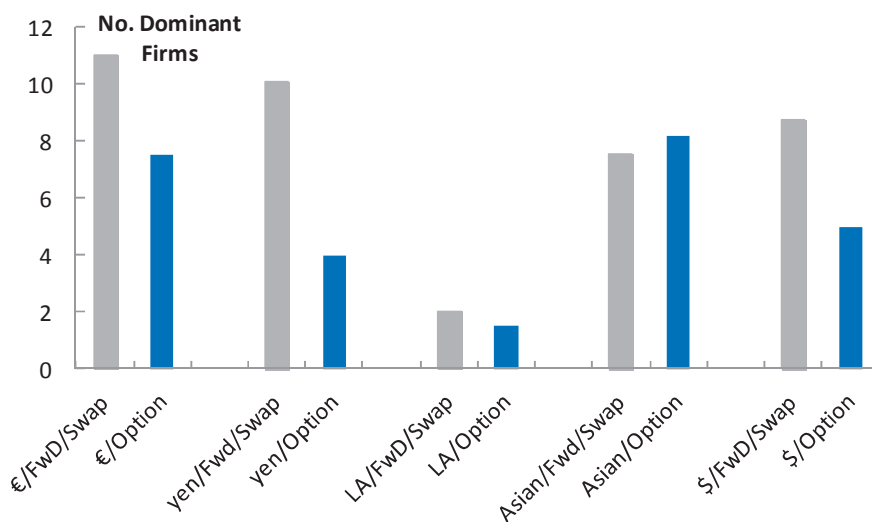


Source: Bank for International Settlements (BIS).

However, the market has tended to be much smaller than the other derivative markets to this point in time, and it has always been more highly concentrated than the other markets since 1998. Similar comments apply to the bank-to-bank market in equity derivatives shown in Figure 2.11. There was a spike in concentration at the end of Glass-Steagall, which subsequently fell away in the mid 2000s. But since the crisis concentration in the market has begun to increase.

Figure 2.11. **Herfindahl index: equity derivatives, bank-to-bank**

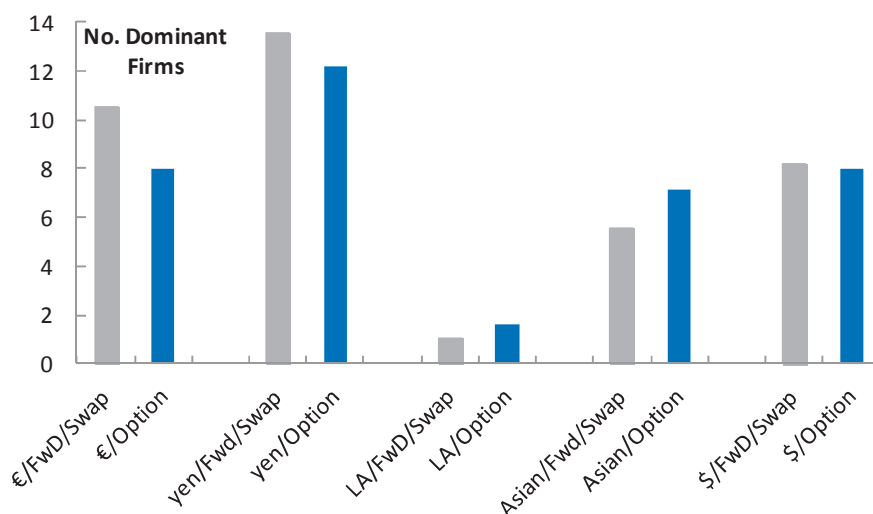
Source: Bank for International Settlements (BIS).

Figure 2.12. **Herfindahl index: equity derivatives, bank-to-non-bank clients**

Source: Authors' calculations based on Bank for International Settlements (BIS) data.

Figure 2.12 shows the number of dominant firms in the equity derivatives business between banks and non-banks: the equivalent of 9 firms serve the dollar forward and swap market, and only 5 serve the options market. Figure 2.13 shows the same calculations for bank-to-bank equity derivatives. Eight dominant firm banks serve the dollar market for forwards, swaps and options.

Figure 2.13. **Herfindahl index: equity derivatives, bank-to-bank clients**



Source: Authors' calculations based on Bank for International Settlements (BIS) data.

Explanations of recent trends

The main likely reasons for this rise in concentration in GSIFI derivative activities are as follows:

M&As

- The financial crisis led to the 'failure' and absorption of some large institutions (Merrill Lynch, Wachovia, Lehman Brothers, Bear Stearns, Northern Rock, Country Wide, etc), which directly raised concentration favouring GSIFIs.

TBTF

- A clear distinction emerged between TBTF banks and those that were not too big. This

TBTF list certainly includes all the GSIFs considered in this paper. All small banks, insurance companies, hedge funds and other clients of GSIFs will now recognize that counterparty-risk is reduced by dealing with TBTF-banks. This is a major barrier to entry.

Technology barriers

- There are also high barriers to entry in terms of the set-up costs for large global businesses, and because of the need for sophisticated trading platforms with rapid execution times in derivatives businesses. Related to this are those barriers that arise from the need for strong risk management skills and systems in OTC derivative businesses.

Regulatory costs

- Other things given, higher Basel III and Dodd-Frank regulatory capital costs favour scale and volume.

Margin pressure and exit

- Ex ante margin pressure from regulatory reforms of Basel II & III and the Dodd-Frank Act will elicit the exit of the smaller less efficient firms from some of the derivatives businesses, as they will need to free up capital to look for better opportunities.

The netting incentive

- Regulatory changes under the Basel system permit bilateral counterparty netting for OTC derivatives, and some cross-product netting. This provides an incentive to deal directly with GSIFs to maximize a greater bilateral netting pool to economise on capital (see the CVA discussion below).

Balance sheet efficiency

- Much of the regulatory arbitrage that arises from agency costs is due to the balance sheet efficiency of large globally interconnected banks that can trade in all jurisdictions and products. This favours a steady agglomeration of business in these GSIFs.

Competition concerns

These trends are of concern for a number of reasons.

(1) Market efficiency and pricing:

- Most of the derivatives are provided in the opaque OTC market, where pricing is difficult to monitor, due in part to the tailored nature of the products. While transparency will improve somewhat with better reporting and more clearing required of some products in the reform process, it is clear that oligopolistic concentration is conducive to wide bid-ask spreads and lack of price competition.⁶
- Price discovery in financial markets where counterparties are concerned depends on opposite sides of the trade having different views. The fewer players there are the less divergent views on security prices there are likely to be. As already noted at the outset, the financial crisis was caused in part by the mispricing of risk. The increasingly concentrated nature of the derivatives market raises the chances of mispricing assets due to the lack of competition in bid-ask spreads.

(2) Consumer protection:

- The trend towards even more oligopolistic structures in OTC derivative markets will improve pricing power, offsetting the pressure on margins flowing from regulatory reform. This in turn adds to cost for the non-bank client base.

(3) Financial stability and bank interdependence:

- It is evident from the above analysis that concentration is rising in the bank-to-bank provision of derivative services. This is particularly so in the vast interest rate derivatives market and in equity derivatives. While foreign exchange has traditionally been a more competitive derivative market, there is a clear trend towards increased concentration in this market too. Increasing concentration and a smaller number of counterparties raises interdependence and the TBTF problem.
- Fixed income still dominates the revenue base of GSIFIs, and the interest rate derivatives business is a massive 75% of outstanding

notional derivatives. The notional outstanding size of equities derivatives, on the other hand, at 1.1%, is currently very small. Interest rate derivatives contain a lot of plain vanilla low margin business and the crisis has hurt previously very profitable structured products. Much of this business already trades on lower margin exchanges. The equity derivatives business is currently relatively more profitable following the Dodd Frank and Basel III reforms.

- Table 2.1 reproduces some illustrative private sector analysis that shows that the equity derivatives business in total, even after all the regulatory reforms, is expected to be twice as profitable (at 22%) as the overall investment banking business (at 12%). Within the equity derivatives businesses the following points can be noted:
 1. Delta one products (those with no optionality) are more than 3 times as profitable as the overall investment bank business at a 40% return on equity (ROE) on average. It can therefore be expected that exchange-traded funds (ETFs), and swap-based equity products generally, will be prime candidates for the next bubble-like trend in the GSIFI business models.
 2. Convertibles are next most profitable at 30% ROE on average.
 3. Structured equity products and prop trading look especially profitable in the EU, which are less affected by reforms.

Table 2.1. Expected GSIFI ROEs post regulatory reform

	CS	UBS	DBK	GS	MS	BNP	SG	BARC	BAC	Citi	Avg.
ROE before reg. Changes	23.5	22.7	19.9	23.4	19	19.2	17.2	17.8	na	na	20.3
Post Reg. ROE	13	11.5	10.5	13.8	12.4	13.8	10.2	12	na	na	12.1
Equity Derivatives Post Reg. ROE's											
Structure products	15	13	16	11	5	21	27	15	5	4	14
Flow equity	15	15	15	30	18	19	15	21	20	8	18
Delta one (ETFs, swaps, futures, forwards)	38	45	34	32	53	51	55	49	32	23	40
Convertibles	27	36	23	26	42	24	18	42	36	44	30
Prop. Trading	23	36	24	21	37	12	31	29	17	22	24
Total	22	26	21	20	22	24	29	27	17	15	22

Source: JP Morgan.

- Bubbles develop when (i) the macro rate environment is stimulatory; (ii) a clear profit arbitrage opportunity arises, often involving new products; (iii) early movers exploit the opportunities and gain in revenue market share, which induces entry into the business from other banks in a ‘herd-like’ manner. The equity derivatives business generally, and ETFs in particular, have all the early requirements for a bubble to develop. The sector is still small, particularly swap-based ETFs, and demand for them is high. For example, ETFs tie in nicely with revenue from stock lending and swap based ETFs from opaque derivatives pricing. Early movers were State Street and Black Rock, but now the large GSIFIs are growing these products quickly too. The concern here is that the competition for market share for the most profitable complex products, like the CDO in the lead up to the crisis, is likely to see derivatives activities concentrated in GSIFIs and rising leverage and inter-connectedness.

2.4. Derivatives and regulatory reform

Given the role of derivatives in the crisis, a number of reforms have recently been introduced which will affect – *ex-ante* – GSIFI revenues, ROEs and the structure of their businesses. This is very important, because derivatives involve relationships between counterparties that raise interconnectedness within the financial system. This section summarises recent reforms as they pertain to derivatives.

Dodd-Frank

The US has led the way through the Dodd-Frank Act of July 2010:

- *CCPs*: the aim is to rout a majority of OTC derivatives through central counterparty clearing houses (CCPs), which reduces counterparty and operational risks. However, this shift is unlikely to happen for customised structured products, and exemptions will apply for exchange rate derivatives and corporate end-users of derivatives.
- *SEFs*: all cleared swap transactions have to be traded on exchanges or through swap execution facilities (SEFs). This would lead to ex-ante margin compression for OTC swaps (affecting investment bank revenue which will be resisted) as the more transparent platforms should allow more competition from the shadow banking sector. However, the major GSIFIs control much of the flow in OTC

derivatives and are the natural candidates to be clearing members and will likely dominate the SEFs. There are many exemptions, for customised products, exchange rates and, of course, structured products will not be eligible for clearing.

- *Reporting*: Customized swaps that are subject to mandatory clearing will be subject to real-time reporting of price and volume. This will apply also to swap transactions reported to central repositories or the SEC. The EU is following suit here with similar requirements for all OTC derivatives. This sort of transparency will (other things given) reduce margins, as bid ask spreads are subject to greater scrutiny and competitive comparisons.
- *Bailout prohibition of some swap entities* (Section 716): the ‘entity’ definition includes practically everything (dealers, SEFs, CCPs, exchanges and counterparties). However, after some fight-back by banks, it will not apply to interest rate, exchange rate, and gold/silver swaps; nor will it apply to derivatives for hedging banks’ own risks. GSIFIs will have to (effectively) ring-fence and separately capitalise and fund those parts of their swaps business to which the rule does apply: agriculture, un-cleared commodities, non-investment grade CDS, most metals, energy, and equity derivatives. Such measures will not apply at all within the EU. The credit rating needed to participate in the swap market would make the cost of transacting with the entities to which the Act applies higher – as banks would need more capital. US banks would therefore suffer in the swaps markets affected versus the EU. The scope is however very limited, as interest rate and foreign exchange derivatives constitute 89% of total derivatives (as shown earlier), and the rule will only apply to new businesses.
- *The Volcker rule*: The Volcker rule bans proprietary trading (i.e. the bank acting as principal using its trading account to deal in securities and derivatives). This will put pressure on ROEs of GSIFIs as this traditionally profitable business migrates elsewhere. But riskiness is reduced, and the large negative ROEs in crisis periods should be partly ameliorated. This measure will not apply within the EU.

Basel III changes affecting derivatives

Basel I, II, and III apply a capital charge to a bank’s risk-weighted assets (RWA). Basel III makes the following adjustments to deal with derivatives counterparty risk:

- To add a capital buffer based on a stressed value at risk (VaR) (equal to 3 times the 10-day 99% VaR calculated during a period of high stress) to the ordinary VAR-based capital requirement. This will have the effect of raising RWA. This reform of the counterparty credit risk framework was motivated in part by wrong-way risk – *i.e.* when the probability of default of a counterparty is positively correlated with general market risk factors (like the monoline insurers).
- A Credit Valuation Adjustment (CVA) – is an additional up-front charge to cover mark-to-market unexpected counterparty risk losses, valuing counterparty risk in bond equivalents and applying the market risk (MR) regulatory charge to such bond equivalents (after deducting the IRC – incremental risk charge). The CVA is calculated within each of the netting sets, and is then added across netting sets.⁷ The initial end-2009 proposal to multiply the standard benchmark CVA charge was abandoned after consultation with the banks in the final version.
- Standards for collateral management and initial margins will be strengthened, *i.e.* for these to act as offsets to calculated market exposures.
- In the models used by banks, the correlation factor between large financial entities (greater than USD 100bn assets) will be raised 25% to help address the interconnectedness issue (higher risk of exposure to financial firms).
- Central Counterparties (CCPs) are explicitly incorporated in the framework, where fully collateralized positions attract a modest risk weight (in the 1-3% range) – while highly favourable, the non-zero exposure recognises that CCP exposures are not risk free.

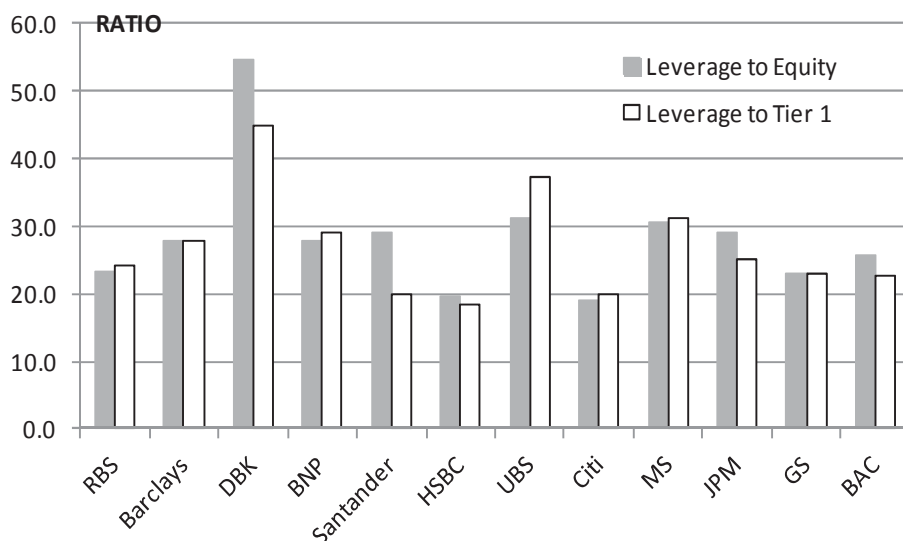
2.5. High leverage in the increasingly concentrated GSIFIs

This section examines the leverage of the GSIFI firms that dominate derivative flows, focusing on the role of derivatives. It also explains why the reforms summarised earlier will not be effective in reducing this element of risk without introducing an explicit leverage ratio. The subsequent section focuses on counterparty risk and explains how competition trends are increasing the concentration of these risks.

US GAAP (Generally Accepted Accounting Principles) accounting permits derivatives subject to netting agreements to be reported on the balance sheet on a fully net basis to measure total assets (TA). International

Financial Reporting Standards (IFRS) include fair value exposures in TA with limited netting.⁸ Figure 2.14 shows leverage to Tier 1 capital and to equity less goodwill for US and European banks on a more comparable basis – with derivatives before cash collateral and counterparty netting added back in for the US banks. US banks look similar to other European banks on this basis. The EU banks shown still have on average less capital than US banks, 2.9% versus 4% of assets in the case of equity less goodwill, and slightly closer if Tier 1 is used (the EU banks use more hybrids). The UK banks on average are slightly more capitalized than US banks, and significantly better than the EU group.

Figure 2.14. **Comparing recent US and European leverage**



Source: Authors' calculations based on bank report data.

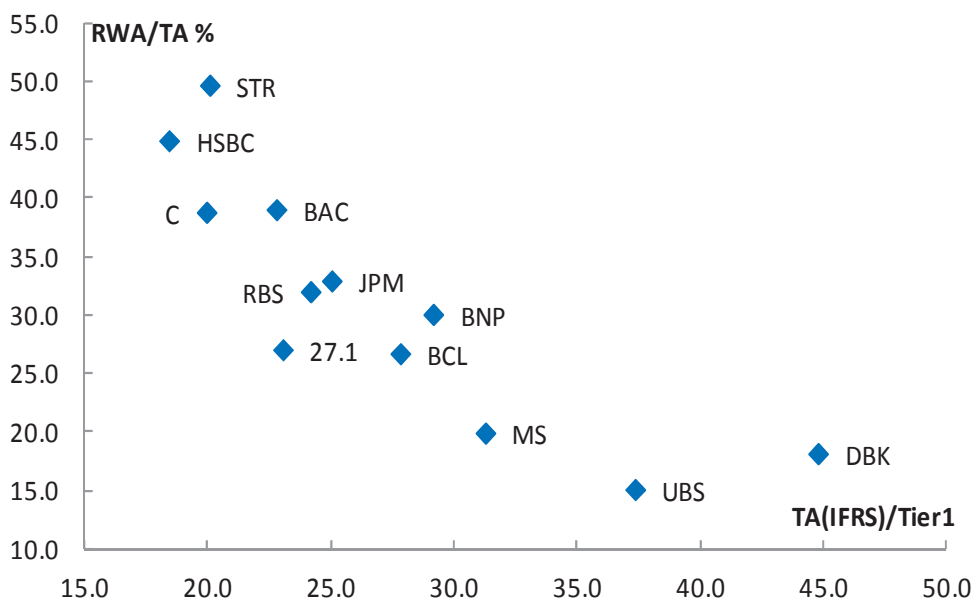
Figure 2.15 shows a cross section of the European and US GISIFIs RWA/TA and leverage ratios to Tier 1 capital, based on the more comparable (though still approximate) IFRS accounting basis at Q4 2010. The negative trade-off between these two variables is very clear. Banks are able to adjust the ratio of RWA/TA via:

- The use of derivatives which allows them to shift risk (e.g. by buying CDS contracts against high risk products written by lower

risk entities, often outside the banking system, as was the case for example with AIG).

- The use of internal risk models which allows banks to calculate exposures with mark-to-model prices for OTC derivatives and leaves considerable scope for judgment: (i) what volatility to consider; (ii) what spreads to use to reflect default risk; (iii) how to handle derivatives with binary outcomes like CDS, including their correlations with derivatives traded in continuous time; etc.
- The way netting and clearing is likely to work with the above regulatory changes (see below).

Figure 2.15. **Leverage and RWA/TA compared: assorted GSIFIs**



Source: Authors' calculations based on bank report data.

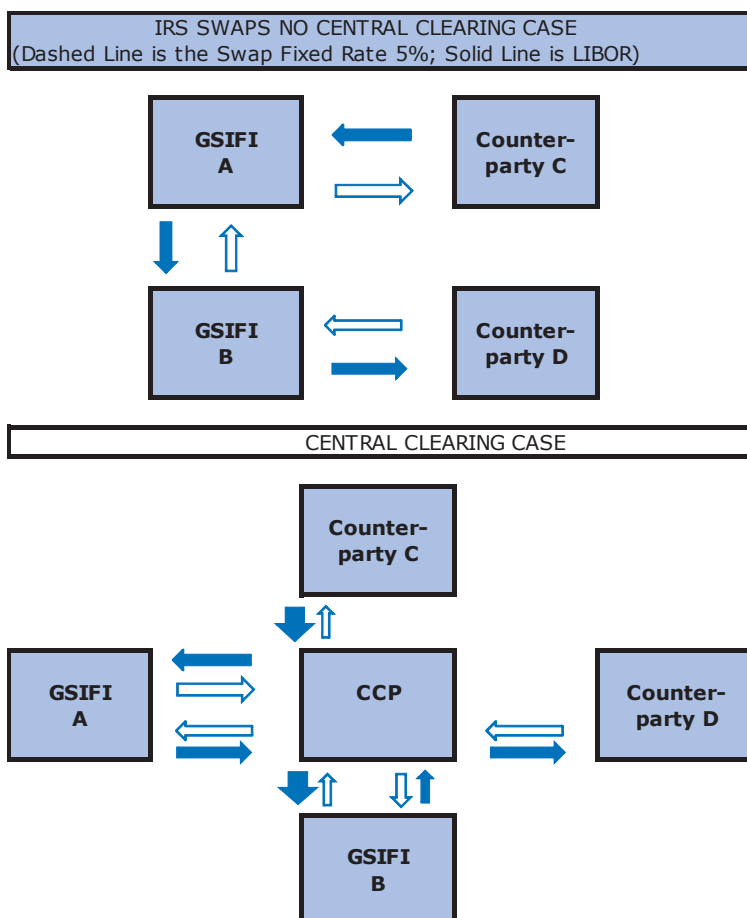
Since the Basel Tier 1 ratio applies to RWA, banks have considerable scope to reduce the ratio of RWA/TA and thereby minimise capital and promote higher leverage. It is of potential concern that such mechanisms would allow the lower leveraged banks shown in the upper left, to move into the higher leveraged area (lower right), with profitability objectives in mind. The question of how leveraged GSIFIs should be as they become more

concentrated remains a key policy issue that needs to be settled when calibrating a leverage ratio in the Basel III *parallel run* exercise.

2.6. Rising interconnectedness risk as the derivatives market becomes more concentrated

This section looks at derivative counterparty risk in the light of rising concentration, CCPs and the advent of the CVA charge. These developments will act to reduce competition and increase risks.

Figure 2.16. Interest rate swap example



No clearing: interest rate swap example (IRS)

Figure 2.16 sets out a simple derivatives trade situation without clearing in the upper panel: it is a 10-year fixed 5% (shown by the dashed arrows) versus floating LIBOR (shown by the solid arrows) swap. The two GSIFI banks A and B undertake the swaps with counterparties C and D, and each trade with a notional principal of USD 100m. GSIFIs A and B square up by the dealer practice of hedging the reverse trade with each other.

- If the swap fixed rate rises by 1% pa (from 5% to 6%), the hedgers gain and the losses to the three players with fixed commitments (A, B and D) is the present value of the 1% over the 10 years, or USD 7.4m each, (USD 22.4m in aggregate).
- If a fixed rate spread move of 10% pa should arise, as has occurred recently in European sovereign bond volatility, the loss to the payers of the fixed rate rises to USD 50.2m each, half of the notional value (and USD 150m in aggregate).

This illustrates that the CVA risk can be very large in unexpected stressed conditions, and it is highly unlikely that bank modelling for CCR and CVA will reflect this in an ex-ante sense. Banks never have a problem until they have a problem.

No clearing plus a netting set: GSIFI A (with IRS loss & CDS gain)

Now consider the case of GSIFI bank A, which is down USD 50m on the above IRS swap (the 10% move in rates) but is up USD 60m on a CDS position with counterparty C, where it has a netting agreement. This gives rise to a “current net gain of USD 10m up”. Without clearing, and following the above Basel III reforms, the GSIFI bank A would be holding the following capital for that portfolio:

- The counterparty credit risk charge based on model-based expected positive exposure of the entire portfolio using a stressed calibration, which would be additive to the market risk charge that applied under Basel II.
- The CVA charge to address the mark-to-market losses based on loss given default (LGD) and the probability of default (PD), which is additive across netting sets.

TBTF & cross-subsidising risk

As noted earlier, banks have ample scope to reduce the impact of market risk modelling on RWA and hence on capital charges and leverage. From the market structure point of view, the IRB model approach to regulation may work to reinforce TBTF; risk modelling is a barrier to entry, because scale and sophisticated risk groups and technology are required to participate.

Furthermore, the models rely on credit spreads at which counterparties can borrow for discounting future cash flows of exposures. If a variety of collateral is posted for derivative trades it must be discounted at a variety of credit, currency and liquidity risks. Where GSIFs are concerned, the TBTF problem is present with the result that credit spreads are less than would apply to separate derivative trading entities that do not have access to retail/commercial bank capital and official and unofficial guarantees and support. This reduces the associated capital charges. Risk (particularly from the viewpoint of the taxpayer) is likely to be underpriced and risk activities commensurately greater. Risk is subsidised by the TBTF status (and the explicit and implicit guarantees that lie behind it) while at the same time reduced spreads reinforce dealing with the concentrated entities.

Netting and Clearing

Concentration risk and netting

Close out netting reduces exposures in the event of an actual default. In the above simple netting set example of USD 50m down on the interest rate swap and USD 60m up on the CDS, the most the bank could lose in a close out is USD 10m compared to the USD 60 in the absence of netting. However, the fact that the CVA charge applies at the netting set level, and is additive across netting sets, means that it does not reward diversification. Suppose bank A in Table 2.2 has multiple counterparties (2 here for simplicity) and the gain/loss exposures are as shown. The CVA is additive and in the diverse counterparties case results in a positive capital charge related to the USD 10m and the -USD 10m. In the single counterparty (larger netting set) case there is no exposure for a counterparty charge.

More generally, the additive CVA gives no benefit for using a well-diversified set of counterparties, and instead rewards risk concentration in a smaller number of counterparties.

Table 2.2. **Netting & concentration**

A. Diverse counterparties		B. Concentration case	
P1: Netting Set 1		One netting Set	
IRS up	100	IRS up	100
CDS down	-90	CDS down	-90
Net	10	IRS up	90
P2: Netting Set 2		CDS down	-100
IRS up	90	Net	0
IRS down	-100		
Net	-10		

The CVA charge in a netting context is therefore likely to reinforce concentration and the use of TBTF banks as counterparties. That is, it will reinforce the trends towards the highly oligopolistic derivative markets illustrated earlier. Risk is increased, because diversification is reduced while capital to absorb unexpected large losses in a crisis is minimised.

Concentration also reduces market efficiency in the pricing of risks. Efficient pricing requires a diversity of views. However, it is precisely this diversity that is undermined by rising concentration. The probability of mispricing risk is increased.

To give some idea of the enormity of derivatives netting some examples from US banks' 2010 accounts are illustrative: Bank of America had USD 1 519bn in gross derivative assets, but with counterparty netting of USD 1 406bn, and allowance for cash collateral, this reduces to only USD 73bn. JP Morgan had USD 1 529bn in gross derivatives that nets to USD 80bn. Citigroup had USD 654bn in gross derivatives that nets to USD 50bn.

Clearing

The lower panel of Figure 2.16 shows the case for the interest rate swaps where all of the deals are entered into with the CCP, instead of bilaterally. The GSIFI payment streams will all cancel each other out, as shown by the sets of 4 arrows for each versus the CCP. Only the un-hedged counterparty

D responsible for fixed yield flows to the CCP would have a USD 50.2m loss (in the case of the 10% spread move) with respect to the clearing house. In this way, clearing through the CCP greatly reduces the aggregate counterparty market risk.

The CCP gives rise to multilateral netting, which is something like Case B of Figure 2.17 on a grander scale.

Problems still remain with clearing

- Mandatory clearing of standardized derivatives that trade on exchanges or via Dodd-Frank SEFs would increase transparency, and undermine the ability of the bank oligopoly to maximize profits via bid-ask spreads. This is a very difficult area for which the way rules will be applied is unclear. Bank resistance to this is assured, and likely to spark new forms of regulatory arbitrage.
- As shown earlier, there are between 6 and 14 GSIFIs that control each of the various dollar derivative products (less for some other currencies). As these institutions dominate trading volume and control flows, they will likely also control an oligopolistic SEF market structure, and the anti-competitive issues discussed previously are unlikely to be fully ameliorated.
- There is likely to be significant exemptions to the use of CCPs. Derivatives traded on exchanges are less than 4% of the total, and of the 96% OTC derivatives many are customized and not traded. Definitions are difficult here, and the scope for GSIFIs to ensure products are exempt from clearing is very large. Furthermore, it has now been determined that the (highly-volatile) foreign exchange swaps will be exempted from clearing under Dodd-Frank. These exclusions and scope for structuring products to avoid the intent of regulation will become very similar to the capital arbitrage via shifting promises outlined earlier.
- Placing the CCP between counterparties does not remove the modelling and concentration problems discussed earlier. Clearing requires both market prices and liquidity, with the clearer taking on risk. Setting initial margins and managing variation margin calls between clients (where these are not exchange traded) will require modelling and all of the associated problems discussed earlier.

Where standard products can be cleared, it is likely that the CCPs will follow the patterns discussed earlier for the trends in derivative market concentration in the lead up to the crisis and its aftermath. That is, they will

likely compete at first on initial margin and variation margin rules. If risk is underpriced as a result of this process, then large losses could wipe out an undercapitalized CCP, and require it to be rescued by another CCP, or via the taxpayer. Indeed, the TBTF problem has in effect been transferred in part to the CCP, with every chance that it will under price risk and generate future problems. A CCP linked with many banks and trades certainly cannot be allowed to fail.

Furthermore, OTC products not subject to clearing will remain, and are in any case still quite capable of leading to another systemic crisis.

2.7. Policy options

Leverage ratio

The OECD has long backed the need for a leverage ratio, where the IFRS concept of derivatives exposure is used in the measure of TA.⁹ On this basis, the parallel run idea of a 3% ratio, provided it is based on equity capital, would be a reasonable starting point. The idea that a leverage ratio discriminates against low-risk assets is rejected by the above analysis. The crisis amply demonstrated that in the age of complete markets in credit, there is no such thing as ex-ante fixed risk weights. The ability of financial firms to transform risk at will to obtain capital relief while expanding leverage is a risk in itself that needs to be dealt with by a leverage ratio.

Higher CVA Charge or OTC Derivative Transaction Tax

In principle, the problem of too much interconnectedness risk via derivatives could be dealt with by raising the CVA to a level that fully offset the under-pricing of risk. However, the efficiency of the charge would over time be reduced as it would reinforce the trends in concentration to expand netting sets with GSIFI domination of flows, including SEFs and CCPs.

Historically, the OECD has been against a general Tobin tax due to the negative impact it could have on liquidity in otherwise open and transparent markets. While this view still stands, it is worth considering whether a transactions tax in the form of a regulatory charge could not be applied to the OTC derivatives market.¹⁰ The charge could be accumulated in an insurance fund to help underwrite the solvency guarantee of CCPs. The rationale for this more targeted approach is as follows:

- The OTC market is already characterised by illiquidity, so the standard objection may not apply or matter.
- The charge would raise the cost of derivatives, resulting in higher bid/ask spreads in the OTC markets to cover the additional cost. This would reinforce the demand for standardisation, clearing and trading on exchanges.
- The incidence of the charge would fall more on active trading of a short-term gambling/churning nature in those institutions where such trades were concentrated, rather than on longer-term final user hedging in the corporate sector. It would lengthen the holding period of derivative products.
- Such a charge would help to reduce the trend towards less socially useful derivatives activity implicit in the parabolic trends shown in section 2.

Either of these measures should be seen as a direct response to the under-pricing of risk and the TBTF issue discussed above – a ‘subsidy’ offset by the ‘charge’.

Structural separation

It would also be quite possible to allow existing market mechanisms to manage interconnectedness risk, without the need for regulatory intervention, via initial margins, variation margin and the cost of liquidity provider channels. But this could only be achieved effectively by breaking up GSIFIs so that derivatives were only traded by entities that are legally separate from retail banking and commercial banking activities – not unlike the Dodd-Frank treatment of certain exotic OTC swaps. The OECD has long supported the idea that key investment banking and dealer activities should be carried out within a strict subsidiary structure – a non-operating holding company (NOHC) with firewall provisions.¹¹ The US Dodd-Frank Act has gone some of the way in this direction with the treatment of certain swap entities and the Volcker rule.¹² The point of separation is to make it clear that deposit insurance and government bail-out mechanisms will not apply to the derivatives entity, which would not be bailed out in the event of a crisis, and where transfers of capital and securities between the different entities within the group would be prohibited or subject to regulatory approval.

This would ensure that collateral requirements of counterparties and clearing houses would be based on the clear understanding that the entity trading derivatives would be separately capitalized (and hence more

expensive) and not a beneficiary of implicit or explicit government guarantees. Liquidity provision for posting collateral would occur in an arms-length manner or (preferably) with third parties. Collateral requirements and liquidity finance would be based on a much better appreciation of the risk that the entity could fail and cross subsidization from TBTF would cease. The cost of transacting derivatives business would rise.

Far from this being perceived as a problem, it should be seen as a counterbalance to the systematic under-pricing of risk and the undercapitalisation of financial institutions – which were the most fundamental basic causes of the global financial crisis.

Notes

1. The correct concept to examine for the purposes of this paper is the notional value of outstanding derivatives, the size of which is the exposure of financial institutions to price risk. It also reflects the potential command over assets and resources that clients have, and is the basis on which fees are paid to broker/dealers. The close out value of vast derivative positions—in the money and out of the money—could in principle be zero, giving a highly misleading picture of the derivatives market in terms of its role in the economy and the risks attached to it.
2. See Blundell-Wignall, A. and P.E. Atkinson (2008), “The Sub-prime Crisis: Causal Distortions and Regulatory Reform”, in *Lessons From the Financial Turmoil of 2007 and 2008*, Reserve Bank of Australia; and UBS (2008), “Shareholder Report on UBS Writedowns”, UBS AG, 18 April.
3. The Herfindahl index sums squared market shares, expressed in percentages, across all firms with a maximum score of the index of 10000. A score of 10000 would imply that one firm supplies the market. The index is interpreted as the reciprocal of the index times 10000, which is equivalent to the number of firms with equal share that are providing the service.
4. There is a little more competition (less concentration) between reporting banks themselves.
5. The notable failure of Bankers Trust allowed Deutsche Bank to take a strong position in US investment banking.
6. There have also been rumours of collusive behavior in the derivatives market. See Louise Story, “A Secret Banking Elite Rules Trading Derivatives”, *The New York Times*, 12/12/2010.
7. The notional of the bond is the EAD of the counterparty, (treated as fixed); the maturity of the ‘bond’ is the effective maturity of the longest dated netting set of a counterparty; and the time horizon is 1-year (as opposed to the 10 day period for MR).
8. There must be an intent to settle on a net basis, or to realize the asset and settle the liability simultaneously.

9. See OECD (2009), *The Financial Crisis: Reform and Exit Strategies*, Paris.
10. Such a very small charge applies in Germany.
11. See OECD (2009), *ibid.*
12. At the time of writing there are also press reports that the Swiss regulator favours some form of separation for its banks IB activities. The UK is also considering ring-fencing retail banking activities. See Independent Commission on Banking (2011).

Chapter 3

Bank competition and government guarantees

Using government guarantees to avoid systemic fallout from the crisis distorted competition between banks and further reinforced the perception that systematically important banks enjoy implicit guarantees. To reduce this perception, policy reforms must include provisions for the orderly failure of financial institutions, whatever their size, level of interconnectivity and complexity.

3.1. Motivation

Systemically important financial institutions benefit in several ways from access to the financial system safety net, which consists of a set of institutions and rules. As part of the response to the financial crisis, policymakers in several major financial markets modified the explicit rules defining the safety net, in effect, widening the scope of that net to cover additional claims and institutions. This policy response helped avoid the worst, but not without costs, which include the creation of distortions to competition.

In particular, some of the guarantees that were provided (e.g. extension of deposit insurance guarantee coverage) did not involve the charging of commensurate fees, while the fees for other guarantees (e.g. for government guarantees for unsecured bank bonds) were not as “fair” as one might have hoped. Better choices of the design of fees for the additional guarantees provided would have helped to avoid some distortions.

Moreover, unfortunately, as a result of the various support measures including the extension of existing and introduction of new guarantees, the perception that systematically important financial institutions enjoy implicit (or explicit) government support has been reinforced. This situation obviously creates additional distortions to competition, especially in funding markets.

This part focuses on the notion that guarantees that are not properly priced distort competition. It consists of two sections. The first section identifies the policy response to the financial crisis as an extension of the financial safety net. The second section then argues that this policy approach may have further entrenched the perception that systematically important financial institutions enjoy an implicit guarantee.¹

3.2. The policy response to this crisis

The financial system safety net

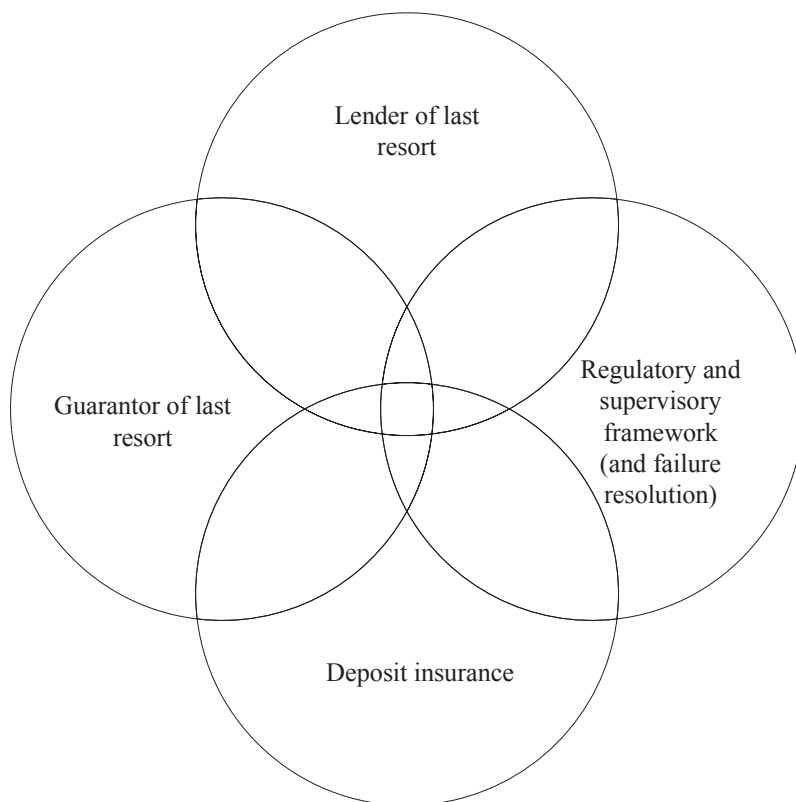
In theory, when competition is strong, less efficient financial institutions are forced to improve their cost effectiveness or, if unsuccessful, exit from the market. Through this mechanism, scarce resources will not be wasted but used by those financial institutions that are most effective.

In reality, however, the existence of a variety of transactions costs, including in relation to the switching of financial consumers from one producer of financial services to another, taxes, formal and informal barriers to entry, and explicit and implicit guarantees negatively affect competition. Access to the government-provided financial system safety net is yet another factor that affects competition.

Given the perceived importance of banks for the functioning of the financial system as a whole and a policy interest in protecting small bank depositors, deposit-taking banks have traditionally benefitted from access to the financial safety net. The financial safety net consists of a wide set of elements and institutions involved in the provision of these elements and there exist numerous interactions between them. The traditional definition of the safety net focuses on a lender-of-last-resort function, a deposit insurance function (possibly including special resolution powers at the level of the deposit insurer) and the regulatory and supervisory framework. Access to the safety net involves costs, including the exposure to tighter regulation and supervision, but also entails benefits that become most visible during a financial crisis.

A schematic illustration of the safety net is provided in Figure 3.1. It should be noted that this figure deviates from the traditional definition of the safety net. In particular, it also includes the guarantor-of-last resort function, which effectively has now been more explicitly added to the traditional components.

Figure 3.1. Elements of the financial safety net



Source: Schich, S., “The Government as Guarantor of Last Resort: Benefits, Costs and the Case for Premium Charges”, chapter 3 in *Managing Risk In The Financial System*, Edward Elgar, June 2011.

The financial system safety net was at the core of the policy response to the crisis

Erring on the side of providing too much assurance?

The financial safety net was at the core of the policy response to this global financial crisis and the scope of that net was considerably extended in a number of ways. For example, central bank liquidity was provided to an expanded set of financial institutions, while the quality of required collateral was lowered. Indeed, given changes in the perceptions regarding systemic importance, the set of financial institutions receiving central bank support

was extended beyond traditional banks to also include entities from the investment banking and insurance sectors as well as some securities firms. As a result, central bank balance sheets expanded significantly.

In addition, government guarantees were extended to parts of banks' liabilities (and even their assets) that would not under normal circumstances benefit from such protection. Perhaps most notably, depositor protection was widely expanded to avoid the occurrence of bank runs. Blanket deposit coverage guarantees, often involving unlegislated political commitments by governments, were introduced in several countries.

This policy response helped avoid the worst outcome. But it also created some additional costs. These include potential distortions to competition.

The financial safety net provider faces a policy trade-off between providing sufficient assurance to maintain proper functioning of the system versus providing too much assurance, which generates moral hazard and competitive distortions. The evidence gathered by the OECD in the context of discussions within its Committee on Financial Markets (CMF) and in other *forae* on the policy response to financial crisis suggests that public authorities seem to have decided to err on the side of providing too much assurance even at a detriment to competition.

The remainder of this section discusses this argument in the context of two examples -- deposit insurance and government-supported guarantees for new (and sometimes existing) unsecured bank bonds.

Increases in deposit guarantee coverage

Deposit insurance is part of the financial safety net and it consists of specific functions to protect bank depositors and support financial stability. Where the function is explicit, the specific set up differs from one country to another: First, in some cases, the deposit insurance function is performed by a dedicated legal entity, while in other cases it is performed by other financial system safety net participants. Second, in some cases the entity performing that function has wide-reaching powers to intervene in banks; in other cases the entity is merely a so-called "pay-box".²

Table 3.1. **Deposit guarantee coverage level changes including political commitments**

(Changes made in fall 2008; G20 countries highlighted by shading)

Country/market	Unlimited	Increase in coverage	Country/market	Unlimited	Increase in coverage
Argentina			Italy		
Australia	Yes	Yes	Japan		
Austria	Yes	Yes	Korea		
Belgium		Yes	Luxembourg		Yes
Brazil		Yes	Mexico		
Canada			Netherlands		
Chile			New Zealand		Yes
China			Norway		
Czech Republic		Yes	Poland		Yes
Denmark	Yes	Yes	Portugal		Yes
Estonia		Yes	Russia		Yes
Finland		Yes	Saudi Arabia	Yes	Yes
France			Singapore	Yes	Yes
Germany	Yes	Yes	Slovenia	Yes	Yes
Greece	Yes	Yes	Slovak Republic	Yes	Yes
Hong Kong (China)	Yes	Yes	South Africa		
Hungary	Yes	Yes	Spain		Yes
Iceland	Yes	Yes	Sweden		Yes
India			Turkey		
Indonesia			United Kingdom		Yes
Ireland	Yes	Yes	United States.		Yes
Israel					

Notes: Cells with “Yes” indicate that such a measure has been taken; empty cells indicate that no such measure has been taken. The assessment includes political commitments that were not accompanied by changes in legislation. Various other aspects of these measures differ from one country to another. For example, in the case of Australia, additional fees applied for coverage beyond a specific threshold.

Source: OECD Secretariat estimates based on FSB, “Exit from extraordinary financial sector support measures”, 7 November 2009 and FSB, “Update on Unwinding Deposit Insurance Arrangements”, June 2010; Deposit Insurance Systems in the MENA Region: Recent Developments, presentation by Mohammed Al-Jafari, General Director, Jordan Deposit Insurance Corporation FSVC-FSI-MENA FRTI Joint Regional Seminar, Cairo- Egypt, 7-9 April 2009; and OECD Secretariat assessment.

One of the remarkable features of the policy response to this crisis was the expansion of depositor protection, in particular the introduction of unlimited deposit guarantee coverage. Among the 36 jurisdictions participating in the OECD's CMF, deposit insurance coverage was increased in 28 cases and without limits in 11 cases. In several cases, protection without limits took the form of political commitments, which were not necessarily accompanied by changes in legislation. Looking at the G20 countries, Table 3.1 illustrates that, only three of the G20 countries resorted to blanket retail deposit coverage, but increases in deposit insurance guarantee coverage were widespread.

The effective expansion of deposit insurance, either through changes in legislation or by means of political commitments, was a key element of the policy response to the financial crisis. This response had the effect of pre-empting the loss-absorption function of existing deposit insurance arrangements in many countries.

This assessment is corroborated by the observation that many deposit insurance schemes actually increased their reserve ratios during the financial crisis, and only some of them experienced significant deterioration in funding ratios. These findings essentially confirm the view that deposit insurance schemes are simply not meant to take the brunt of the burden of a crisis of the magnitude just witnessed.

Even more important in the present context is that, where deposit guarantee coverage levels were raised or blanket guarantees extended, typically no additional surcharges were levied on deposit-taking institutions. The extra protection provided was not, as a general rule, accompanied by commensurate premiums charged to the beneficiary institutions.

This situation has given rise to competitive distortions, as otherwise similar investments and other institutions that do not take deposits did not benefit from such protection. There were, however, some efforts made to charge for the extra protection provided. For example, in Australia, risk-adjusted fees were levied for the extra coverage that was offered beyond AUD 1 million per depositor.

The differences in terms and conditions of coverage between jurisdictions in some instances created significant externalities on a cross-border level. To the extent that banks are competing with each other across borders, the conditions of their funding matter for their relative competitive positions. A subsidy provided by governments for one part of their funding, e.g. by not charging appropriate costs for the guarantees for either retail or wholesale funding or both, influences competition by artificially lowering the costs for some but not all competitors. Against this background, a note prepared by the FSB for the G20 Ministers and Governors meeting on

6 to 7 November 2009 encouraged policymakers to give consideration to using regional forums to promote discussions between jurisdictions. The FSB note concluded, as far as it concerns the failure of policy authorities to coordinate across borders the deposit insurance measures taken in response to the crisis, as follows:

The OECD summed this [i.e. the above mentioned failure] up in noting that “co-ordination with regard to deposit insurance policy measures taken was not always as close as one might have hoped.”³

Government guarantees to support wholesale bank funding

As suggested previously, the expansion of guarantees in the response to this financial crisis was not limited to retail deposits. Guarantees were also introduced for other items on bank balance sheets that are typically not covered by guarantees, at least not under normal circumstances. For instance, banks benefitted from credit guarantees on their issuance of unsecured debt, albeit on a temporary basis, although in many cases for a longer span of time than initially announced. Between October 2008 and March 2011, banks issued more than EUR 1 trillion of government-guaranteed bonds.

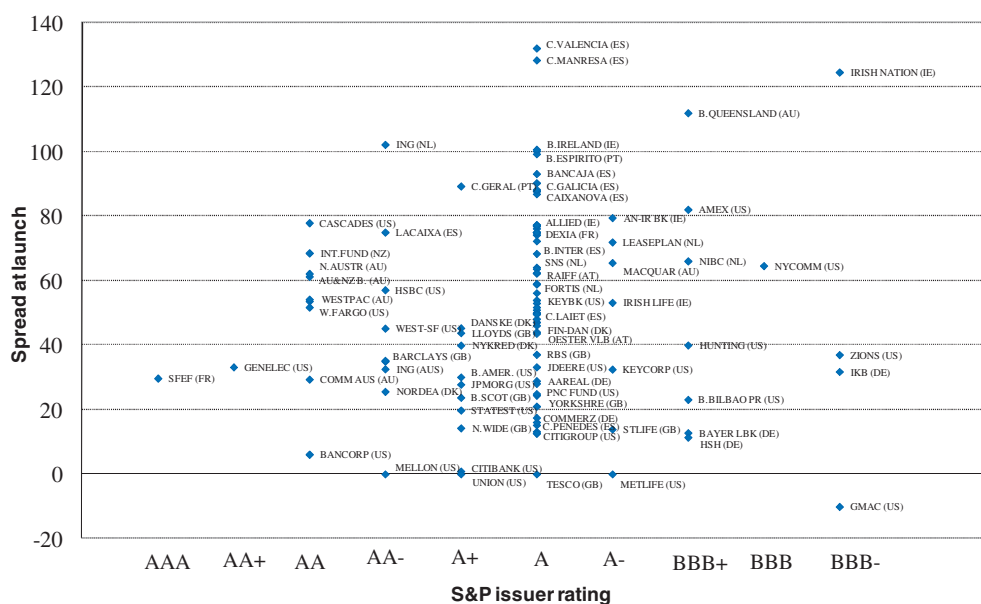
In contrast to the arrangements for deposit insurance, governments did attempt to levy risk-adjusted fees for this specific type of explicit guarantee and to coordinate the design of fee determination mechanisms. In some cases, such as in the EU, coordination was close. In fact, the Governing Council of the European Central Bank developed a pricing scheme that was by and large adopted by all EU member states, and it essentially implied a homogenisation of fee charges. Such efforts were aimed at limiting the potential competitive distortions arising from the extension of government-supported guarantees for internationally competing banks.

The recent sovereign crisis has shown, however, that sovereigns are indeed characterised by different creditworthiness and that perceptions of creditworthiness can undergo substantial changes over time. Therefore, when sovereigns are not identical, such harmonisation is not helpful in limiting competitive distortions.

Thus, the harmonised pricing structures chosen by governments for determining the fees to be paid by debt-issuing banks have tended to induce competitive distortions. In particular, the costs to banks of issuing guaranteed bonds has mainly reflected the characteristics of the sovereign guarantor rather than those of the issuer, thus favouring “weak” borrowers with a “strong” sovereign backing. An illustration of this effect is provided in the Figure 3.2.

The figure demonstrates that there is no clear systematic relationship between the quality of the issuer and the yield spread at launch of its bond. In fact, the identity of the guarantor is a key determinant of that yield spread. For instance, Portuguese banks paid much larger spreads at launch than German banks that were lower rated. Looking at guaranteed bond issues of banks with similar long-term issuer credit ratings (that is the ratings that apply to these banks' issues of unsecured and unguaranteed bonds), one finds sometimes considerable variation in the spreads at issue. For example, the spread at issue varies by identity of guarantor.

Figure 3.2. Spread at launch of government-guaranteed bonds and issuer rating



Notes: Government guaranteed bonds issued in the period October 2008 to October 2009. Averages per issuer. Spreads over comparable interbank rates, with axis limited at 140 basis points.

Source: Levy, A. and A. Zaghini (2010), "The Pricing of Government-Guaranteed Bank Bonds", Banca d'Italia Working Paper no. 753, March.

There is, of course, another component of the borrowing cost faced by the issuing bank, namely, the guarantee fee. Unfortunately, data on actual fee charges are, as a general rule, not published. Private sector estimates suggest that the ranges of fees charged in practice have not differed very much from one country to another. Comparing *average* fees suggests that

differences have been small. With the exception of France, where they were as low as 50 basis points, average fees elsewhere were mostly close to 100 basis points. The extremes of the spectrum around that average were Germany, where fees were about 10 basis points lower, and the United Kingdom, where fees were about 15 basis points higher than 100 basis points.

Under those circumstances, and other things equal, “stronger” sovereigns should have been encouraged to charge higher fees for their guarantees as compared to “weaker” sovereigns, given that the guarantees of the former are more valuable. By choosing such a fee setting mechanism, competitive distortions could have been reduced.⁴

3.3. A somewhat more entrenched perception of implicit government support?

Providing too much assurance?

As mentioned before, as a general rule, the financial safety net provider faces a policy trade-off between providing sufficient assurance to maintain financial stability and providing too much assurance. The evidence gathered by the OECD in the context of its discussions within the CMF on the policy response to the financial crisis suggests that public authorities seem to have decided to avoid compromising financial stability.

Extension of explicit guarantees and perception of implicit guarantees

Assurance was provided through the extension of existing guarantees and introduction of new *explicit* guarantees. This choice appears to have reinforced the perceptions that banks enjoy *implicit* guarantees from the government.

In fact, already for some time now, credit rating agencies have rated banks by explicitly factoring in an estimate of the external support that the bank under consideration receives from (its parent) or public authorities. The rating that takes this potential support into account is called e.g. an “all-in rating” or “issuer credit rating”, as opposed to the “stand-alone” rating that abstracts from such support. The latter describes the intrinsic financial strength of the institution and, thus, its estimated likelihood of default, abstracting from any external support.⁵

To define the “all in rating” or “issuer credit rating”, rating agencies need to assess both the likelihood and strength of external support, which

can be explicit or implicit. If it is explicit and consists of a binding commitment to support the creditworthiness of a bank, the rating agency assesses the financial capacity backing up this commitment. If the commitment is only implicit, the rating agency also needs to evaluate the willingness of (the parent or) sovereign to provide support. Both the capacity and the willingness of these entities can change over time; what matters is how likely it is that the support will be forthcoming when the institution needs it. As a general rule, the perception that an issuer enjoys such support is beneficial for its credit rating.

The perceived support provided can also affect the credit rating of the entity providing the support. It turns out that rating agencies factor in the potential contingent liabilities that could arise for a sovereign from the existence of such support for the banking sector. In fact, the potential support for the banking sector turns out to be one of the key drivers behind the total contingent liabilities of sovereigns, as perceived by credit rating agencies. Figure 3.3 shows that, comparing 2008 and 2010, in some countries where government guarantees for the banking sector were quite extensive, the potential contingent liabilities of the sovereign have increased. This observation is consistent with the suggestion that, at least in some cases, the perception of an implicit government guarantee for banks has become more relevant as a result of the financial crisis and the policy response to it.

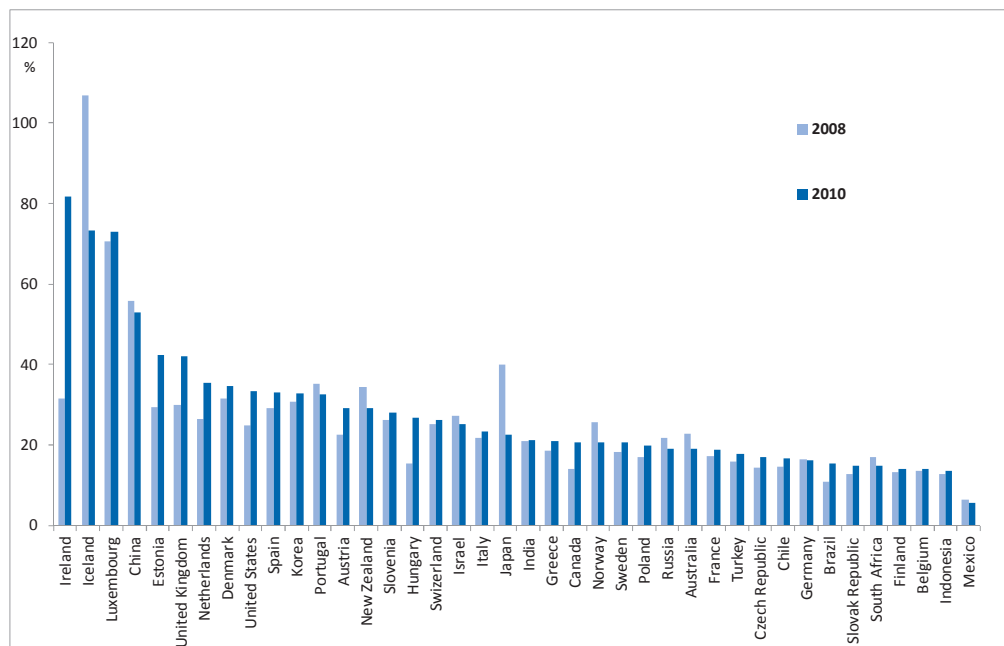
In fact, on average, by the measure shown here, the perception of implicit government support for banks is now on average greater than it was in the pre-crisis period. This interpretation is consistent with the empirical evidence shown in Figure 3.4. The figure shows that the all-in-ratings or total ratings of a sample of large banks have declined between mid-2007 and early 2011. That decline would have been even larger had the rating uplift reflecting assumed government support not increased. In fact, the increase in that rating uplift partly compensated for the decline in stand-alone credit ratings of large international banks.

Financial institutions need to be allowed to fail

To reduce the perception of such implicit support, financial institutions need to be allowed to fail. Thus, a key policy prerogative is to facilitate the orderly failure of financial institutions, whatever their size, interconnectedness and complexity. In this context, when the CMF discussed the specific issue of how to fund resolution of large systemic financial crises (at its meeting in October 2010),⁶ it concluded that ex ante-funded systemic crisis resolution arrangements financed by the financial industry, together with strengthened failure resolution powers are in

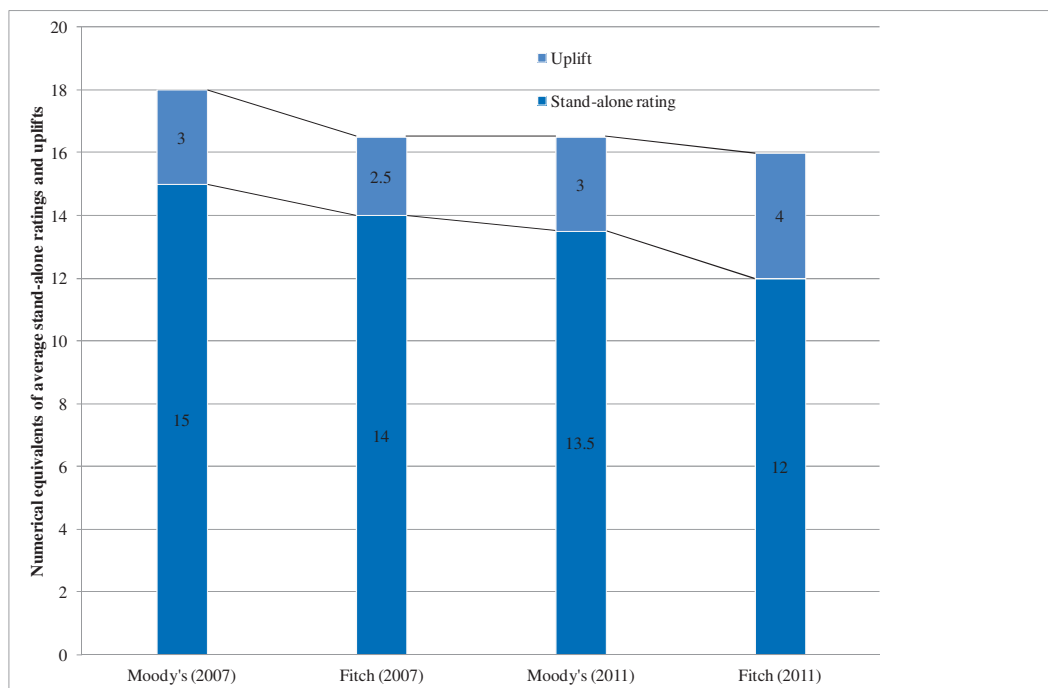
principle adequate to help fill the funding gap left by existing deposit insurance arrangements in such situations. In particular, significant ex ante funding of such arrangements should help weaken the potential link between financial sector and sovereign risk.

Figure 3.3. Estimates of potential contingent sovereign liabilities
(in per cent of GDP)



Source: Schich, S. and Kim, B.K., “Guarantee Arrangements for Financial Promises: How Widely Should the Safety Net Be Cast?”, *OECD Journal: Financial Market Trends*, June 2011.

Figure 3.4. Changes in stand-alone and all-in ratings of large international banks



Notes: The Figure provides an approximation of the data used by Packer and Tarashev (2011), which is publicly available only in aggregate form. Ratings reported in that study are translated into numbers, with AAA equal to 20, AAA/AA+ equal to 19.5, AA+ equal to 19, and so forth.

Source: OECD Secretariat estimates based on Packer and Tarashev (2011).

Notes

1. The discussion in this part is not an attempt to provide a comprehensive discussion of these various issues. For such a discussion see e.g. Committee on the Global Financial System, “The Impact of Sovereign Credit Risk on Bank Funding Conditions”, CGFS Paper No. 43, Report submitted by a Study Group established by the Committee on the Global Financial System chaired by Fabio Panetta, July 2011; Panetta, F., T. Faeh, G. Grande, C. Ho, M. King, A. Levy, F.M. Signoretti, M. Taboga, and A. Zaghini (2009), “An Assessment of Financial Sector Rescue Programmes”, BIS Paper No. 48, July; Schich, S. (2009), “Expanded Guarantees for Banks: Benefits, Costs and Exit Issues”, *OECD Journal: Financial Market Trends*, Vol. 2009/2, November; and Packer, F. and N. Tarashev, “Rating Methodologies for Banks”, BIS Quarterly Review, June 2011.
2. Deposit insurance is part of the financial safety net and the relationship between the deposit insurance entity and other financial safety net participants, including the regulatory and supervisory agencies and the lender of last resort, differs from one country to another. Currently, no widely agreed “best” model in terms of institutional set-up exists. In fact, the *Core Principles* developed by the International Association of Deposit Insurers (IADI) and the BSCB recognise that “*the distribution of powers and responsibilities between the financial safety-net participants is a matter of public policy choice and individual country circumstances*”.
3. FSB, “Exit from Extraordinary Financial Sector Support Measures”, 7 November 2009, p.6.
4. Levy, A. and S. Schich, “The Design of Government Guarantees for Bank Bonds”: Lessons from the Recent Financial Crisis, *OECD Journal: Financial Market Trends*, June 2010.
5. The present discussion has benefitted from the comprehensive discussion in Packer and Tarashev (2011), *op. cit.*
6. Schich, S. and B.H. Kim, “Systemic Financial Crises: How to Fund Resolution” *OECD Journal: Financial Market Trends*, December 2010.

Bibliography

- Beck, T, A. Demirguc-Kunt and R Levine (2005), “Bank Concentration and Fragility: Impact and Mechanics”, *NBER Working Papers*.
- Berger, A. and G. Udell (1995), “Relationship Lending and Lines of Credit in Small Firm Finance”, *Journal of Business*, Vol. 68 (July).
- Bikker, J. and K. Haaf (2002), Competition, Concentration and Their Relationship: An Empirical Analysis of the banking Industry”, *Research Series No. 30, De Nederlandsche Bank*.
- Bikker, J., L. Spierdijk and P. Finnie (2006), “The Impact of Bank Size on Market Power”, *De Nederlandsche Bank Working Paper*.
- Bikker J. and L. Spierdijk (2008), “How Banking Competition Changed Over Time”, *De Nederlandsche Bank Working Paper*.
- Bikker, J. S. Shaffer and L. Spierdijk (2009), “Assessing Competition with the Panzar Rosse Model: the Role of Scale, Costs and Equilibrium”, *Working Papers 09-27, Utrecht School of Economics*.
- Blundell-Wignall, A. et. al. (2009), “The Elephant in the Room: the Need to Deal With What Banks Do”, *OECD Journal: Financial Market Trends*, vol. 2009/2.
- Blundell-Wignall, A. et.al. (2010), “Thinking Beyond Basel III: Necessary Solutions for Capital and Liquidity”, *OECD Journal: Financial Market Trends*, vol. 2010/1 (www.oecd.org/daf/fmt).
- Blundell-Wignall, A. and P.E. Atkinson (2008), “The Sub-prime Crisis: Causal Distortions and Regulatory Reform”, in *Lessons From the Financial Turmoil of 2007 and 2008*, Reserve Bank of Australia; and UBS (2008), “Shareholder Report on UBS Writedowns”, UBS AG, 18 April.
- Boyd, J. and M. Gertler (1993), “U.S. Commercial Banking: Trends, Cycles and Policy”, NBER working paper No. 4404.

- Cetorelli, N. and M. Gambera (2001), "Banking Market Structure, Financial Dependence and Growth: International Evidence for Industry Data", *Journal of Finance*, vol. 56, No. 2, pp 617-648.
- Committee on the Global Financial System, "The Impact of Sovereign Credit Risk on Bank Funding Conditions", CGFS Paper No. 43, Report submitted by a Study Group established by the Committee on the Global Financial System chaired by Fabio Panetta, July 2011
- Degryse, H. and S. Ongena, "Competition and Regulation in the Banking Sector: A Review of the Empirical Evidence on the sources of bank rents," in A. Thakor and A. Boot (eds.), *Handbook of Financial Intermediation and Banking*, Elsevier, 483-542.
- Edwards, F. and F. Mishkin (1995) "The Decline of Traditional Banking: Implications for Financial Stability and Regulatory Policy", *FRBNY Economic Review*, 1, pp. 27- 45.
- Flannery, M. J. and S. Nikolova (2004) "Market discipline of U.S. financial firms: recent evidence and research issues" in W.C. Hunter, G.G. Kaufman, C. Borio and K. Tsatsaronis, Editors, *Market Discipline across Countries and Industries*, Cambridge University Press
- FSB (2009), "Exit from extraordinary financial sector support measures", 7 November.
- FSB (2009), "Update on Unwinding Deposit Insurance Arrangements", June 2010; Deposit Insurance Systems in the MENA Region: Recent Developments, presentation by Mohammed Al-Jafari, General Director, Jordan Deposit Insurance Corporation FSVF-FSI-MENA FRTI Joint Regional Seminar, Cairo- Egypt, 7-9 April.
- FSB (2009), "Exit from Extraordinary Financial Sector Support Measures", 7 November, p.6.
- Jensen, M. and W. Meckling (1976), "Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure," *Journal of Financial Economics*, 3, pp. 305-360.
- Levy, A. and A. Zaghini (2010), "The Pricing of Government-Guaranteed Bank Bonds", Banca d'Italia Working Paper no. 753, March.
- Levy, A. and S. Schich (2010), "The Design of Government Guarantees for Bank Bonds": Lessons from the Recent Financial Crisis, *OECD Journal: Financial Market Trends*, June.
- Moshe, K, D. Kliger and B. Vale (2003), "Estimating switching costs: the case of banking" *Journal of Financial Intermediation* 12 pp. 25-56

- Moshe, K., D. Kliger and B. Vale (2003), “Estimating switching costs: the case of banking” *Journal of Financial Intermediation* 12 pp. 25-56.
- Nagarajan, S. and C.W. Sealey (1995) “Forebearance, deposit insurance pricing and incentive compatible bank regulation”, *Journal of Banking and Finance*, 19, pp. 1109-1130.
- OECD (2009), *The Financial Crisis: Reform and Exit Strategies*, Paris.
- Packer, F. and N. Tarashev (2011), “Rating Methodologies for Banks”, BIS Quarterly Review, June.
- Panetta, F., T. Faeh, G. Grande, C. Ho, M. King, A. Levy, F.M. Signoretti, M. Taboga, and A. Zaghini (2009), “An Assessment of Financial Sector Rescue Programmes”, BIS Paper No. 48, July.
- Petersen, M.A. and R.G. Rajan (1995), “The Effect of Credit Market Competition on Lending Relationships”, *Quarterly Journal of Economics*, vol. 110, pp407-443.
- Rajan, R.G. and L. Zingales, (1998), “Financial Dependence and Growth”, *American Economic Review*, vol. 88, No. 3, pp 559-586.
- Schaeck, K. M. Cihak and S. Wolfe (2006), “Are More Competitive Banking Systems More Stable?”, *IMF Working Paper*.
- Schaeck, K., and M. Cihak (2007), Banking Competition and Capital ratios”, *IMF Working Paper*.
- Schich, S. (2009), “Expanded Guarantees for Banks: Benefits, Costs and Exit Issues”, *OECD Journal: Financial Market Trends*, Vol. 2009/2, November.
- Schich, S. (2011), “The Government as Guarantor of Last Resort: Benefits, Costs and the Case for Premium Charges”, chapter 3 in *Managing Risk In The Financial System*, Edward Elgar, June.
- Schich, S. and B.H. Kim (2010), “Systemic Financial Crises: How to Fund Resolution” *OECD Journal: Financial Market Trends*, December.
- Schich, S. and B.H. Kim, (2011), “Guarantee Arrangements for Financial Promises: How Widely Should the Safety Net Be Cast?”, *OECD Journal: Financial Market Trends*, Vol. 2011/1.
- Story, L. (2010), “A Secret Banking Elite Rules Trading Derivatives”, *The New York Times*, 12 December.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where governments work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Union takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

Bank Competition and Financial Stability

Contents

Introduction

Chapter 1. Competition in retail banking and financial stability

Chapter 2. Competition in derivative markets and financial stability

Chapter 3. Bank competition and government guarantees

Please cite this publication as:

OECD (2011), *Bank Competition and Financial Stability*, OECD Publishing.

<http://dx.doi.org/10.1787/9789264120563-en>

This work is published on the *OECD iLibrary*, which gathers all OECD books, periodicals and statistical databases. Visit **www.oecd-ilibrary.org**, and do not hesitate to contact us for more information.