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Structural bank regulation initiatives: approaches and implications

by Leonardo Gambacorta and Adrian van Rixtel

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Structural bank regulation initiatives: approaches and implications

Leonardo Gambacorta and Adrian van Rixtel¹

Abstract

The paper examines the basic rationale and features of the proposals adopted to separate specific investment and commercial banking activities (Volcker rule, Vickers and Liikanen proposals). In particular, it focuses on the likely implications of such initiatives for: (i) financial stability and systemic risk; (ii) banks' business models; and (iii) the international activities of global banks.

Keywords: regulation, bank business models, systemic risk, economies of scale, economies of scope, too big to fail

JEL classification: G21, G28.

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1. Introduction

In response to the global financial crisis, several advanced economies have either adopted or are considering structural bank regulation measures. The common element of the various initiatives, including the “Volcker rule” in the United States, the proposals of the Vickers Commission for the United Kingdom, the Liikanen Report to the European Commission and draft legislation in France and Germany, is a mandatory separation of commercial banking from certain securities markets activities.

The proposals mark a paradigm shift. Since the 1970s, in parallel with the deregulation of financial markets, restrictions on banks’ business lines have been relaxed. There was a broad consensus that banks which offer a full range of financial services can provide the largest economic benefits in a rapidly growing global economy. Diversification of business lines, innovations in risk management, market-based pricing of risks and market discipline were seen as effective safeguards against financial risks associated with the rapid expansion of large universal banks.

The financial crisis has triggered a reassessment of the economic costs and benefits of universal banks’ involvement in proprietary trading and other securities markets activities. With hindsight, many large universal banks shifted too many resources to trading books, supported by cheap funding. The complexity of many banks weakened market discipline, while their interconnectedness increased systemic risk, contributing to contagion within and across firms. While the crisis has shown the need to strengthen market-based pricing of risk and market discipline, the heavy burden of bank losses imposed on taxpayers has raised questions about the separation of certain banking activities.

The proposed changes do not go as far as the previous strict separation of commercial from investment banking that existed in some jurisdictions, such as the United States. But for many countries, notably a number of continental European ones, restrictions on universal banking would be new. A number of questions arise. How effective can these measures be in improving financial system soundness? What can their impact be on banks’ profitability and business models, both nationally and internationally?

This paper explores these issues. Section 2 considers in more detail the rationale behind the measures as well as their similarities and differences. Section 3 provides a basis for evaluating their effectiveness in promoting financial stability. Section 4 discusses their implications for banks’ business models and profitability. The last section concludes.

2. The initiatives: basic rationale and features

The basic rationale for the structural measures is to insulate certain types of financial activities regarded as especially important for the real economy, or significant on consumer/depositor protection grounds, from the risks that emanate from potentially riskier but less important activities. The line is generally drawn somewhere between “commercial” and “investment” banking businesses, restricting the universal banking model.

Such a separation can, in principle, help in several ways. First, and most directly, it can shield the institutions carrying out the protected activities from losses incurred elsewhere. Second, it can prevent any subsidies that support the protected activities (eg central bank lending facilities and deposit guarantee schemes) from lowering the cost of risk-taking and encouraging moral hazard in other business lines. Third, it can reduce the complexity and possibly size of banking organisations, making them easier to manage, more transparent to outside stakeholders and easier to resolve; this in turn could improve risk management, contain moral hazard and strengthen market discipline. Fourth, it can prevent the aggressive risk culture of the riskier activities from infecting that of more traditional banking business, thus reducing the scope for conflicts of interest. In addition, some observers have noted that smaller institutions would reduce the risk of regulatory capture. All these mechanisms would also help to limit taxpayers' exposure to financial sector losses.

Beyond this basic similarity, structural reform initiatives differ in scope (*where* they draw the separation line) and strictness (how *thick* that line is); see Annex A for details.

The Volcker rule is narrow in scope but otherwise quite strict. It is narrow in that it seeks to carve out only *proprietary* trading while allowing market-making activities on behalf of customers. Moreover, it has several exemptions, including for transactions in specific instruments, such as US Treasury and agency securities. It is strict in that it forbids the coexistence of such trading activities and other banking activities in different subsidiaries *within* the same group. It similarly prevents investments in, and sponsorship of, entities that could expose institutions to equivalent risks, such as hedge funds and private equity funds. That said, it imposes very few additional restrictions on the transactions of banking organisations with other financial firms more generally (eg such as through constraints on lending or funding among them). However, it is worth remembering that the current US legislation does constrain the activities of depository institutions.²

The Liikanen Report proposals are somewhat broader in scope but less strict. They are broader because they seek to carve out both proprietary trading and market-making, without drawing a distinction between the two. They are less strict because they allow these activities to coexist with other banking business within the same group as long as these are carried out in separate subsidiaries. The proposals limit contagion within the group by requiring, in particular, that the subsidiaries be self-sufficient in terms of capital and liquidity and that transactions between the legal entities take place on market terms. Just like the Volcker rule, the proposals do not envisage significant restrictions between the protected banking unit and other financial firms, except that they require the separation of exposures to entities such as hedge funds and special investment vehicles (SIVs) in the trading entity.

The Vickers Commission proposals are even broader in scope but have a more articulated approach to strictness. They are broader in that they exclude a larger set of banking business from the protected entity, including also securities underwriting and secondary market purchases of loans and other financial instruments. A very

² For example, US regulation restricts banks' dealings with affiliates, which can be seen as a degree of ring-fencing. In particular, dealings between banks and their affiliates are limited and constrained by the Fed's Regulation W, which implements sections 23A and 23B of the Federal Reserve Act of 1933, which section 608 of the Dodd-Frank Act has substantially widened and strengthened. See Vickers (2012) for further details.

narrow set of retail banking business *must* be within the protected entity (retail deposit-taking, overdrafts to individuals and loans to small and medium-sized enterprises (SMEs)); and another set *may* be conducted within it (eg some other forms of retail and corporate banking, including ancillary operations to hedge risks to support them). The approach to strictness is more articulated because it involves both *intragroup* and *inter-firm* restrictions (the “ring fence”). As in the Liikanen Report, protected activities can coexist with others in separate subsidiaries within the same group but subject to intragroup constraints that are somewhat tighter, including on the size of the linkages.³ Moreover, a series of restrictions limit the extent to which the banking unit within the ring fence can interact with other financial sector firms. An in-depth exploration of the economic underpinnings of the reforms is provided in Vickers (2012).

A stylised comparison of selected structural reform proposals

Table 1

	Volcker	Liikanen	Vickers
Broad approach	Institutional separation of commercial banking and certain investment activities	Subsidiarisation: proprietary and higher-risk trading activity have to be placed in a separate legal entity	Ring-fencing: structural separation of activities via a ring fence for retail banks
Deposit-taking institution may:			
- deal as principal in securities and derivatives	No	No	No
- engage in market-making	Yes	No	No
- perform underwriting business	Yes ¹	Yes	Restricted
- hold non-trading exposures to other financial intermediaries	Unrestricted	Unrestricted	Restricted (inside the group)
Holding company with banking and trading subsidiaries	Not permitted	Permitted	Permitted
Geographical restrictions	No	No	Limitations for ring-fenced banks in the UK to provide services outside the European Economic Area

¹ Underwriting in response to client/counterparty demand.

Recent French and German reform proposals can be seen as adaptations of the Liikanen proposal. The new French banking law proposal adopts the subsidiarisation model, but allows the deposit-taking institution to carry out more activities, including market-making within limits. A new draft law on the separation of retail and some investment banking activities submitted to the German Parliament considers separation of retail banking if assets devoted to proprietary or high-frequency trading and hedge fund financing operations are relatively large in relation to the banks’ balance sheet.

³ In addition, a subsequent parliamentary commission has proposed “electrifying” the ring fence, giving the supervisory authority the power to request full separation (subject to Treasury override) in individual banking groups if the barrier does not work effectively there.

3. Implications for financial stability and systemic risk

Do the various structural regulatory initiatives strengthen financial stability? The mechanisms listed above have intuitive appeal. The question, though, is how far the various measures would be effective in realising the hoped-for benefits and whether they may have unintended side effects. While it is difficult to provide an answer, it is possible to lay out the relevant considerations.

From a financial stability perspective, a precondition for the initiatives to be helpful is that banks which combine commercial and securities business *are less safe or that their failure is more costly* to the community. The evidence suggests that the costs of failure of universal banks can be larger, since universal banking encourages size and complexity. The evidence on the probability of failure is much more indirect and mixed but, on balance, points in a similar direction. For instance, a general conclusion is that growing reliance on non-interest income – a very rough proxy for more investment banking-like activities – has not resulted in lower earnings volatility or a decline in bank systematic risk, as derived from stock market returns. Similarly, Box 1 provides tentative evidence that profits of somewhat more diversified banks are higher, but also more volatile. Moreover, risk diversification benefits appear to be mostly restricted to certain ranges of income sources or to geographical and loan portfolio diversification.

Against this backdrop, a number of questions about the design of structural regulation arise. A first question concerns *where the separation line is drawn*. Here, the philosophy behind the proposals is quite different. The Liikanen Report opts for combining proprietary trading and market-making activities on the grounds that the line between the two is too fuzzy and hard to enforce – a controversial issue with the Volcker rule in the United States. And the Vickers Report takes a very narrow view of the types of activity that need to be protected on the grounds that disruptions there can have a large impact on economic activity. Moreover, while the Vickers Report argues for more stringent capital requirements for the *protected* activities, on importance grounds, the Liikanen Report argues for potentially more stringent ones for the *trading* business (and possibly for real-estate related lending), on risk grounds.

It is not unequivocally clear that the concentration of trading activities in separate entities will enhance financial stability. These firms may have less stable, wholesale market-based funding structures, while still being highly interconnected with other parts of the global financial system. This could give rise to considerable contagion risk, as demonstrated by the repercussions of the failure of Lehman Brothers on global bank funding markets.

A second question concerns *the thickness of the line*. How effective is it in insulating the protected parts of the banking business? One typical criticism of allowing the activities to coexist within the same group is that, especially at times of stress, the line will prove not sufficiently strong as reputational considerations loom large. In turn, any expectation that the line will turn out to be ineffective would weaken market discipline. Moreover, only the Vickers Report proposes major additional restrictions on the interactions between the protected banking units and the rest of the financial system. Their effectiveness is yet to be tested.

A third question concerns the possibility of *sidestepping the line altogether*. The worry is that risky activities could migrate outside the regulatory perimeter. In fact, one reason why the Liikanen Report opts for subsidiarisation rather than full

separation is to limit this risk. Migration would be a worry if those activities proved to be systemic in nature.

All this puts a premium on effective resolution mechanisms. While structural separation may help resolvability, the benefits of the proposals do hinge on the adequacy of the resolution schemes in place. The Liikanen Report, for instance, suggests several complementary steps in this area. Effective resolution schemes are especially important if, contrary to expectations, the business lines left outside the protective umbrella result in systemic disruptions. In this case, the pressure to “bail out” the legal entities involved could be very strong: this would put taxpayers’ money on the line ex post and raise moral hazard concerns ex ante.

Yet another question concerns the interaction between national structural bank regulation and international banking regulation, such as Basel III. The two types of regulation differ in approach and scope. The latter takes banks’ business models as given and imposes capital and liquidity requirements that depend on the riskiness of a banking group’s business. The former imposes constraints on specific activities and types of business. From this angle, the two approaches can be seen as complementary. Indeed, certain aspects of structural regulation – restrictions on leverage for ring-fenced institutions – may reinforce elements of Basel III.

At the same time, there may be challenges. One risk, already alluded to, is that banks may shift activities outside the perimeter of consolidated regulation in response to structural regulation. Another risk is that structural regulation, especially if national approaches differ, will create business models that are difficult to supervise. For example, resolution strategies may be rather complex to design for globally operating banks that have to face increasing heterogeneity in permitted business models at the national level. Finally, structural regulation may lead to different capital and liquidity requirements for the core banking and trading entities within a single banking group. Although this may be intended, in practice it has implications for regulatory standards applied at the consolidated level.

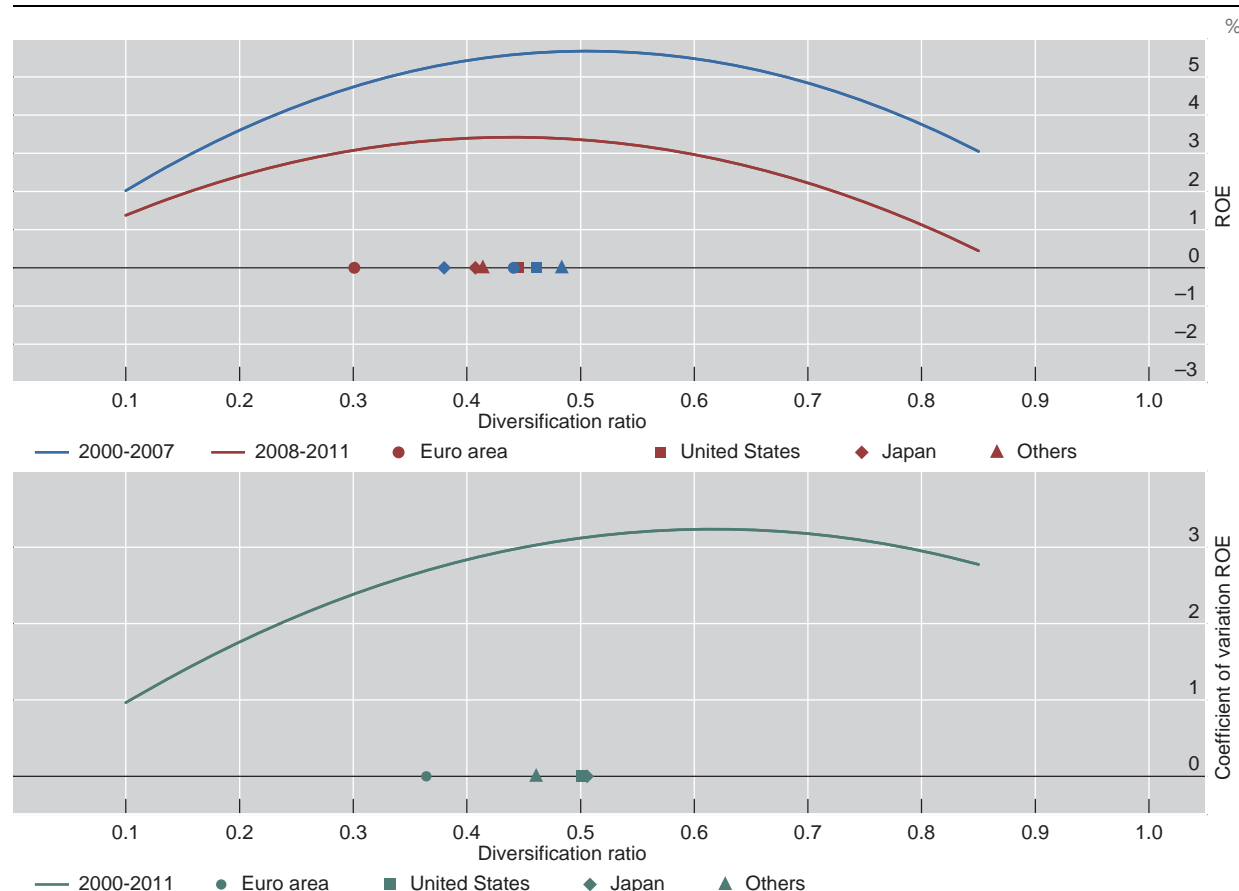
Some new evidence on risk diversification and economies of scope

This box presents some new preliminary evidence on the impact of combining different business lines on the risk-return profile of banking organisations. A novel aspect is that the analysis allows for the possibility of non-linear effects, so that the benefits may exist only within certain ranges. The evidence is based on a sample of 108 international diversified banks. Product differentiation is proxied by the ratio of non-interest income (trade revenues, fees and commissions for services) to total income. On balance, the evidence indicates that benefits do accrue up to a certain degree of diversification in terms of return on equity (ROE). However, bank profitability tends to be more volatile for more diversified banks (for details of the econometric analysis, see Annex B).

The two lines in the upper part of the graph below represent the result of a panel regression of bank ROE on the ratio of non-interest to total income (diversification ratio) and its square. The regression includes fixed effects for each bank, as well as a country*year interaction term to control for idiosyncratic and macro factors. The curves are drawn on the basis of the two estimated parameters. Blue refers to the pre-crisis period (2000–07), while red indicates the crisis period (2008–11). The symbols indicate average values obtained by grouping banks by jurisdiction in the two sub-periods. The results indicate that revenue diversification does increase ROE, but only up to a point, after which ROE declines. While the optimal mix may have shifted somewhat towards a smaller share of non-interest income in the post-crisis period, the results of this exercise suggest that economies of scope do exist only up to a certain degree of product diversification.

The green line in the lower panel represents the result of a cross-sectional regression of banks' coefficients of variation of ROE – a proxy for risk – on the diversification ratio, its square and country fixed effects. The green symbols indicate average values obtained by grouping banks by jurisdiction over the period 2000–11. The econometric analysis finds that ROE volatility also increases, up to a point, with revenue diversification, after which it declines again.

Link between revenue diversification and ROE



Sources: Bankscope; BIS estimates.

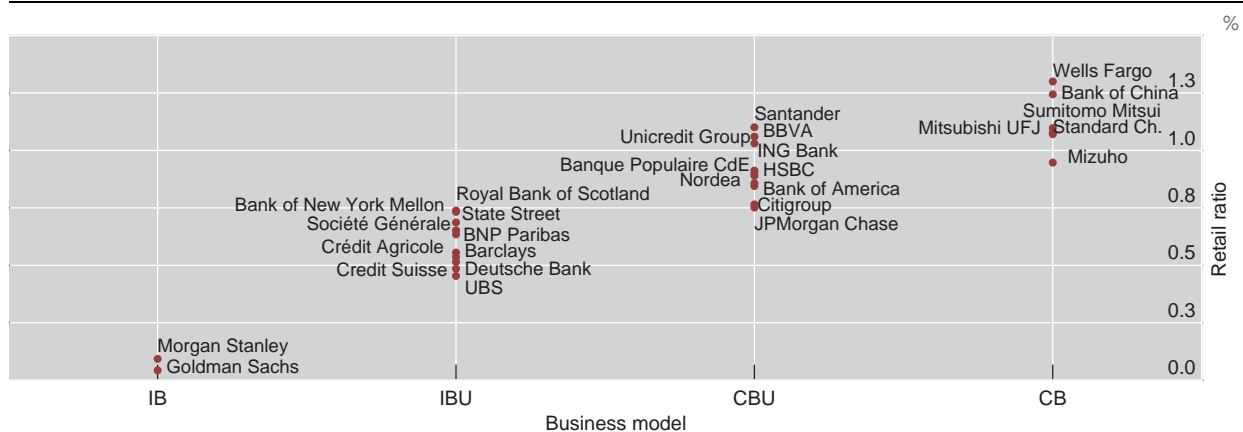
4. Implications for business models

Structural bank regulation would most directly affect the large banks that dominate global banking. These have very different business models. For example, the 28 global systemically important banks (G-SIBs) identified by the Financial Stability Board can be classified into two specialised and two universal banking-type business models, depending on the relative importance of their retail business (see Graph 1). To illustrate the different activities performed by these globally active banks, Graph 2 shows the development in their sources of income. In this section we analyse, in turn, the possible impact of the proposed reforms on business models in general and on banks' international operations in particular. An overview of the literature on the motivation for banks' business models is provided in Box 2.

G-SIBs distribution according to business model

Distribution as of end-2010

Graph 1



Retail ratio = (net customer loans + customer deposits) / total assets. The composition of the four groups is based on various factors, including significance of trading and derivatives business and funding structure characteristics. This explains why the three Japanese banks and Standard Chartered are classified as commercial banks (CB) and not as commercial banking-oriented universal banks (CBU), despite their retail ratios being lower than for some banks in the CBU group.

IB = investment banks: Goldman Sachs and Morgan Stanley.

IBU = investment banking-oriented universal banks: Bank of New York Mellon, Barclays, BNP Paribas, Crédit Agricole, Credit Suisse, Deutsche Bank, Royal Bank of Scotland, Société Générale, State Street and UBS.

CB = commercial banks: Bank of China, Mitsubishi UFJ FG, Mizuho FG, Standard Chartered, Sumitomo Mitsui FG and Wells Fargo.

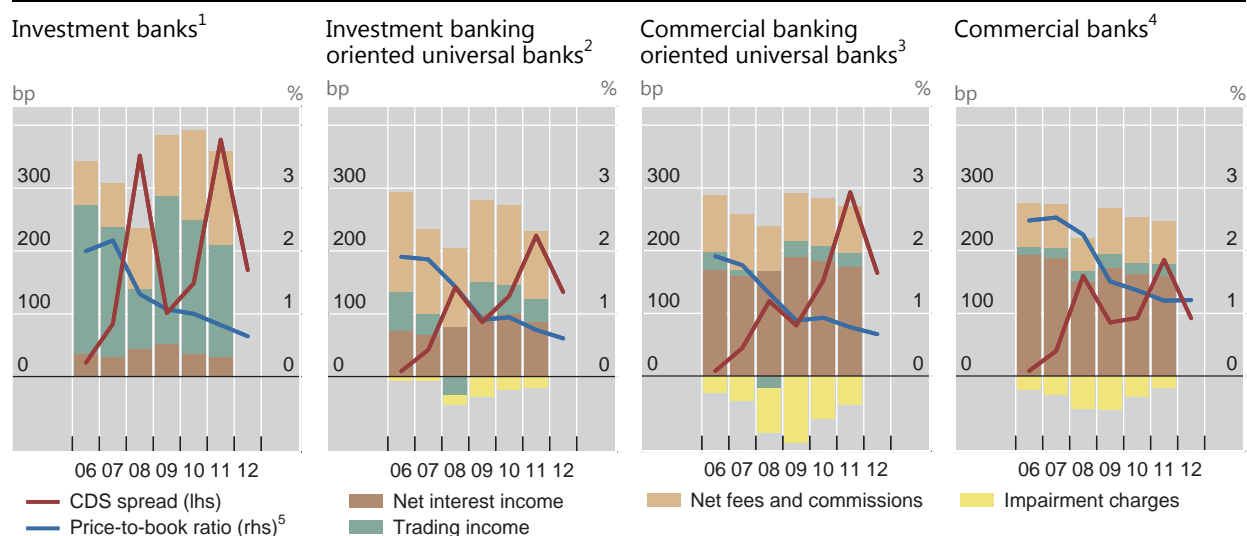
CBU = commercial banking-oriented universal banks: Bank of America, Banque Populaire CdE, BBVA, Citigroup, HSBC, ING Bank, JPMorgan Chase, Nordea, Santander and Unicredit Group.

Source: Merck Martel et al (2012).

Main income components

As a percentage of total assets

Graph 2



Simple averages across banking groups.

¹ Goldman Sachs and Morgan Stanley. ² Bank of New York Mellon, Barclays, BNP Paribas, Cr dit Agricole, Credit Suisse, Deutsche Bank, Royal Bank of Scotland, Soci t  G n rale, State Street and UBS. ³ Bank of America, Banque Populaire CdE, BBVA, Citigroup, HSBC, ING Bank, JPMorgan Chase, Nordea, Santander and Unicredit Group. ⁴ Bank of China, Mitsubishi UFJ FG, Mizuho FG, Standard Chartered, Sumitomo Mitsui FG and Wells Fargo. ⁵ Simple ratio, not in per cent.

Sources: Bankscope; Datastream; BIS estimates. For additional details on the composition of the groups, see Merck Martel et al (2012) and Graph 1.

Box 2

Literature review on determinants of different business models

The choice of business models is determined by several interrelated factors, including regulation, economies of scale and scope, and benefits derived from "too big to fail" (TBTF) status.

Banking theorists have traditionally argued that positive economies of scale and diversification benefits are inherent in the role of banks as delegated monitors (Diamond (1984)). Economies of scale reflect the potential reduction in unit costs that large banks may achieve by spreading fixed costs, particularly those for payment systems, market infrastructure and technology, over a large customer base. Fixed costs in banking can be sizeable. For example, the minimum fixed infrastructure costs for a full scale investment bank may be around USD 4 billion (Morgan Stanley and Oliver Wyman (2011)). The importance of scale economies has been well established for certain traditional banking services such as the provision and processing of payment transactions (Humphrey (2009)). Scale is also a defining characteristic in banks' capital market activities: the share of the three largest players in total trading volumes in various market segments (cash equities, fixed income, FX, structured products and listed derivatives) was between 60% and 80% in 2011 (McKinsey (2011)).

Economies of scope relate to efficiency gains realised by diversifying business activities across products and services, geographies or a combination of both. Cost economies of scope may be exploited by sharing joint costs such as for information technology over a greater range of activity lines. Revenue economies of scope result from cross-selling different products to customers. Diversified banks also may take advantage of potential internal capital and labour market efficiencies (Schmid and Walter (2009)).

Econometric assessments of the importance and significance of economies of scale and scope in banking differ greatly. Industry studies find substantial to very substantial benefits related to both size and diversification (IIF (2010); The Clearing House (2011, Annex C and D)). The argument is that larger banks and their scope for achieving greater diversification across business lines and geographies may realise significant synergies, promoting safer, more stable and ultimately more valuable banks. On this basis, structural bank regulation initiatives would imply

costs, not only for banks and their shareholders, but for the economy as a whole.

Empirical academic studies, however, generally have difficulties in establishing significant and substantial positive economies of scale and especially of scope in banking (Boot (2011); Hoenig and Morris (2012)). Regarding economies of scale, early studies find that these are mostly exhausted at relatively low total asset levels: accordingly, the maximum efficient size of commercial banks would be between USD 100 million and USD 25 billion (CGFS (2010, Annex C)). More recent studies – that consider output measures corrected for banks' risk – tend to find positive size effects for banks beyond the threshold of USD 100 billion in total assets. However, when taking into account TBTF implicit subsidies, eg lower funding costs for larger banks, these stronger results disappear (Haldane (2012)). At the same time, research does provide support for the conclusion that larger banks are riskier and are characterised by greater reliance on non-interest income and less stable funding structures (Demirgüç-Kunt and Huizinga (2011)).

Empirical research on scale economies faces various technical problems, notably specification and statistical ones (Hughes et al (2001); DeYoung (2010); Boot (2011); Boyd and Heitz (2011); Hughes and Mester (2011); Wheelock and Wilson (2012)). Hence, finding benefits may be elusive, in the sense that they may exist but are difficult to detect. Moreover, there are identification problems, such as managerial inefficiencies related to scale that may mask positive economies of scale. In addition, benefits derived from advances in information technologies may have become more apparent only recently. Finally, the sample size of very large banks is small, which puts obvious restrictions on research (DeYoung (2010)). This problem is exacerbated by the tremendous growth of banks in size, complexity and concentration over the past 15 years or so (Tarullo (2012)).

All in all, given the considerable degree of uncertainty in empirical work on economies of scale, proponents of size restrictions are not convinced of the existence of sufficiently large efficiency benefits that would make these restrictions economically suboptimal or even counterproductive. They fear that TBTF considerations will foster moral hazard and excessive risk-taking and that large banks may abuse market power. In this context, the mixed evidence on scale economies has led some to conclude that these efficiency gains are merely a "distraction", as the real issue is not size but a credible resolution of failing banks (DeYoung (2010); Boot (2011)). In contrast, others hold the view that economies of scale in banking not only exist but are significant and hence limits on bank size would have unintended consequences (Mester (2010)).

On economies of scope, there is a large body of research suggesting that product diversification has detrimental effects. This seems to be the case when commercial banks move into investment banking activities, but generally also for financial conglomerates diversifying into even broader activities including insurance (Annex D). Diversification of product lines has been associated with significant increases in risk, both at the banking sector and overall financial system levels (Fiordelisi and Marques-Ibanez (2013)). Positive effects are mostly restricted to geographic and loan portfolio diversification.

In addition to economies of scale and scope, banks' business models have been driven by regulation, or more precisely deregulation (Borio and Filosa (1994)). The easing of restrictions on business lines within traditional banking and on other activities, such as investment banking, asset management and insurance, has promoted the development of diversified banks. In fact, of the 28 G-SIBs that have so far been identified, 20 can be classified as universal banks (Graph 1). The trend of functional diversification adopted by most large global banking groups is intertwined with increased consolidation and concentration of financial services into fewer, much larger and more complex banking conglomerates (Buch and DeLong (2010); Herring and Carmassi (2010); Boot (2011)).

Given the mixed evidence on the importance and significance of economies of scale and scope, the business model of large and complex global banking organisations may have been, at least partly, induced by regulatory considerations. In this context, obtaining the status of "too big to fail" may have played a role. Empirical research on this issue overwhelmingly finds significant benefits for banks that are potential TBTF candidates.

Overall, then in the academic literature, results on the importance of TBTF status are rather strong, while those on positive economies of scope are generally weak. Evidence from studies on economies of scale is somewhere in between.

The structural bank regulation initiatives currently being implemented (Volcker rule) or considered (Vickers and Liikanen proposals) generally reduce scope economies and attempt to eliminate implicit TBTF subsidies; explicit size restrictions are not part of the original proposals. The scope for banks to exploit economies of scale will depend in particular on actual or potential restrictions on size imposed by other regulatory frameworks, such as the leverage rule in Basel III. At this juncture, possible explicit size restrictions as part of further structural reforms are being discussed with greater intensity in the public domain (see, for example, Fisher (2013); Haldane (2013)).

4.1 Business models: general operations

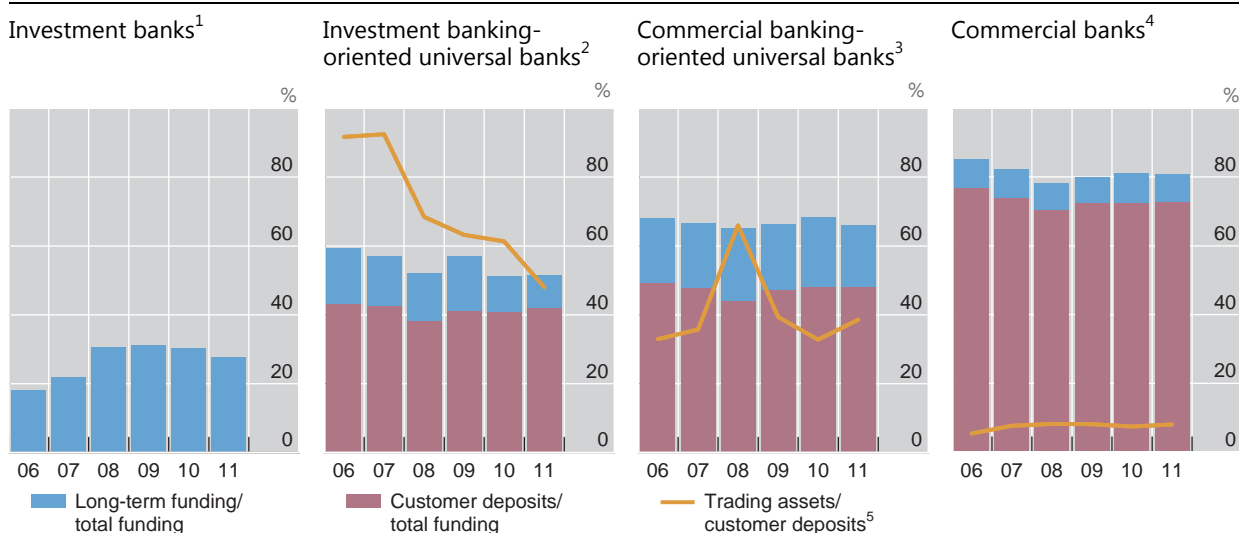
An obvious intended effect of the reforms would be to *lead to less diversified banks*, although diversification may be retained at the group level whenever subsidiarisation is allowed. This could have a significant impact on the profits of individual institutions. For instance, for the investment banking-oriented universal banks shown in Graph 2, trading accounted on average for about one seventh to one eighth of their income in the past few years.

To some extent, structural regulation is likely to reinforce existing market pressure and managements' efforts under way. As the blue lines in Graph 2 show, price-to-book ratios for investment banks and "mixed" business models are much lower than those for "pure" commercial banks. In part, this reflects low equity valuation levels for European banks against the backdrop of difficult economic conditions in their home markets. But it may also indicate investor scepticism regarding the benefits of the more encompassing models, not least owing to their complexity and opacity.

There is also evidence of adjustments in bank funding and liquidity management practices that work in the same direction as structural reform proposals. These include, in particular, greater reliance on subsidiaries for local funding and market-based pricing of intragroup funding (CGFS (2010a)). The latter trend may *reduce the volume of trading activity* by raising the cost of holding trading assets. This may be particularly relevant for the two groups of universal banks shown in the middle panels of Graph 3, which combine a substantial share of deposit funding with relatively large trading books.

Stable funding ratio by source

Graph 3



¹ Goldman Sachs and Morgan Stanley. ² Bank of New York Mellon, Barclays, BNP Paribas, Crédit Agricole, Credit Suisse, Deutsche Bank, Royal Bank of Scotland, Société Générale, State Street and UBS. ³ Bank of America, Banque Populaire CdE, BBVA, Citigroup, HSBC, ING Bank, JPMorgan Chase, Nordea, Santander and Unicredit Group. ⁴ Bank of China, Mitsubishi UFJ FG, Mizuho FG, Standard Chartered, Sumitomo Mitsui FG and Wells Fargo. ⁵ All securities classified as held for trading, excluding derivatives.

Sources: Bankscope; BIS estimates.

The potential partial withdrawal from market activities has raised concerns about *the impact on market liquidity*,⁴ also in markets outside the countries where banks are headquartered (see below). That said, the impact is hard to assess.⁵ On the one hand, even if the scaling-down of banks' involvement did reduce liquidity, new entrants could fill the void. If so, liquidity may be restored or even enhanced in the medium to long run. On the other hand, size is important for liquidity provision, and prospective new market players could face significant hurdles. In any case, from a financial stability perspective, what matters is that market liquidity be robust at times of stress. Experience has shown that liquidity may be artificially high if underpinned by excessive risk-taking. If structural bank regulation initiatives resulted in more prudent and sounder institutions, they would also help ensure that market liquidity was better priced and more robust.

The reforms could also *lead to smaller institutions*. To be sure, powerful incentives to grow would still be present. Regardless of whether economies of scale exist (see below), other motives to increase size would not go away. Apart from ubiquitous managerial ambitions, "too big to fail" considerations may be a factor. Empirical research overwhelmingly finds significant funding cost advantages for banks that are regarded as too big to fail. That said, the various restrictions would tend to hinder expansion.

What would all this imply for banks' profitability and unit costs? The Vickers Report lists several costs arising from ring-fencing, including banks' direct operational costs and higher cost of capital and funding. At the same time, it may be possible for banks to still spread fixed costs across the whole banking group, for instance for IT infrastructure.

Overall, the actual costs would importantly depend on bank-specific factors. Indeed, analysts' estimates of potential costs are in the order of £2 billion up to £10 billion for the major UK banks, with an average estimate of around £6 billion. This is equivalent to approximately 0.1% of the funded assets, 33% of the pre-tax profit and 10% of the profit before tax and staff costs of the largest UK banks.

4.2 Business models: international activities

Structural regulation may affect the international activities of universal banks through at least three channels.⁶ First, initiatives seeking to protect depositors and cut the cost of the official safety net within the home country jurisdiction may create disincentives for global banking. In particular, the Vickers Report seeks to restrict government support to retail banking and payment services with the European Economic Area.

⁴ See eg Oliver Wyman and SIFMA (2011) and Duffie (2012).

⁵ Literature on the costs and benefits of limiting banks' participation in market-making and underwriting is relatively scarce (FSOC (2011)). Some studies find advantages in underwriting activities being conducted by diversified universal banks (Drucker and Puri (2005)), while others see specialised investment banks better equipped for this role (Focarelli et al (2011)). Boot and Ratnovski (2012) argue against underwriting restrictions, as ample empirical evidence points to synergies between lending and underwriting.

⁶ Explicit geographical restrictions are included only in the Vickers Report, which stipulates limitations for ring-fenced (retail) banks in the United Kingdom providing services to clients outside the European Economic Area. Their impact on the global operations of UK banks is not clear, as these may be served by other entities of the group located outside the United Kingdom.

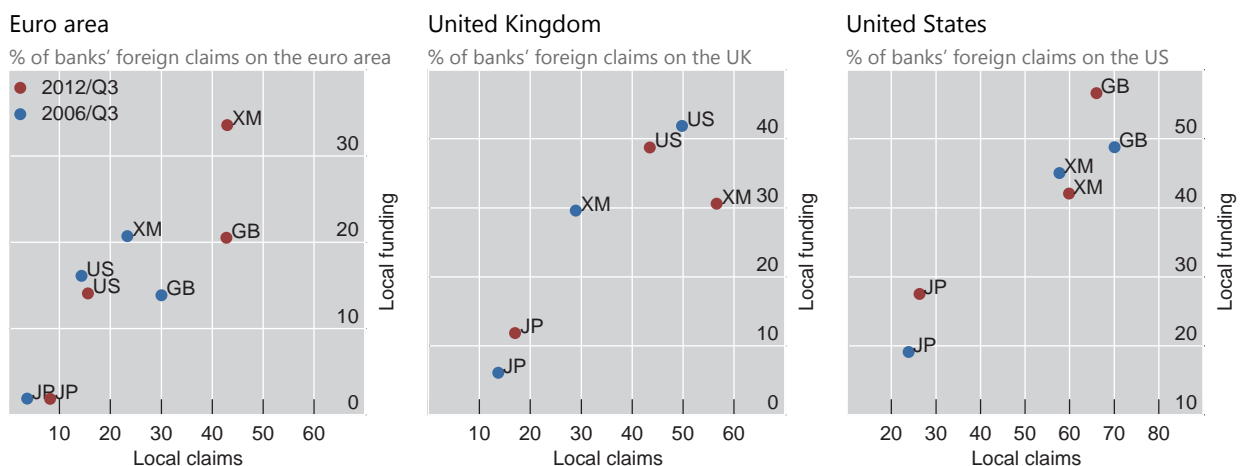
Second, restrictions that raise the cost of trading activities will affect banks that have large international trading operations. This may be because of the reduced ability to fund them via deposits or to combine proprietary trading with market-making. For example, national authorities in several jurisdictions have expressed some concerns about the cross-border effects of the Volcker rule, fearing that a pullback of US banks could reduce the liquidity in their government bond markets.

Third, ring-fencing and subsidiarisation may constrain the allocation of capital and liquidity within a globally operating banking group. These restrictions would add to the supervisory responses in several countries that aim to increase the self-sufficiency of foreign subsidiaries by tightening local liquidity and/or capital requirements.

Through these channels, structural regulation may contribute to a fragmentation of banking markets along national lines. This may reinforce the longer-term trend towards *multinational* banking, characterised by banks largely matching assets and liabilities in subsidiaries in multiple jurisdictions, as opposed to operating directly across borders or relying on inter-office transfers – sometimes referred to as the *international* banking model (McCauley et al (2010)). Business models for global banking are analysed in more detail in Box 3.

Characterisation of global banking business models

Graph 4



Foreign claims comprise cross-border claims and local claims in both local and foreign currencies. Local claims refer to credit extended by banks' foreign offices to residents of the host country. Horizontal axis: local claims are calculated as total claims extended by banks' foreign offices to residents of the host country (euro area, United Kingdom or United States), divided by their total foreign claims on the host country axis: local funding measures the degree of local funding (ie funding obtained in the host country) of local claims, expressed as a percentage of total foreign claims. Banks are classified according to the nationality of their headquarters: GB = United Kingdom; JP = Japan; US = United States; XM = euro area. In the left-hand panel XM represents activity of euro area banks in other euro area countries than those where they are headquartered.

Source: BIS consolidated banking statistics (immediate borrower basis).

Banks' current business models provide a sense of the possible size and direction of the adjustment. Graph 4 compares the size of local claims (how much of the foreign lending is done on-site in the host country, x-axis) with that of local funding (how much of these operations are funded locally, y-axis) for various home country banking systems vis-à-vis the euro area, the United Kingdom and United States. Least affected would be the banks that already tend to operate the multinational model, such as those from the euro area and United Kingdom that

occupy the top right-hand corner of the panels in Graph 4. These banks have increased both local claims and funding in the euro area considerably since 2006, while euro area banks expanded their local claims on UK residents as well. Banks that rely more on cross-border lending and funding, such as Japanese banks, located in the bottom left-hand corner, would be more affected. Qualifying this generalisation is the fact that banks from the same home country often follow different approaches when lending to borrowers in the euro area, the United States and the United Kingdom. In particular, more banking systems match assets and funding in the United States, especially euro area and UK banks. Operations vis-à-vis the euro area show a somewhat more heterogeneous pattern, and it is not clear that the Liikanen or French/German structural reforms would disturb this heterogeneity.

Banking systems with low percentages of funds obtained in the host country (eg low levels of local funding) seem especially exposed to subsidiary self-sufficiency requirements. In this context, several European banking systems have sizeable funding gaps in the United States. That said, their operations there may well be more affected by portions of Dodd-Frank than by the Volcker rule per se.

Eventually, the size and direction of adjustment will depend on how structural regulation affects the relative profitability of specific activities in a jurisdiction. Especially in mature financial systems with relatively intense competition and narrow margins, even modest changes could have significant effects.

As it is rather difficult to anticipate potential trade-offs between local and cross-border operations, the domestic versus global orientation (columns) of various banking systems (rows) is shown in Table 2. This table allows for a comparison between total foreign claims (local plus cross-border lending) of banks from a particular country (nationality of headquarters) on borrowers in various foreign countries and those on borrowers in the home country. It shows that Swiss banks are by far the most globally oriented, with only 46% of their total assets consisting of claims on borrowers in Switzerland. In contrast, Italian banks have 86% of their total claims on domestic borrowers. The figures also indicate important differences in the total foreign exposures of national banking systems to the euro area, the United Kingdom and the United States. The three largest for each of them are respectively (in brackets as a percentage of total assets): Swedish (14%), Dutch (13%) and Swiss (10%) banks; Spanish (8%), Swiss (6%) and US (5%) banks; and Swiss (23%), Canadian (18%) and UK (10%) banks. Hence, there is also considerable heterogeneity in the potential sensitivity of banks' total foreign exposures to structural bank regulation initiatives in the United States, United Kingdom and euro area.

Bank assets, by banking system and ultimate borrower¹

Table 2

Nationality of headquarters	Location of ultimate borrower													Sum	Memo: euro area ²		
	Austria	Australia	Belgium	Canada	Switzerland	Germany	Spain	France	Italy	Japan	Netherlands	Sweden	United Kingdom			United States	Other
Austria	70.2	0.0	0.2	0.1	0.8	3.0	0.2	0.8	1.2	0.1	0.8	0.1	1.2	0.7	20.7	100.0	9.8
Australia	0.0	74.3	0.0	0.7	0.3	0.7	0.0	0.3	0.0	0.8	0.3	0.1	4.7	3.1	14.5	100.0	1.6
Belgium	0.1	0.1	79.6	0.1	0.1	1.0	0.7	2.1	0.8	0.1	1.7	0.0	2.3	1.8	9.5	100.0	9.1
Canada	0.0	0.6	0.1	72.0	0.1	0.6	0.1	0.5	0.1	0.4	0.4	0.1	2.8	17.6	4.7	100.0	2.1
Switzerland	0.3	1.0	0.3	0.8	46.1	2.6	0.6	1.9	0.7	2.6	1.3	0.3	5.9	22.9	12.7	100.0	10.4
Germany	0.6	0.2	0.2	0.2	0.6	77.5	1.0	1.6	1.0	0.4	1.3	0.3	3.8	4.2	7.0	100.0	8.3
Spain	0.1	0.1	0.1	0.0	0.1	1.0	74.4	0.5	0.5	0.1	0.4	0.0	7.5	3.6	11.4	100.0	4.1
France	0.1	0.1	1.8	0.1	0.4	1.4	0.8	80.1	2.5	0.5	1.2	0.2	1.6	3.1	5.9	100.0	9.4
Italy	1.7	0.0	0.1	0.1	0.2	4.4	0.4	0.8	85.6	0.0	0.3	0.0	0.9	0.5	5.1	100.0	8.8
Japan	0.0	0.8	0.1	0.4	0.2	0.8	0.1	0.9	0.2	82.9	0.3	0.1	1.0	7.5	4.7	100.0	2.9
Netherlands	0.2	1.9	2.9	1.2	0.3	4.4	1.3	1.7	0.8	0.4	70.4	0.1	3.2	4.0	7.0	100.0	12.7
Sweden	0.1	0.1	0.1	0.1	0.3	4.2	0.1	0.4	0.1	0.0	0.5	58.3	2.3	5.4	28.1	100.0	13.5
United Kingdom	0.1	0.7	0.2	1.0	0.7	2.7	0.7	2.1	0.4	1.3	1.4	0.1	62.7	9.9	16.0	100.0	9.2
United States	0.1	0.9	0.2	1.0	0.7	1.7	0.4	1.7	0.3	3.0	0.8	0.2	4.9	74.5	9.7	100.0	5.9

¹ Each row shows that banks headquartered in a particular country (nationality) hold claims on borrowers in their home country (diagonal elements) and on borrowers in other jurisdictions (columns), and expresses these vis-à-vis country exposures as shares of total assets at end-2007. (For example, the number 3.6 in row France and column Germany means that 3.6% of French banks' total assets consist of claims on German borrowers). To simplify the construction of the weighted macroeconomic indices, exposures on countries outside the sample (column Other) are added to home country exposures. ² Excluding parent country borrowers.

Sources: ECB; IMF *International Financial Statistics*; BIS consolidated banking statistics on an ultimate risk basis, own calculations.

Business models for global banking

Global banking has expanded markedly over the past 30 years (CGFS (2010b)). This process has been driven mainly by macro factors, of which changes in the regulatory environment both in home and host countries have been especially important. Ongena et al (2012) show that lower barriers to entry, tighter restrictions on bank activities and, to a lesser degree, higher minimum capital requirements in domestic markets are associated with lower bank lending standards abroad. Houston et al (2012) find that banks in countries with more activity restrictions, more stringent capital regulations, higher disclosure requirements, stronger external audit, more powerful and independent supervisory agencies and more stringent loan classifications are more likely to expand abroad by establishing subsidiaries and/or branches. Fidrmuc and Hainz (2013) report evidence suggesting that even small differences in financial regulation between countries may lead to one-way flows of cross-border lending. Müller and Uhde (2013) show that arbitraging on costs arising from different regulatory requirements between home and host countries may be a significant determinant of cross-border lending to emerging markets.

The various structural bank regulation initiatives will fundamentally affect the regulatory frameworks in the countries concerned, both from the home and host perspective. Hence, potentially, they may have important repercussions for the business models that banks have adopted for the globalisation of their activities (see Table 3).

Different lending and funding strategies in global banking

Table 3

Banking system	Strategies	Euro area	UK	US
German banks	Lending: Funding:	Strongly international Strongly centralised	Multinational Strongly centralised	International Strongly centralised
French banks	Lending: Funding:	Multinational Strongly centralised	Strongly international Strongly centralised	Multinational Decentralised
Italian banks	Lending: Funding:	Multinational Decentralised	Strongly international Strongly centralised	International Strongly centralised
Spanish banks	Lending: Funding:	Multinational Hybrid	Strongly multinational Strongly decentralised	Strongly multinational Strongly decentralised
Dutch banks	Lending: Funding:	Multinational Decentralised	Strongly international Strongly centralised	Strongly multinational Hybrid
Belgian banks	Lending: Funding:	Strongly international Strongly centralised	Strongly international Strongly centralised	Strongly international Strongly centralised
UK banks	Lending: Funding:	International Strongly centralised	-	Multinational Decentralised
Swiss banks	Lending: Funding:	Strongly international Strongly centralised	International Strongly centralised	Strongly multinational Decentralised
US banks	Lending: Funding:	Strongly international Strongly centralised	International Centralised	-
Japanese banks	Lending: Funding:	Strongly international Strongly centralised	Strongly international Strongly centralised	Strongly international Strongly centralised

Note: The table reports an overview of the strategies adopted by national banking systems in global intermediation. Foreign claims comprise cross-border claims (such as lending from a bank's HQ to borrowers abroad) and local claims. The latter refer to credit in local and foreign currencies extended by banks' foreign offices to residents of the host country. On the lending side, we have considered five possible models characterised by an increasing intensity of lending supplied locally in the host country: (i) "Strongly international": local claims < 30% foreign claims; (ii) "International": local claims between 30% and 45% of foreign claims; (iii) "Hybrid": local claims between 45% and 55% of foreign claims; (iv) "Multinational": local claims between 55% and 70% of foreign claims; (v) "Strongly multinational": local claims > 70% of foreign claims. On the funding side, we have considered five possible models characterised by an increasing intensity of local funding in the host country: (i) "Strongly centralised": local funding < 30% foreign claims; (ii) "Centralised": local funding between 30% and 45% of foreign claims; (iii) "Hybrid": local funding between 45% and 55% of foreign claims; (iv) "Decentralised": local funding between 55% and 70% of foreign claims; (v) "Strongly decentralised": local funding > 70% of foreign claims. Local claims and funding refer to positions in local currency, except for US banks, where they refer to positions in all currencies.

Source: BIS international consolidated banking statistics on an immediate borrower basis.

Several business models can be distinguished in global banking (McCauley et al (2010)). Multinational banks operate sizeable foreign branches and subsidiaries in multiple jurisdictions. In their extreme form, they also fund these positions locally in the host countries. International banks predominantly conduct cross-border business from their home country. Hence, they have limited local business activity in host countries. Banks also differ in the degree to which they fund their operations locally in the host countries (decentralised model and high degree of local intermediation) or through internal capital markets from their main offices (centralised model and low local intermediation). The latter markets are important funding mechanisms for large and globally active banks and played an important role in their international liquidity adjustments during the financial crisis (De Haas and Van Lelyveld (2010); Klein and Saidenberg (2010); CGFS (2010a); Cetorelli and Goldberg (2012)).

Multinational models with relatively low local funding seem especially vulnerable to “self-sufficiency” regulations. To indicate the varying impact of changes in regulation, Table 3 summarises the global lending and funding strategies of various banking systems. Those that are characterised by relatively large local lending operations (multinational model) funded cross-border (centralised model) may have significant local funding gaps, defined as the difference between local lending and funding in a particular host country. Hence, in case “self-sufficiency” requirements would become more stringent, these banks would have to change their strategies and obtain more local funding or reduce their local lending.

5. Conclusions

A number of jurisdictions are considering whether to implement regulations that impose restrictions on the scope of banking activity, or have already taken concrete steps towards doing so. These initiatives include the so-called Volcker rule in the United States, the proposals of the Vickers Commission in the United Kingdom and the European Commission’s Liikanen Report. Draft legislation on structural bank regulation is underway in Germany and France.

The proposals for structural bank regulation break with the conventional wisdom that the banking sector’s efficiency and stability stands only to gain from the increased diversification of banks’ activities. Rather, structural bank regulation sees the combination of commercial banking and certain types of capital market-related activities as a source of systemic risk. The common element of all the proposals is to restrict universal banking by drawing a line somewhere between “commercial” and “investment” banking businesses. Hence, the various initiatives on structural bank regulation aim at changing how banks organise themselves.

Structural bank regulation initiatives are designed to reduce systemic risk in several ways. First, they can shield the institutions carrying out the protected activities from losses incurred elsewhere. Second, they can prevent any subsidies supporting the protected activities (eg central bank lending facilities and deposit guarantee schemes) from cutting the cost of risk-taking and inducing moral hazard in other business lines. Third, they can reduce the complexity and possibly the size of banking organisations, making them easier to manage, more transparent to outside stakeholders and easier to resolve.

However, the initiatives also raise some challenges. One risk is that banks may respond to the reforms by shifting activities beyond the perimeter of consolidated regulation. In fact, one reason why the Liikanen Report opts for subsidiarisation rather than full separation is to reduce this risk. Migration would be a concern if these activities proved to be systemic in nature.

Second, structural regulation may, through various channels, affect the international activities of universal banks in particular. For example, disincentives for global banking may be created by initiatives seeking to protect depositors and cut the costs of the official safety net within the home country jurisdiction. Moreover, ring-fencing and subsidiarisation may constrain the allocation of capital and liquidity within a globally operating banking group. Through these channels, structural regulation may contribute to a fragmentation of banking markets along national lines.

A third risk is that structural regulation may create business models that are, in fact, more difficult to supervise and resolve. For example, resolution strategies may be rather complex to design and implement for globally operating banks that have to face increasing heterogeneity in permitted business models at the national level.

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Annex A: Additional details of structural reform proposals⁷

The Volcker rule

On 21 July 2010, President Obama signed into law the Dodd-Frank Wall Street Reform and Consumer Protection Act (the Act). Section 619 – the “Volcker rule” – prohibits deposit-funded, licensed commercial banks in the United States, or bank holding companies (BHCs) with US affiliates, from engaging in proprietary trading and investing in or sponsoring hedge funds and private equity funds.

The prohibition on propriety trading and investing in or sponsoring hedge funds and private equity funds applies to:

- FDIC-insured depository institutions and entities that own them (eg BHCs).
- Foreign banks or BHCs that have a US bank branch or subsidiary.
- Any affiliate (ie at least 25% of common control) of the above institutions.

The prohibition on proprietary trading applies to engaging as principal in a transaction to buy or sell any security, derivative or futures or forward contract, and any option on such securities, derivatives or contracts.

However, there are a number of exceptions to the rule, including the following:

- Transactions involving bank-eligible securities (defined to include US Treasury debt or agency securities, eg debt issued by Fannie Mae or Freddie Mac).
- Transactions in connection with underwriting or market-making activities in response to client/counterparty demand.
- Hedge transactions.
- When acting as agent for customers.
- Transactions in connection with securitisation or sale of loans.
- Proprietary trading conducted by non-US subsidiaries or branches of non-US banks or BHCs.

The same exemptions apply to the prohibition on acquiring or maintaining any equity, partnership or other ownership interest in, or sponsoring, a hedge fund or private equity fund. Funds organised and offered as part of trust, investment advisory or fiduciary operations are permitted provided that they are restricted to the lesser of 3% of total fund assets or 3% of the bank’s Tier 1 capital.

While there are parallels between the Volcker rule and the Glass-Steagall prohibitions in Banking Act 1933, the Volcker rule prohibits fewer principal dealing activities than did the Banking Act 1933 and allows full securities underwriting by a subsidiary within the bank holding company.

⁷ This overview draws extensively on FSB (2012).

The UK Independent Commission on Banking (Vickers Commission) and the Vickers Report

On 12 October 2012, the UK government published the draft Financial Services (Banking Reform) Bill, to implement the recommendations of the Independent Commission on Banking, chaired by Sir John Vickers. The UK government introduced "The Banking Reform Bill" to parliament on 4 February 2013.

Under the Vickers Commission proposals, each banking group headquartered in the United Kingdom would be required to "ring-fence" critical banking services whose temporary interruption would have a significant direct impact on the domestic economy, in particular on households and small and medium-sized enterprises (SMEs).

Within its own group, the ring-fenced bank will need to be a separate legal entity with at least half of the board of directors independent of the rest of the group. It should be able to meet capital and liquidity requirements on a standalone basis. Higher capital requirements will be applied to ring-fenced entities.

Ring-fencing has two dimensions, referred to in the Vickers Report as "location" and "height". The former refers to the designation of which services should be in and which should be outside the ring-fenced entity. The latter refers to the permitted relationship between the ring-fenced entity and other financial institutions, both inside and outside the same group.

With respect to the location of the ring fence, the UK government plans to mandate that certain financial services should only be provided by a ring-fenced entity: these are primarily the taking of retail deposits and the provision of overdrafts to individuals and SMEs. Certain other services will be excluded from ring-fenced banks, particularly those which impede resolution and/or increase a ring-fenced bank's exposure to shocks from financial markets. Activities which ring-fenced banks will be prohibited from conducting include any services provided outside the European Economic Area and the following:

- Origination, trading or lending of or market-making in securities (including structured investment products) or derivatives.
- Secondary market purchases of loans and other financial instruments.
- Conduit financing or securitisation of assets originated outside the ring-fenced bank.
- Underwriting of securities issues.

With respect to the height of the ring fence, the UK government proposes that ring-fenced banks should be prohibited from entering into any transaction with a financial institution that results in an economic exposure to that institution, other than for the purposes of:

- Facilitating payments for other financial institutions.
- Managing liquidity (where ring-fenced banks may place deposits with other financial institutions and hold claims as part of their liquidity resources, as approved by the regulator).
- Acting as derivatives counterparties for the purposes of ring-fenced banks' risk management (subject to certain safeguards).

The regulator will also impose limits on large exposures, intragroup transactions and intragroup funding (for example, limits on the proportion of the ring-fenced banks' funding that is derived from the rest of the group.)

The Vickers Commission proposed the ring-fencing of UK banks' retail operations without going as far as to require full institutional separation of commercial from investment banking, as it recognised that there were financial stability benefits arising from the diversification of business lines and activities; it argued that a diversified financial group would be better placed to absorb shocks arising from either the capital markets or the real economy than would standalone entities. For this reason, the Vickers Commission decided not to recommend the complete separation of trading activities from commercial banking, but instead to require domestic deposit-taking activities to be placed inside a ring-fenced entity which could nonetheless be part of a diversified financial group, and recommended a higher level of capital for ring-fenced activities. The Commission also concluded that there were difficulties in applying the Volcker rule's distinction between proprietary trading and hedging activities and therefore proposed a narrow definition of the range of activities that would be permitted within the ring-fence, principally domestic deposit-taking and lending to households and SMEs. The extent to which certain simple hedging instruments (eg interest rate swaps) may be permitted within the ring fence has emerged as one of the main issues in designing proposals to implement the Vickers Commission's recommendations.

On 19 December 2012, the Parliamentary Commission on Banking Standards issued a pre-legislative scrutiny of the Vickers Commission's proposals that included a recommendation that the ring fence be "electrified", ie that banks be given a disincentive to test the limits of the ring fence. The UK government plans to have all legislation enacted by 2015, and reforms will be in place by 2019.

The Liikanen Report

The High-Level Expert Group on reforming the structure of the EU banking sector was established by EU Commissioner Michel Barnier in February 2012, and reported in October 2012. Its main task was to assess whether additional reforms directly targeted at the structure of individual banks would further reduce the probability and impact of failure, ensure the continuation of vital economic functions upon failure, and better protect vulnerable retail clients.

The Liikanen Report contains recommendations which have some similarities with those of the UK Vickers Commission. However, in contrast to the Vickers approach, which aims to carve out domestic deposit-taking activities and to ring-fence them with a separately capitalised subsidiary, Liikanen aims to carve out proprietary trading and all assets, liabilities and derivatives positions incurred in the process of market-making from other banking activities. It accordingly recommends that these should, with only certain exceptions, be assigned to a separate legal entity and carried out on a standalone basis and separate from the deposit-taking bank. Exposures to hedge funds and special investment vehicles (SIVs) as well as private equity investment would also need to be assigned to a separate trading entity. The trading entity would not be allowed to fund itself with deposits and would not be permitted to provide retail financial services. If the amount of trading assets and assets held for sale exceed 15–25% of a bank's total assets or are above a minimum €100 billion threshold, a second stage examination will be imposed on

the bank. In this stage it will be investigated in greater detail if assets will have to be separated, based on a quantitative threshold to be calibrated by the Commission.

Although the Liikanen proposals would allow the universal banking model to continue, it would no longer be possible to conduct a wide range of financial activities in a single legal entity. Instead, universal banks would be required to adopt a holding company structure with separately capitalised subsidiaries conducting banking and trading activities.

The Liikanen group proposed that trading and market making activities should be allowed to remain within the same group structure as deposit-taking to prevent them migrating to the unregulated sector. Placing such activities within a common holding company structure would ensure that they remained subject to supervisory oversight and to regulatory requirements applied on a consolidated basis to the group as a whole. By transferring both trading and market-making to a separate entity, the Liikanen group also aimed to avoid the difficulty of drawing the boundary between proprietary trading and other types of financial activity that has emerged as one of the Volcker rule's main implementation challenges. In contrast to the case for complete separation, the Liikanen group also argued that the coexistence of certain activities within the same group would create several advantages: it would limit the scope for investment banking activities to migrate to the unregulated shadow banking sector, while still facilitating resolution and simplifying risk management.

Lending to companies and consumers, mortgage issuance, and wealth or asset management would all be allowed to remain with the deposit-taking entity within the group. Hedging for non-bank clients, eg foreign exchange or interest rate swaps, would also not need separation. In this respect, the Liikanen Report is less restrictive than the Vickers Report in terms of the activities it would allow domestic deposit-taking entities to undertake. However, while the presumption is to allow deposit-takers to engage in a wide range of activities such as lower-risk trading (in particular, securities underwriting), the Liikanen Report also suggests that the activities of the deposit-taking institution could be made narrower on a case by case basis if required by an individual bank's recovery and resolution plan. As with the Vickers proposals, it would be necessary to place limits on intragroup bank exposures between the deposit bank and trading entity. These would be in line with standard "arm's length" large exposure limits.

Liikanen recommends an assessment of the Basel Committee's trading book review to consider whether the resulting capital requirements will be sufficient to address trading arms of EU banks. The report also suggests a review on capital requirements on real estate related lending.

The Liikanen Report, which was published on 2 October 2012, is currently the subject of public consultation by the European Commission.

French law initiative on separation and regulation of banking activities

On 19 December, the French Ministry of Finance presented a draft law that reforms the regulatory framework for banking supervision, introduces a bank resolution framework and places restrictions on certain "speculative activities". In particular, banks will be asked to create a separate subsidiary in order to undertake speculative activities including proprietary trading and financial operations creating non-collateralised counterparty risks with leveraged investment trusts (ie hedge funds)

and other similar investment vehicles, when these activities exceed a specific level (to be specified by the Ministry of Finance).

However, as an exception, the deposit-taking part of the bank can continue to conduct the following activities:

- Provision of trading services to clients.
- The bank's hedging activities.
- Market-marking, within certain limits (depending on how strict the limits will be, this could represent a difference with the recommendations of the Liikanen Report).
- The bank's treasury management.
- The Bank's investment operations (investment in securities with a long-term holding horizon).

In addition, the French law stipulates that the subsidiary hosting the speculative activities will be banned from engaging in high-frequency trading and speculating on agricultural commodity derivatives. This is motivated by the perceived negative impact of these two activities on the real economy.

German banking law proposal

Along the lines of the Liikanen proposals, on 6 February 2013 the German government tabled a legislative proposal aimed at forcing banks to spin off riskier activities – essentially proprietary trading, high-frequency trading and lending to highly leveraged institutions on a secured and unsecured basis (which would include prime brokerage business) – by July 2015 into legally separate, fully capitalised units without parental guarantee. The law would apply to banks with trading activities that exceed €100 billion or 20% of total assets (applicable if total assets pass a critical threshold of €90 billion). Market-making would still be allowed in the deposit-taking entity, although subject to discretionary intervention by the supervisory authority BaFin if risks stemming from these activities were deemed too high. Trading assets originated to hedge underlying exposures to clients or used for asset-liability management purposes would also be allowed within the deposit-taking entity.

Annex B: The effects of “diversification” versus “focus” on bank profitability – a non-linear approach

Although there are many studies on the link between diversification and performance of banks, there is no consensus thus far; evidence is adduced to support both sides of the argument. Proponents of “diversification” suggest that diversified banks can benefit from leveraging managerial skills and abilities across products (Iskandar-Datta and McLaughlin (2007)), gaining economies of scope by spreading fixed costs over products and stabilising overall profits (Saunders and Walter (1994); Lown et al (2000)). Conversely, proponents of “focus” argue that diversified banks can suffer from dilution of the comparative advantage of management (Klein and Saldenberg (2010)), diversification-inducing competition (Winton (1999)), increased agency costs resulting from value-decreasing activities of the managers who have lowered their personal risk (Amihud and Lev (1981); Leaven and Levine (2007); Deng and Elyasiani (2008)), and increasing volatility of profits (DeYoung and Roland (2001); Stiroh (2004b)).

Besides the inconclusive findings in the literature (see also Annex D), the empirical evidence documented in the banking literature is based on linear models. It is interesting therefore to check if such a diversity of views could depend on the fact that the relationship between the diversification ratio and bank profitability is non-linear, controlling for differences in macroeconomic and structural factors. Hence, we run the following regression for return on equity (ROE):

$$ROE_{k,j,t} = \alpha DIV_RATIO_{k,j,t} + \beta DIV_RATIO_{k,j,t}^2 + \vartheta_k + \eta_{jt} + \varepsilon_{k,j,t}$$

where $DIV_RATIO_{k,j,t}$ is the diversification ratio (non-interest income/total income) for bank k headquartered in country j at time t . We include in the regression a set of bank fixed effects (ϑ_k) and a complete vector of country*time fixed effects (η_{jt}) to control for changes in business cycle conditions (Jiménez et al (2012)).

Regression results

Dependent variable	(I) ROE	(II) ROE	(III) Coefficient of variation of ROE
Dividend ratio	22.45** (8.48)	15.56* (8.35)	10.49** (4.86)
Dividend ratio^2	-22.19*** (4.31)	-17.69*** (2.76)	-8.51** (4.17)
Bank fixed effects	yes	yes	No
Time*country fixed effects	yes	yes	No
Country fixed effects	no	no	Yes
Sample period	2000–07	2008–11	2000–11
Observations	727	398	108
R-squared	0.616	0.632	0.143

Robust standard errors clustered at the country level are reported in brackets. ***/**/* indicates significance at the 1/5/10% level.

We divide the sample into two parts, 2001–07 and 2008–11, to test for structural changes in the relationship. In the analysis, we use a sample of 108 international

banks with headquarters in 14 advanced economies (for more details, see Brei, Gambacorta and Von Peter (2013)). The results reported in columns (I) and (II) of the table – and represented graphically in the upper panel of the graph in Box 1 – indicate that (i) the relationship changes over time but maintains a similar shape and (ii) diversification has a positive and increasing impact on ROE up to a level of roughly 50%. Higher levels of diversification are associated with lower profitability.

The ROE is not a risk-adjusted measure of bank profitability. It is interesting to investigate whether a different degree of diversification would also modify the volatility of bank ROE. Therefore, we run the following cross-sectional regression for the coefficient of variation of the return on equity (CV_ROE) calculated over the whole period 2000–11:

$$CV_ROE_{k,j} = \gamma DIV_RATIO_{k,j} + \delta DIV_RATIO_{k,j}^2 + \mu_k + \varepsilon_{k,j}$$

where $DIV_RATIO_{k,j}$ is the diversification ratio (non-interest income/total income) for bank k headquartered in country j . We include in the regression a set of country fixed effects (μ_k) to control for institutional differences.

The results reported in column (III) of the table – and represented graphically in the bottom panel of the box graph – indicate that diversification has a positive and increasing impact on ROE volatility up to a level of roughly 70%.

Annex C. Economies of scale in banking

Paper	Country	Assessment benefits/Size restrictions	"Optimal" size	Bank type	Results	Sample period
Berger and Mester (1997)	US	Positive	\$25 billion	Commercial banks	Evidence of scale economies of banks up to \$25 billion in size	1990–95
Hughes et al (2001)	US	Positive	\$10 billion	Bank holding companies	Economies of scale resulting from diversification exist when controlled for risk; scale economies increase with size.	1994
Amel et al (2004)	US	Mixed	\$50 billion	Commercial banks plus other financial intermediaries	Consolidation beneficial only up to a relatively small size; US banks > \$50 bln have higher operating costs than smaller banks.	–
Mercieca et al (2007)	EU	Positive	–	Small banks (<euro 450 mln)	For relatively small banks, increasing size is positively related with risk-adjusted performance	1997–2003
Feng and Serletis (2010)	US	Positive (limited)	–	Large banks (>\$1 billion)	Establish moderate economies of scale	2000–05
Boyd and Heitz (2011)	US	Negative/Yes	–	Commercial banks plus other financial intermediaries	Social costs of TBTF much larger than economies of scale TBTF banks. Hence, support breaking-up of large banks.	1983–2007
The Clearing House (2011)	US	Positive/No	–	Banks > \$50 billion	Annual scale benefits of \$20–\$45 billion	2007–11
Demirgüç-Kunt and Huizinga (2011)	Global	Negative/Yes (as extreme solution)	–	Publicly listed banks	Systemically large banks display lower profitability and higher risk	1991–2009
Hughes and Mester (2011)	US	Positive/No	–	Bank holding companies	Economies of scale increasing with size	2007
Haldane (2012) (citing unpublished work by Davies and Tracey)	–	Negative/yes	–	–	No economies of scale at bank sizes above \$100 billion; evidence of diseconomies of scale.	–
Hoening and Morris (2012)	–	Negative	–	–	No strong evidence of economies of scale at the sizes of the largest banking companies	–
Wheelock and Wilson (2012)	US	Positive/Both benefits and costs of size restrictions	Scale economies for banks ≥ \$100 bln and up to \$1 trillion	Commercial banks, bank holding companies	Significant and increasing economies of scale. Limits on bank size have potential costs.	1984–2006

Annex D. Economies of scope in banking

Paper	Country	Assessment benefits	Diversification	Bank type	Further details	Sample period
Demsetz and Strahan (1997)	US	Negative	Overall	Bank holding companies	Consolidation does not reduce risk. It is motivated by diversification, which allows for riskier lending and greater leverage.	1980–93
DeLong (2001)	US	Negative	Product	Not specified	Activity-diversifying mergers do not have a positive announcement effect on share prices, contrary to focused mergers	1988–95
DeYoung and Roland (2001)	US	Negative	Product	Commercial banks	Increase in fee-based activities is associated with higher volatility of revenues and higher leverage	1988–95
Hughes et al (2001)	US	Positive	Product	Bank holding companies	Better diversification is associated with positive economics of scale. This requires incorporating risk explicitly into the analysis.	1994
De Nicoló et al (2004)	Global	Negative	Product	Financial conglomerates	Larger and conglomerate firms have higher levels of risk-taking than smaller and specialised financial firms. Complexity resulting from conglomeration and consolidation increases systemic risk.	1995–2000
Stiroh (2004a)	US	Negative	Product	Community banks	Increase in non-interest income generating activities is associated with declines in risk-adjusted performance	1984–2000
Stiroh (2004b)	US	Negative	Product	Commercial banks	Increase in non-interest income is associated with lower risk-adjusted profits and higher risk	1978–2000
Drucker and Puri (2005)	US	Positive	Product	Commercial and investment banks	Economies of scope from spreading fixed costs of information acquisition over various products (lower underwriting fees)	1996–2001
Stiroh and Rumble (2006)	US	Negative	Product	Financial holding companies	Certain diversification gains are more than offset by the costs of increased exposure to volatile activities	1997–2002
Baele et al (2007)	Europe	Mixed	Product (CB into IB: (move into non-interest income)	Universal banks	Functional diversification increases systemic risk, but may reduce idiosyncratic risk and increase banks' franchise value	1989–2004

Paper	Country	Assessment benefits	Diversification	Bank type	Further details	Sample
Deng et al (2007)	US	Positive	Product and geographic (domestic)	Bank holding companies	Diversification of assets (including non-traditional banking) and domestic geographic diversification of deposits reduce cost of debt	1994–98
Laeven and Levine (2007)	43 countries	Negative	Product	Financial conglomerates	Potential economies of scope are not large enough to compensate for agency problems and inefficiencies of cross-subsidies	1998–2002
Mercieca et al (2007)	15 European countries	Negative	Product (CB into IB: move into non-interest income)	Small banks	Negative impact of diversification on profitability (level and volatility) and risk-adjusted performance	1997–2003
Deng and Elyasiani (2008)	US	Positive	Geographic (domestic)	Bank holding companies	Geographic diversification is associated with firm value enhancement and risk reduction	1994–2005
Lelyveld and Knot (2009)	EU	Mixed	Product	Financial conglomerates	No universal diversification discount. Larger financial conglomerates face larger discount.	1995–2006
Rossi et al (2009)	AT	Positive	Diversification of loan portfolios across industries and size	Commercial banks	Positive impact on risk and profitability. Reduces capital needs.	1997–2003
Schmid and Walter (2009)	US	Negative	Product	Financial conglomerates (including banks, insurance companies and asset managers)	Substantial and persistent diversification discount. Not for conglomerates primarily active in IB.	1985–2004
Demirgüç-Kunt and Huizinga (2010)	101 countries	Negative	Product (CB into IB)	All types	Banking strategies that rely on non-interest income and non-deposit funding are very risky	1995–2007
Elsas et al (2010)	9 countries	Positive	Product	Banks > \$1 billion	Significant economies of scope. Diversification increases profitability.	1996–2008
Klein and Saidenberg (2010)	US	Negative	Geographic (national)	Commercial banks	Diversification discount reflects both diversification and organisational structure. Diversification measured as an increase in organisational complexity.	1990–94
The Clearing House (2011)	US	Positive	Product and geographic	Banks > \$50 billion	Annual scope benefits of \$15-\$35 billion	2007–11

Paper	Country	Assessment benefits	Diversification	Bank type	Further details	Sample
Gulamhussen et al (2011)	56 countries	Positive	Geographic (international)	Commercial banks	International diversification premium (is value enhancing for shareholders)	2001–07
Focarelli et al (2011)	US	Negative	Product (CB into IB)	Universal versus investment banks	Debt securities issues underwritten by commercial banks had a higher probability of default than those underwritten by investment banks	1991–2008
Van Ewijk and Arnold (2012)	US	Negative	Product	Commercial banks	Traditional relationship banks were better equipped to weather the financial crisis than diversified transactions-oriented banks	1992–2010
Fiordelisi and Marques Ibanez (2013)	EU	Negative	Product (CB into IB: (move into non-interest income))	Commercial banks	Increased diversification (higher share of non-interest income of total income) is associated with increased risk (both banking or systemic and overall financial system or systematic risks)	1997–2007

CB = commercial banking; IB = investment banking.