

IMF STAFF DISCUSSION NOTE

Creating a Safer Financial System: Will the Volcker, Vickers, and Liikanen Structural Measures Help?

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EXECUTIVE SUMMARY

Structural constraints on banks proposed by a number of countries aim to address the too-important-to-fail problem by reducing the risk that these institutions will fail and by simplifying their resolution if they do fail.

Structural measures can contribute to financial stability in combination with enhanced, post-crisis price-based regulations, supervision, and cross-border bank resolution frameworks. Activity restrictions, when appropriately designed and judiciously implemented, can work in tandem with strengthened capital requirements to limit bank management's capacity for excessive risk taking. Corporate structures aligned to business activities and limits on intra-group exposures and on their pricing can shield systemically important financial services from idiosyncratic shocks impacting other activities.

The nations proposing structural banking reform are global financial centers and systemically important economies. By enhancing financial stability in these countries, such policies can have positive spillovers on the global economy and financial system.

Nevertheless, our analysis suggests that these policies will also have potentially significant global costs given that they will be imposed on internationally active and systemic financial institutions. Our assessment points to the need for a global cost-benefit exercise encompassing extra-territorial implications of structural measures. This is necessary to determine whether the benefits of structural measures match or exceed costs at the global level; it would be difficult to justify them otherwise.

Subjecting a global institution to different structural measures in different jurisdictions could exert further pressure on consolidated supervision and cross-border resolution. Our view is that, with firm political support, a "targeted" approach—with structural measures tailored to the specific risk profiles of individual banks at a global group level—would promote global financial stability more effectively than an across-the-board approach. However, absent sufficient confidence in the supervisory capacity to design and forcefully implement the targeted approach, across-the-board measures would be appropriate provided their global benefits exceed their costs.

I. INTRODUCTION

1. A relatively small number of large, complex financial institutions account for a vast majority of cross-border financial intermediation. Although the evidence is mixed, these financial institutions and their clients, especially multinational corporations, benefit from their diversification and scale.² More generally, these institutions facilitate cross-border capital flows and allocation of global savings. But they can also at times propagate distress to the broader financial system because of their interconnectedness with other financial institutions and markets. The size and scale of their activities, in turn, give these institutions greater influence over the regulatory and legislative process and a funding advantage over other institutions. For instance, the 73 banks identified as systemically important by the Basel Committee on Banking Supervision (BCBS) account for almost two-thirds of global bank assets.³

2. These institutions pose management challenges and are very difficult to regulate, supervise, and resolve in an orderly manner in the event of failure.⁴ This is a reflection of the complexity and integrated nature of group structures and operations, with multiple legal entities spanning national borders and business lines. This complexity often contributes to inadequate risk management, because it makes it more difficult to aggregate data and information systems.

3. Financial institutions that are considered too important to fail (TITF) pose a risk to the financial system as a whole. There are *two broad approaches* to reducing this negative externality: (1) price-based regulations accompanied by enhanced supervision and effective resolution; and (2) structural limits on the size and scope of the activities of these institutions.

4. In the aftermath of the crisis, the Financial Stability Board (FSB), at the request of the G20, proposed measures to be implemented globally that exemplify the *first approach* to reducing systemic risk:

- **Enhanced regulatory framework**, with higher quantity and quality of (loss-absorbing) capital, tougher liquidity standards, and systemic risk surcharges;
- **Proactive and intensive supervision** consistent with the risks an institution poses to the financial system;

² A recent survey of the empirical evidence on scale economies in U.S. banking can be found in Mester (2010).

³ BCBS, November 2011. These banks constitute the set of *potential* global systemically important banks (G-SIBs), from which the set of 28 G-SIBs were identified by the Financial Stability Board (FSB, 2012) based on the identification methodology developed earlier (BCBS, 2011a).

⁴ For further details see Ötoker-Robe and others (2011).

- **An effective resolution framework** with tools to enhance orderly recovery and wind-down in the event of failure, including effective burden-sharing with the private sector through debt that can be bailed in, cross-border arrangements, and *firm-specific* structural measures as needed;
- **Enhanced transparency and disclosure** to improve market discipline and monitoring; and
- **Strengthened market infrastructure** to limit the risks of contagion arising from interconnectedness and the limited transparency of counterparty relationships.

5. Several jurisdictions have supplemented these initiatives with the *second approach* to combating systemic risk. The structural measures proposed range from moving businesses identified as too risky and complex into stand-alone subsidiaries to prohibiting banks from engaging in these activities altogether. The proposals developed by the United States (US), the United Kingdom (UK), the European Union (EU), France, and Germany—currently at varying stages of the legislative and regulatory processes—support the global reform agenda. But they also presume that *price-based regulations alone do not go far enough* in some areas (capital requirements, leverage ratio) and *may not be implemented in a consistent manner* in others (bail-in, net stable funding ratio, and cross-border resolution framework).⁵ The proposed structural measures also reflect the authorities' intention to limit the benefits of public guarantees to certain systemically important banking services, such as deposits and payments, and limit contagion from financial markets. Proponents of these national measures believe that there are synergies between their approaches and that they could be combined.

6. This paper offers a framework for assessing the relative merits of the proposed structural measures. It develops a decision process that may inform policymakers' choices in opting for structural measures as well as principles that may guide their design. Adhering to these principles will require significantly enhanced levels of international coordination.

7. The next section focuses on a decision process that is aimed at analyzing conditions under which policymakers may wish to adopt structural reform alongside enhancements to traditional prudential instruments. Section III outlines the key design features of the existing structural reform proposals and their place in the broader national regulatory reform process. Section IV provides a comparative analysis of the potential costs and benefits of these proposals and the risks associated with material differences in national approaches. Section V concludes, arguing for a greater role for international coordination.

⁵ U.K. Independent Commission on Banking (2011) and European Commission (2012).

II. CAN STRUCTURAL MEASURES ELIMINATE THE TOO-IMPORTANT-TO-FAIL PROBLEM?

Recent evidence from the crisis does not implicate specific bank business models as susceptible to greater risk of failure. Nevertheless, structural measures could be a useful complement to traditional prudential tools under certain conditions. Targeting them to reflect firm-specific risk profiles increases their effectiveness relative to the one-size-fits-all approach envisaged by the recent structural reform proposals, albeit the targeted approach requires firm political commitment and support for supervisors.

8. There is considerable overlap between the objectives of structural banking reform measures and that of recently strengthened prudential, bank resolution, and crisis management tools. The decision tree in Figure 1 provides a framework to identify conditions under which the use of structural measures could be warranted. As illustrated, two complementary objectives are sought—reducing the probability of failure and reducing losses in the event of failure.

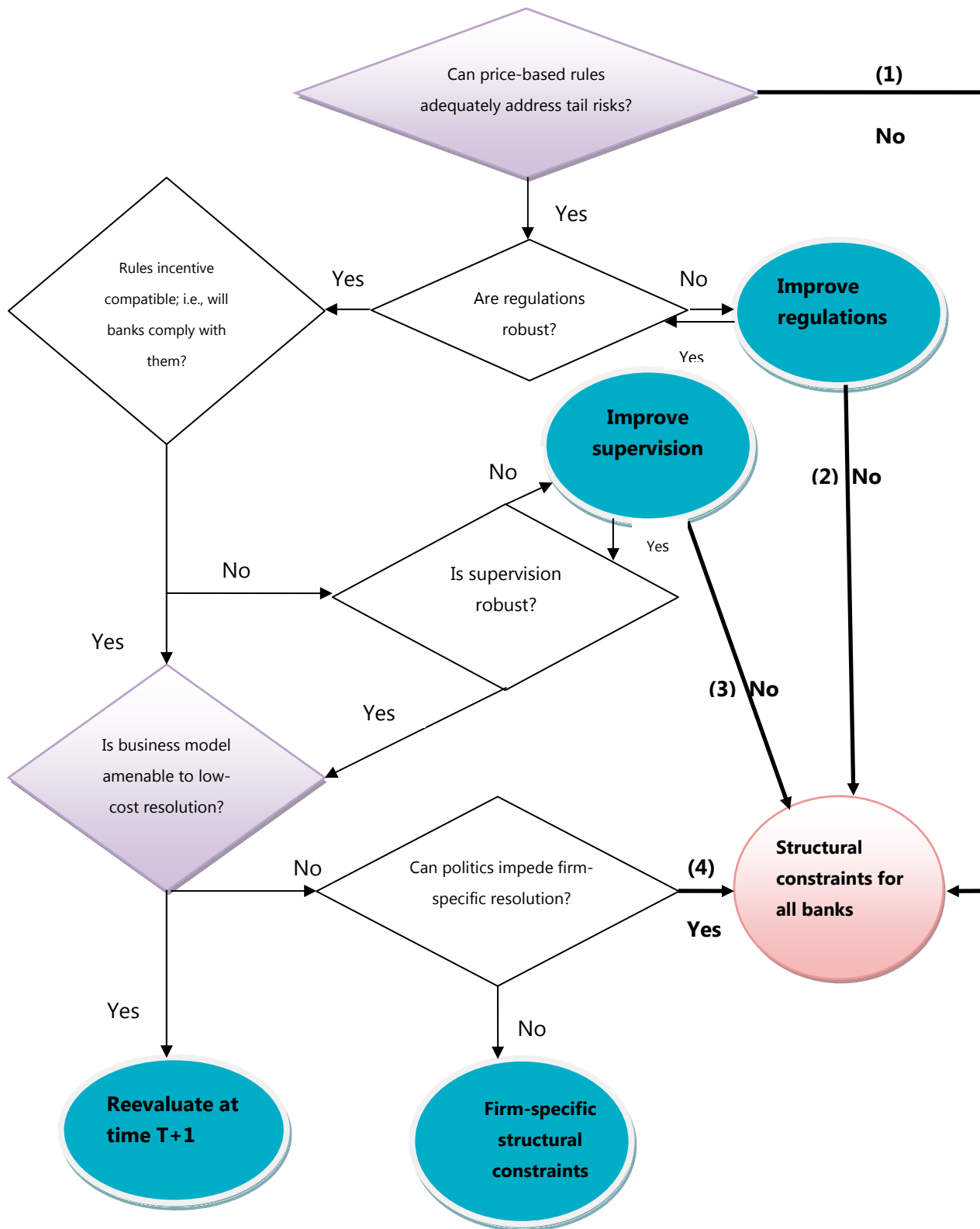
Effectiveness of structural measures in reducing the probability of failure

9. The proposed structural measures and price-based tools both seek to curb excessive risk taking by banks and thus reduce the probability of failure. This raises the question as to when, and under what design, would structural measures add value to price-based regulations. Arguments in favor of structural measures are generally based on four main premises.

10. **A first consideration is the effectiveness of price-based tools in mitigating tail risks** (entry 1 in figure 1). The BCBS has adopted a framework with more robust capital buffers, consisting of higher and better-quality capital with improved loss absorption; better recognition of counterparty and market risks (for the trading book and complex securitizations); a simple capital-to-asset ratio to limit excessive leverage; tighter liquidity standards for short-term and longer-term funding, and capital buffers over and above the new higher-minimum requirements. These enhancements will do much to strengthen the prudential underpinnings of global banking activity. But the complexity of banks' businesses and corporate organizations will continue to test their ability to address tail risk.⁶ In order to limit activities that are too risky—or whose risks are too complex to measure—policymakers may consider using structural measures that prohibit banks from engaging in such activities altogether (Box 1).

⁶ The supervisory community is certainly aware of this challenge as evidenced by the ongoing work of the Basel Committee's Trading Book Group. See, for example, BCBS (2012b).

Figure 1. The Policy Decision Tree—When to Impose Structural Constraints?



Box 1. Effectiveness of Price-Based Regulations in the Face of Complexity

Prior to the post-crisis regulatory reforms, differences in the capital treatment of banks' trading and banking books created incentives that resulted in elevated institutional and systemic risk. For example, banks were able to book securitized assets and illiquid securities (so-called level 3 exposures) as trading assets and price them using internal risk models that generated lighter capital requirements.

International regulatory standards have since been amended to require banks to hold more capital against market risks embedded in their trading books. Basel 2.5 was designed to close opportunities for capital arbitrage by making the capital regime for the trading book much more conservative, including for banks using advanced, internally developed models (A-IRB) for risk-based capital requirements.¹

However, implementation of the new standards may continue to be seriously challenged by the complexity of bank businesses. A-IRB banks' capital models for market and counterparty credit risk in the trading book will be more intricate under the new regulations, raising the bar for supervisors with respect to model validation and back-testing. This is particularly true given the continued ability of A-IRB banks to use internal models to materially compress risk-weighted assets (RWAs) and capital requirements relative to standardized approaches as has been revealed by recent studies conducted by the Basel Committee. The Basel Committee is now undertaking a fundamental review of the trading book to make the approach to calibrating risk-based capital requirements more robust to model risk.

Highly complex combinations of trading, investment, and risk hedging can increase banks' vulnerability to market and basis risk without a corresponding change in calculated risk exposures.

Losses absorbed by J.P. Morgan Chase in 2012 on its synthetic credit portfolio—managed by its Chief Investment Office (CIO)—are a case in point.² A set of competing objectives, including, prominently, a reduction in portfolio RWAs and value-at-risk profit maintenance and higher default protection, resulted in a sequence of trades that, while meeting the CIO's internal risk model test for a balanced portfolio, and hence, maintaining stable RWA, led simultaneously to the piling up of market and basis risk. This strategy failed because it did not factor in the effect of very large positions in an illiquid market and resulting large losses due to the unwinding of the hedges. An ex-post audit by the firm's management task force concluded that internal controls and oversight at the CIO and the firm did not evolve commensurately with the increased complexity and risks of its trading strategies, that CIO risk management lacked the appropriate personnel, and that risk limits were insufficiently granular. This episode also highlights the challenges supervisors continue to face in ensuring that their capability is not outstripped by financial sector complexity.³

¹ BCBS (2011b).

² J.P. Morgan Chase (2013).

³ See Viñals and others (2010).

11. A second consideration is the robustness of regulations underpinning price-based tools (entry 2 in Figure 1). Weaknesses in regulation may arise from gaps in coverage and from inadequately calibrated prudential charges. Policymakers should address such weaknesses by increasing the scope and strength of the prudential rules. They can do so by pushing for changes in existing international standards or by unilateral national enhancements; that is, *gold-plating* regulations. Yet this may not be sufficient. For example, the home and host authorities of a cross-border bank may follow different approaches to national gold-plating, which may increase the risk

of regulatory arbitrage and complicate cross-border supervision and resolution. In such cases, imposing structural constraints may become necessary.

12. A third consideration is whether the rules are incentive compatible and enforceable (entry 3 in Figure 1). Without incentive compatibility, a heavier burden would be placed on supervision to enforce compliance. Should information gaps, resource limitations, or legal impediments constrain the ability of supervisors, or should there be weaknesses in supervisory will, resources would first need to be devoted to overcome these problems. This is because gaps in supervisory intensity and effectiveness would, in general, be expected to weaken compliance with both price-based rules and structural constraints. Nonetheless, supervising compliance with some types of structural constraints (for example, subsidiarization of domestic retail businesses with matching local funding requirements) may still be easier than enforcing price-based rules.

Effectiveness of structural measures in reducing loss in the event of failure

13. A fourth consideration for structural measures is to limit public support in the case of a failure of a bank and facilitate an orderly resolution (entry 4 in Figure 1).

14. An important lesson from the crisis is that the proliferation of intra-group exposures can impede resolution and magnify the real and fiscal impact of a crisis. Such exposures facilitate efficiencies in risk management. But they complicate the spinoff and sale of viable units and restrict the ability of management or the authorities to restructure the group in a crisis situation (Box 2).

15. In this context, structural measures can be viewed as being aimed at insulating financial activities vital to the real economy from reputation-driven or exposure-driven contagion from distress elsewhere in their banking groups. In this way, it is hoped that structural measures will promote a more credible restriction of public guarantees to businesses vital to the real economy because they can be more easily and rapidly separated from trading affiliates that are ailing or facing failure. If successful, these measures can help subject high-risk businesses to greater market discipline in addition to lowering the cost to taxpayers of bank recovery and resolution.

16. The FSB's *Key Attributes of Effective Resolution Regimes for Financial Institutions* (KAs) include scope for construction of ***firm-specific*** structural measures designed to facilitate efficient bank recovery and resolution. This would constitute an alternative, bottom-up approach to structural banking reform.⁷ KAs require the adoption of legal frameworks setting out powers, tools, and safeguards for resolution by all concerned national authorities, which will facilitate least-cost resolution at the group level.⁸ Resolvability assessments and recovery and resolution plans (RRPs), to be conducted for or prepared by each of the G-SIFIs, may require firm-specific structural measures to be undertaken, including changes to business scope or size or to groupwide corporate organization. In the US, big banks have established resolution blueprints in the form of living wills

⁷ FSB (2011).

⁸ Resolution costs, unless otherwise stated, are to be understood to refer to cost to the taxpayer.

and complementary recovery plans as part of their obligations under the Dodd-Frank Act, and many European G-SIBs are in the process of finalizing their RRP.

Box 2. Dealing with Complex Intra-Group Exposures¹

Intra-group guarantees (IGGs) and **back-to-back booking practices (BPs)** enable firms to support affiliates with the consolidated strength of the firm. IGGs permit the consolidated entity to reduce the amount of capital and liquidity devoted to the business relative to a model wherein the affiliate faces clients on the basis of its own financial strength. They can also facilitate resolution in certain circumstances as set out in the recent joint paper of the U.S. Federal Deposit Insurance Corporation (FDIC) and the Bank of England on resolving global systemically important financial institutions. They can be extended either in the form of blanket guarantees to affiliates or as transaction-specific guarantees. BPs can enable firms to consolidate market risk picked up by separate affiliates, maximize netting efficiencies at a consolidated level, and hedge outstanding global exposures in a cost-efficient manner.

While IGGs and BPs can have material benefits, their use can impede recovery and resolution. In a recovery situation, IGGs can add time and cost to transferring positions and portfolios from affiliates to third parties owing to requirements to obtain consent from clients on any open-ended guarantees provided to clients. In a resolution situation, insolvency of the firm can trigger insolvency of the affiliate; for example, through acceleration of claims implied by cross-default clauses. BPs inherently increase operational complexity, impeding the unwinding or transfer of positions. Moreover, failure of information systems to adequately track IGGs and BPs can complicate efforts in resolution or recovery scenarios.

¹ Basel Committee on Banking Supervision (2012a), Fiechter and others (2011), and U.S. FDIC and Bank of England (2012).

17. Imposing firm-specific structural constraints on banks in line with their resolvability assessments offers important advantages over ex ante, across-the-board structural measures. By mapping business lines into groupwide corporate structure, structural measures tailored to risk profiles of individual banks could reduce complexity and facilitate better supervision, hence reducing the risk of failure and lowering resolution costs in the event of failure. However, weaknesses in cross-border resolution regimes or the existence of political or legal constraints could still require a more uniform approach in the form of structural constraints imposed across the board.

Do business models matter?

18. The recent crisis experiences suggest that bank failures result from a combination of risk factors. Studies conducted during the preparation of the Liikanen report found that no business model fared particularly well, or particularly poorly, in the financial crisis. Rather, the conclusion was that trading in highly complex instruments and real estate lending, both based on excessive leverage and short-term wholesale funding, presented an especially risky combination in the run-up to the crisis. Strong linkages between and within financial institutions created high levels of systemic risk (Box 3).

Summing up: Is there a case for structural measures?

- Activity restrictions can be useful in managing risks that are difficult to measure and address using price-based tools. Business lines that are judged to be too complex for the accurate measurement of risk and for effective supervision may require outright separation. These operations would need to be monitored but would not be subject to the same kind of supervision imposed on entities that have access to the safety net.
- Where efficient resolution requires structural reform, well-designed firm-specific RRP may be more effective than across-the-board structural measures provided that correspondingly adequate cross-border cooperation, especially vis-à-vis burden sharing, can be arranged. Without firm political support for supervisors and resolution authorities, however, firm-specific structural measures may not be possible to implement, strengthening the case for a preemptive approach based on across-the-board structural constraints. Indeed, the Liikanen group proposal envisaged a baseline of structural reform for banks that meet or exceed certain size or activity thresholds and the possibility of adding firm-specific constraints on the basis of their resolvability assessments.

Box 3. Did the Crisis Implicate Certain Bank Business Models as Unambiguously Riskier?

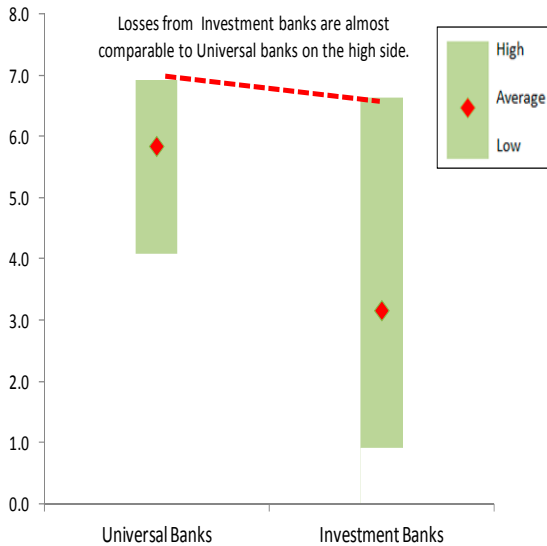
The impact of the financial crisis on US SIBs does not implicate any specific business model as being more vulnerable to cyclical shocks or an increase in market volatility. Evidence from major bank failures from the crisis suggests that the proposed structural measures would not, on their own, have prevented their occurrence.

The global financial crisis shed light on specific combinations of risk factors that made banks susceptible to the turn in the real cycle and the simultaneous jump in financial market volatility. However, the experience of banks during the crisis does not implicate particular business models as more vulnerable to failure or as inflicting greater negative externalities on the global financial system. Two independent channels of evidence supporting this view are provided below: the relative loss experience and market assessed default probabilities (PDs) of banks with different business models and an analysis of factors fundamental to explaining major bank failures of the crisis.

Banks' loss experience and market assessed PDs

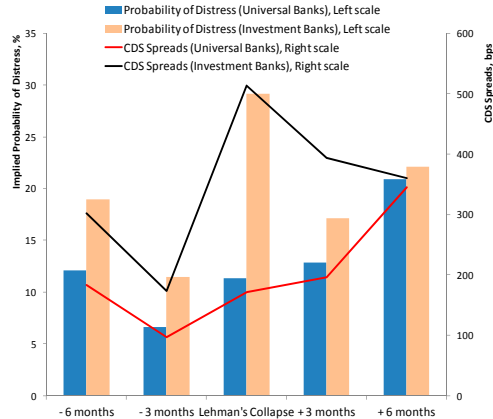
Loss experiences and market risk indicators for a set of U.S. universal and investment banks were compared over the period of the crisis. While universal banks suffered greater loss during the crisis than investment banks, the loss experience of the largest institutions within either category was very similar (Figure 2) suggesting that neither model fared worse than the other insofar as large US banks were concerned. The adverse impact of the Lehman bankruptcy was initially viewed by markets as a significantly more negative credit event for large US investment banks than for large US universal banks. (Figure 3). However, within six months, credit default swap spread implied PDs of both types of banks converged to a similar, albeit higher level than prior to the Lehman bankruptcy. This indicates that markets priced in higher risk of distress for both types of banks during the crisis likely reflecting the fact that the recessionary environment and associated losses on housing, mortgage and commercial real estate exposures was more important in assessing banks' PDs than the institutions' business models.¹

Figure 2. Total Losses From Write-Downs (as percent of Average Assets)



Source: Bloomberg, Staff estimates
 Note: Green bars represent the range of bank losses.

Figure 3. Credit Default Swap Spreads and Implied Probability of Distress¹



Source: Bloomberg, Staff estimates
 1. Sample U.S. banks comprise Citigroup, Bank of America and JP Morgan Chase (Universal Banks), and Morgan Stanley, Goldman Sachs, Lehman and Merrill Lynch (Investment Banks). Implied probability of distress is computed from the 5-year CDS spreads assuming a recovery rate of 30 percent.

Bank failures of the crisis suggest that leverage and liquidity, not business model, were the key underlying risk factors

Lehman Brothers' failure was the result of the bank's adoption of a higher-risk business model a few years before the crisis. Some components of this strategy—for example, private equity investments—are of the type prohibited by the Volcker rule. However, what made the enterprise vulnerable to failure was a combination of high leverage, liquidity mismatches, and reliance on interbank funding—risk factors that are being addressed by international reform of price-based instruments. Losses inflicted by the bankruptcy were vastly exacerbated by the fact that the large intra-group exposures and the groupwide approach to risk management were not conducive to efficient resolution of the firm and its key subsidiaries under the different bankruptcy frameworks of its home and host countries. This latter problem is being addressed by the KAs of G-SIB resolution and the recent Bank of England-U.S. FDIC proposal of groupwide resolution.²

The failures of Northern Rock, Royal Bank of Scotland (RBS), Hypo Real Estate-Depfa, and the German Landesbanken were a function of strategic decisions to increase leverage and the corresponding switch in financing from deposits toward short-term wholesale funding that resulted in elevated levels of liquidity risk.³ In some cases—for example, Northern Rock—leverage was a function of weaknesses in the definition of capital as subordinated debt took the place of common equity in large amounts. In others—for example, RBS—it was a function of pre-crisis acquisitions that resulted in expansion of undercapitalized trading exposures. In still others—for example, Depfa and the Landesbanken—it was a function of volume expansion to boost incomes in the context of core low-margin businesses. Problems of rising leverage were brought into sharper relief by the corresponding funding strategy, where in all cases wholesale funding at maturities substantially shorter than assets was increasingly used. And while active use of derivatives and swaps was made to mitigate the resulting market risk, the freeze in interbank and wholesale markets following the Lehman failure sealed the fate of these banks.

These experiences highlight both the weaknesses in pre-crisis prudential regimes and the challenges supervisors face in ensuring that their capability is not outstripped by increasing financial sector complexity. In most of these cases, therefore, it is enhancement of price-based regulations and of supervisory intensity that is the first and definitive line of defense. *The current proposed structural measures, on their own, would not have prevented the bank failures described above.*

¹ Besides herding, the convergence of the weighted average of credit default swap spreads of the two types of banks could also reflect the transition of the sampled investment banks to bank holding company status and the consequent extension to these firms of certain benefits (for example, U.S. Federal Reserve discount window access) already accessible to the universal banks.

² Jenner and Block (2010); U.S. Federal Deposit Insurance Corporation; and Bank of England (2012).

³ European Commission (2012); and International Monetary Fund (2012, Chapter 6).

III. THE DESIGN ELEMENTS OF THE RECENT STRUCTURAL REFORM PROPOSALS

Structural reform seeks to shield deposits and payments functions of banks from financial market volatility. But the national proposals exhibit important differences in institutional and geographic coverage and in the nature and scope of the separation of bank businesses.

19. The US, the UK, the EU, France, and Germany have proposed structural measures as part of the reform of their banking sectors—some of these are at the legislative stage while others are at the discussion stage. The starting point for these proposals is the attempt to delineate *core* banking activities and the nature of the *boundary* between different business lines. The variation in design and scope across the national proposals follows from the fact that business models and organization of banks vary across countries as do the range of activities that they can or do undertake. These in turn are driven by countries' own crisis experiences.

20. The U.S. Volcker rule's ***outright separation*** of businesses reflects a view that prohibited activities are too complex and generate a risk culture fundamentally at odds with banks' client-facing activities, particularly deposits, lending, and wholesale banking. The European ring-fencing proposals aim to shield these activities from contagion by requiring their ***subsidiarization*** and placing restrictions on their intra-group exposures. Table 1 compares the key features of the three structural reform proposals (US, UK, EU), which were the first to be elaborated. The proposals by France and Germany are modified versions of the Liikanen proposal (see below).

- The UK's retail ring-fence pushes most investment banking activities outside UK ring-fenced deposit-taking banks.⁹
- The U.S. Volcker rule mandates separation of proprietary trading and hedge and private equity fund investments.¹⁰
- The EU expert group (Liikanen group) proposal would disallow depository institutions from engaging in market making, proprietary trading, and investments in hedge funds and private equity; however, other subsidiaries in the same banking group can still conduct these businesses. The recent French and German proposals differ from the expert group proposal in that they allow market making by the depository institution.

⁹ A recent proposal by the U.K. Treasury brings securities underwriting and provision of hedging services to clients back within the ring-fence, aligning the range of separated activities with the Liikanen Group's proposal.

¹⁰ Separately, Regulations 23A and 23B of the U.S. Federal Reserve Act limit the exposures of U.S. depository institutions to their investment banking affiliates.

Table 1. Comparing the Structural Reform Proposals

	Liikainen group report	United Kingdom	United States
Holding company with banking and trading subsidiaries	Permitted	Permitted	Not permitted
Deposit taking institution dealing as principal in securities and derivatives 1/	Not permitted (but other group companies may do so)	Not permitted (but other group companies may do so)	Not permitted
Deposit taking institution investing in hedge funds and private equity	Not permitted (but other group companies may do so)	Not permitted (but other group companies may do so)	Not permitted
Deposit taking institution providing market making services	Not permitted (but other group companies may do so)	Not permitted (but other group companies may do so)	Permitted
Deposit taking institution's non-trading exposures to other financial intermediaries	Unrestricted	Restricted	Unrestricted
Higher loss absorbency rule 2/	Yes, via leverage ratio for trading business that exceeds size threshold	Yes, as add-on to the conservation buffer for UK ring-fenced bank	For SIBs with substantial US footprint
Size threshold for application	Yes; applies to all banks with trading books larger than €100 billion, or trading assets more than 15-25% of balance-sheet	Yes; applies to all banks and building societies with deposits greater than £25 billion	No
Enacted into law	No	Scheduled for completion by 2015	Yes
Implementing regulations finalized?	No	No	No

Notes:

1/ U.S. federal government and agency securities, debt and securities issued by US state and municipal governments and government sponsored enterprises, and derivatives on these securities are exempt from proprietary trading restrictions of the Volcker rule.

2/ The Dodd-Frank Act subject US banks with assets in excess of \$50 billion to more stringent prudential requirements. Similar requirements have been proposed, under the recent Intermediate Holding Company proposal, for non-US banks with more than \$50 billion in global assets that have a systemically important presence in the US.

21. The nature and scope of the separation is significantly more severe under the Volcker rule. While U.S. banks cannot run prohibited business lines anywhere in their global corporate structure and hierarchy, the European proposals permit banking groups to run business lines proscribed for depository institutions in other companies. The European proposals are also narrower in scope, with the UK applying it to domestic retail banking alone and the Liikanen group's proposal applying to the largest EU banks.

22. Alongside structural measures, these proposals also include a number of other enhancements that support the global reform agenda. The reports note that capital requirements and leverage ratios are insufficiently stringent, while the implementation of bail-in and long-term liquidity standards is on a slow trajectory. And the cross-border cooperation required for faithful implementation of effective bank resolution appears to some as forbiddingly high. Accordingly, structural reform proposals include, or are accompanied by, enhancements to the global reform agenda to manage leverage, liquidity, and counterparty risks.

- The Liikanen group's proposal adds **strengthened leverage limits** on separated trading businesses. A leverage requirement and a floor on risk-based capital requirements are proposed for the trading subsidiary. Ex ante identification of debt securities to which resolution authorities' bail-in powers would apply is also recommended (that is, bail-inable debt). The proposal states that further structural constraints on G-SIBs may be necessary should resolvability assessments require changes to the permissible activities or corporate structures.
- The Dodd-Frank Act, which incorporates the Volcker rule, applies **leverage and counterparty risk limits**. U.S. banks holding assets in excess of \$50 billion and designated as systemically important by the U.S. Financial Stability Oversight Council would, in addition to the Volcker rule, be subject to a leverage ratio requirement of 6.25 percent and stress testing requirements. U.S. bank holding companies (BHCs) with over US\$500 billion in consolidated assets are also subject to a single counterparty exposure limit of 10 percent of their own capital. The Collins Amendment extends risk-based and ordinary leverage ratio requirements to BHCs. The more recently proposed intermediate holding company rule would enforce similar requirements on the combined U.S. operations of non-U.S. banks by mandating subsidiarization via their incorporation into a U.S. financial holding company.¹¹
- Reflecting its domestic, as opposed to pan-European focus, the UK's Independent Commission on Banking (Vickers Commission) adds **higher loss absorbency** (HLA) capital rules within the ring-fence on top of the Basel III capital conservation buffer.

¹¹ U.S. House of Representatives (2010) and U.S. Board of Governors of the Federal Reserve System (2012).

IV. HOW DO THE BENEFITS AND COSTS OF THESE MEASURES STACK UP?

Structural reform contributes to financial stability by reducing complexity and interconnectedness and by facilitating lower-cost bank resolution. Their contribution toward enhancing financial stability domestically, in global financial centers, will have positive spillover effects on the global economy and financial sector. Nevertheless, it may be costly to implement and could encourage regulatory arbitrage and adversely impact the market liquidity and efficiency of groupwide bank risk management. Different national structural reforms applied to a common set of global banks risk putting further pressure on consolidated supervision and cross-border resolution; however, some components of the U.K. and Liikanen proposals related to tougher capital requirements on the separated subsidiaries can be expected to work in complementary fashion.

23. A comprehensive cost-benefit analysis is outside the scope of this paper. Our qualitative analysis suggests that there could be substantial global costs to implementing structural reform proposals, notably from international spillover implications; however, these must be measured against positive spillovers as a result their potential financial stability benefits for the U.S., U.K., and EU. Our assessment points to the need for a global cost-benefit exercise encompassing extra-territorial implications of structural measures in order to confirm whether the net benefits of structural measures accruing nationally are accompanied by net costs that are borne globally; it would be difficult to justify structural measures with such distributional implications.

A. The Benefits of the Proposals

24. The structural measures proposed by the US, UK, and EU aim to decrease the probability of bank failure and its systemic implications by **reducing complexity and interconnectedness** (Table 2).

- Forcing proprietary trading and high-risk investments out of banks may increase the effectiveness of capital requirements as a prudential tool. This is based on the notion that the complexity and tail risks of these business lines are especially high. Only the Volcker rule can capture these benefits at the group level because the other proposals would permit these business lines to survive within the banking group, albeit outside the ring-fenced entity.
- A key advantage of ring-fencing is its ability to reduce interconnectedness risk for deposits, payments, and lending by imposing restrictions on the scale and pricing of intra-group exposures. Nevertheless, retail banks may still remain susceptible to reputational risk and group contagion even under ring-fencing, and the failure of a trading subsidiary could lead to a loss of market confidence in the whole group.

25. Ring-fencing promotes **resolvability at the level of the retail bank but not necessarily at the group level** (table 2). Material activity restrictions are not imposed on the non-ring-fenced affiliates under either the U.K. or Liikanen proposals. Also, authorities tying themselves to a certain

corporate structure or activity restrictions may have to deal with a Northern Rock–style crisis, driven by losses in the banking book. This could reduce the number of feasible restructuring options, because it may reduce the range of potential buyers to those interested only in core banking activities.

Table 2. Benefits Ensuing from Structural Banking Reform

Potential channels of impact	Volcker rule	UK ring-fence	Liikanen group proposals
1. Risk reduction			
Lowers complexity, increasing effectiveness of price-based tools			
For the bank	√√	√	√√
For the group	√√	X	X
Reduces financial interconnectedness risk			
Intra-group	X	√	√
From financial markets	√	√	√
2. Improving resolvability			
Retail bank	X	√	√
Financial group	X	X	X
Notes: √√ = likely high impact; √ = impact channel exists; X = not applicable / likely no impact			

B. The Costs of the Structural Reform Proposals

26. The costs may arise from implementation challenges; risk migration; adverse impact on market liquidity, efficiency, and risk management capacity; and lower diversification benefits (Table 3).

Table 3. Costs Imposed by Structural Banking Reform

Potential channels of impact	Volcker rule	UK ring-fence	Liikanen group proposals
1. Implementation related costs			
Mis-identification of permitted or prohibited activities (e.g., proprietary trading vs market making or risk hedging)	√√	√	√
Supervising the regime	√√	√	√
Compliance burden and costs on			
Financial institutions	√√	√	√
Host country authorities	√√	√	√
Expansion of home-host arrangements	√	√	√
2. Risk migration to			
Shadow banking system	√√	√	√
Exempt institutions	X	√	√√
Other markets and countries	√	√	√
3. Market liquidity and borrowing costs			
Through impact on trading and market making			
Domestic markets	√√	√	√
Global markets	√√	√	√
Through subsidiarization of universal banking group			
Restrictions on intra-group exposures	X	√	√
Through adverse impact on cross-subsidization of businesses	X	√	√
4. Lower diversification benefits			
	√	√	√
Notes:			
√√ = likely high impact; √ = impact channel exists; X = not applicable / likely no impact			

27. Implementation costs relate to the challenge of distinguishing proscribed trading from permitted transactions and the resulting burden of compliance and reporting.

- **Distinguishing proprietary from permitted trading will be difficult.**¹² This challenge is particularly relevant for the Volcker rule and the French and German ring-fencing proposals. For example, it will be difficult to differentiate risk exposures of banks due to hedging or market making versus risk from proprietary trading (see Box 1). It is for this reason that the Liikanen group recommended that market making be placed outside the ring-fence alongside proprietary trading.
- **Substantial compliance and reporting requirements** apply to banks covered by the Volcker rule, including foreign operations of U.S. banks and foreign parent firms and holding companies of banks licensed in the US. Countries have expressed concern that U.S. banks may not be able to continue some of their foreign operations under these elevated cost conditions.
- **Unwinding and decoupling integrated businesses** are likely to be challenging. The unbundling of derivatives and structured products may be particularly difficult and time consuming.¹³

28. Tightening activity restrictions on regulated banks may redistribute systemic risk.

- Structural measures may push certain activities to unregulated entities where they can still exert systemic risk. A widespread collapse of such units could adversely affect confidence and liquidity in the financial system, thereby implicating the real economy and retail banks. This was an important consideration for the Vickers Commission's preference for ring-fencing over full separation.
- Exemptions could motivate migration of prohibited activities to institutions just below the threshold. It is critical that the risk management capacity of exempt institutions be commensurate with that of institutions that must be able to engage in such activities.
- Emerging market economies (EMs) may be suitable candidates for the relocation of certain investment banking activities, given that many are anxious to develop their domestic financial and capital markets. The corresponding capital flows could exert a substantial impact on EMs faced with challenging absorption and monitoring/supervision.¹⁴

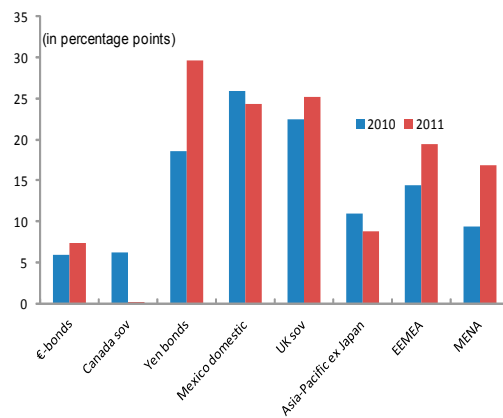
¹² Chow and Surti (2011) and Duffie (2012).

¹³ For example, American International Group's derivatives subsidiary took two and a half years to unwind the bulk of its US\$2 trillion portfolio with 45,000 individual trades.

¹⁴ Relocation of businesses could also occur between advanced market economies and major financial centers if material differences in rules incentivize such movement.

29. Liquidity in home and host capital markets may be adversely impacted. Banks will be unable to trade equities, corporate debt, private label asset-backed securities, and derivatives on a proprietary basis on U.S. exchanges or with U.S. counterparties under the Volcker rule. This may exert an adverse liquidity impact on non-U.S. sovereigns, financial institutions, and nonfinancial corporate firms that issue equities or debt on U.S. exchanges or in the U.S. dollar market. Domestic borrowing costs could also rise in countries where affiliates of U.S. banks are either systemically important (for example, Mexico) or play a key role in making markets for sovereign bonds (for example, Japan and the EU).

Figure 4. Market share of U.S. banks in underwriting of securities



Source: Bloomberg Finance LP.

30. Finally, the reduction in diversification benefits can be substantial. The returns from retail, wholesale, and trading activities of banks complement each other, allowing for greater diversification benefits (Box 4). Furthermore, the inability of banks to move capital and liquidity to where it is most needed may amplify idiosyncratic risk to the group level.

C. What Are the Cross-Border Implications?

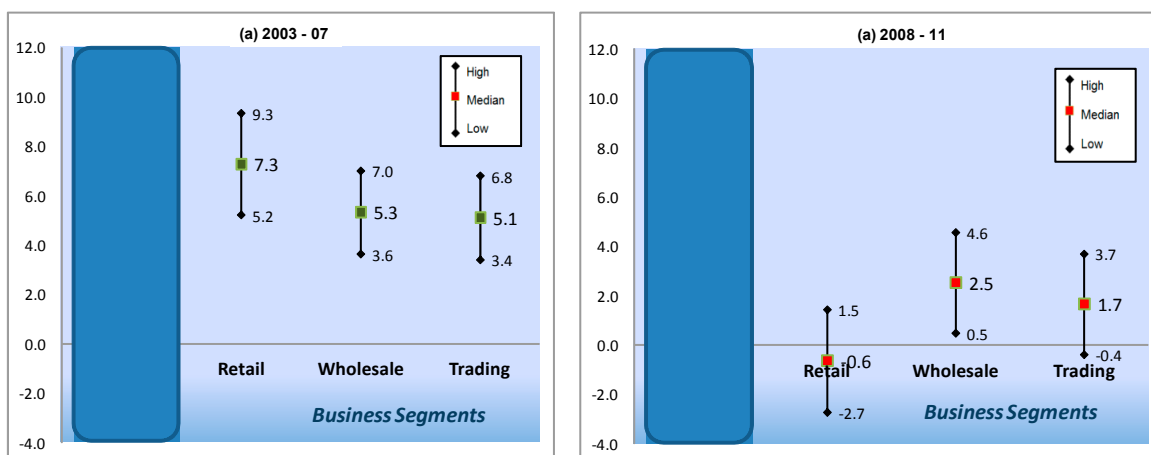
31. Thus far, the discussion of potential benefits and costs of structural banking reform has focused on the pros and cons of individual proposals taken in isolation. Implemented simultaneously, these national proposals would represent a combination of materially different rules operating on institutions that are active in all of their markets. Differences between structural reform measures could provide scope for cross-border regulatory arbitrage by large internationally active banks, exacerbating the burden on consolidated supervision and cross-border resolution. Furthermore, the combined impact of different national rules may force global institutions to move to the highest common denominator, leading to higher costs than would be incurred through compliance with any of the measures in isolation. And the cumulative real and financial sector cost implications for host countries could be significant. The restriction of certain activities to a ring-fenced entity, which must be independently funded, may prohibit potential new entrants in host markets and dampen competition. Thus, a pragmatic, global approach is necessary to avoid unintended implications.

Box 4. Does Diversification Prop up the Bottom Line?

Segment-wise returns were analyzed for a sample of seven G-SIBs, including five U.S. and two U.K. banks. Confidence bands for the volatility-adjusted return for the period 2003–07 suggest that sampled banks’ retail businesses are the most profitable, followed by the wholesale and trading segments (Figure 5, panel a). This result is in line with expectations because retail banking is essentially a spread business, and it benefits from rising interest margins and low funding costs and nonperforming loans in an expansionary phase of the economic cycle. In wholesale banking, net interest margins are lower due to higher competition that drives the generally higher corporate deposit rates. The trading segment complements retail and wholesale banking via product structuring, hedging, and income enhancements through proprietary risk taking. Banks are able to diversify risk by maintaining the three business segments as evidenced by the volatility-adjusted return band for total banking business, which lies between retail, wholesale, and trading.

The diversification benefit of maintaining all three business segments is also visible during the global financial crisis. Retail banking suffered losses due to the increases in mortgage- and consumer credit-related delinquencies, but overall performance was cushioned by returns in wholesale banking that remain positive, albeit lower compared with the pre-crisis period (Figure 5, panel b). Despite registering a negative ratio in the lower tail of the confidence band during the crisis, trading also outperformed retail banking as the latter underwent balance sheet repair through write-downs and increased provisioning.

Figure 5. Confidence Bands for Volatility-Adjusted Return Ratios



Sources: Company financial reports; and staff estimates.

32. Cross-border supervision will be complicated by national incentives. The IMF’s assessment of compliance with the Basel Core Principles for Effective Banking Supervision suggests that globally consolidated supervision remains one of the most challenging areas for supervisors. The movement of riskier businesses across countries, including to EMs, could require more innovative approaches to cooperation and information sharing, for example, warranting corresponding adjustments to supervisory colleges if some hosts become (more) systemically important from a group risk

perspective. If so, mechanisms facilitating legal gateways for supervisory information sharing and joint inspections with a substantially wider set of countries than now involved would be required. On the other hand, to the extent that structural measures result in less complex business models and corporate structures, they would contribute to facilitating consolidated supervision.

33. Cross-border resolution may also be further challenged by the imposition of different national structural measures. For example the hedge of a derivative position taken in country A may be concluded by the bank's proprietary trading subsidiary in country C, which does not impose structural requirements on such activities. In a resolution scenario, both transactions could end up in separate ring-fenced entities domiciled in different jurisdictions, thereby increasing imbalances.

34. Some differences between the national proposals work to increase their joint effectiveness toward increasing financial stability. The HLA requirements imposed by the U.K. and Liikanen proposals would, *in combination*, serve to make EU banks more resilient to shocks. Implementation of the U.K. proposal would result in a tougher capital regime for the ring-fenced retail bank. If the Liikanen group proposal were implemented simultaneously, it would add a tougher capital regime for the trading affiliate. The two proposals combine to increase resilience on both sides of the ring-fence and hence, for the group, to adverse shocks.

V. CONCLUSION

35. Structural measures reflect the economic and political imperative to address the TITF problem. Appropriately designed and judiciously implemented, these policies can work in tandem with traditional prudential regulatory and bank resolution tools to enhance financial stability. Our analysis suggests that activity restrictions may be justified in cases where the assessment of risk and its regulation and supervision are inherently difficult. Mandatory restrictions on corporate structure (such as ring-fencing or subsidiarization) can be justified to improve resolvability. However, conditional on political support, such measures can be more effective if they are designed as bank-specific measures arising from resolvability assessments instead of constituting an across-the-board application. If certain businesses can be identified in advance as very high-risk, excessively complex, or generating a conflict of interest that can destabilize the entire bank, a two-tiered approach may be feasible, with across-the-board structural constraints to deal with such activities and additional bank-specific measures.

36. It is critical that policymakers establish a credible strategy for resolving banks when they fail, regardless of their, size, interconnectedness, or complexity. This requires the ability to impose discipline on the managers, shareholders, and junior debt holders of failed banks. It also requires cross-border collaboration arrangements, such as the 2012 FDIC/Bank of England initiative. All this is critical to address the TITF problem.

37. The Liikanen report provides a useful construct ("Avenue 1") that can help authorities decide whether to add structural measures. Under this approach, countries could add to Basel III capital requirements by introducing a non-risk-based capital requirement on trading activities for banks

that have large trading portfolios. In addition, activity restrictions and corporate restructuring could be considered as a firm-specific option should a bank's resolvability assessment suggest this as desirable; however, these may be combined with across-the-board measures if bank-specific measures are difficult to carry out.

38. Structural reform measures must carefully consider implementation challenges: as with other administrative constraints, such measures may lead to incentives and behavior that reduce their effectiveness. Banks, particularly the internationally active ones, will optimize across different rule books by moving operations, changing corporate structures, and redesigning products in ways that could weaken policy effectiveness. This could push risks outside the regulated financial sector into shadow banks whose regulation and supervision will need to be strengthened appropriately. With varying national proposals, there is an additional need to ensure that the different measures do not run counter to each other or to the reform agenda.

And hence the case for international coordination...

39. Since the application of structural measures is being contemplated with the aim of increasing banks' resilience and resolvability in global financial and economic centers, these benefits would also have positive spillovers for the global financial system. Nevertheless, given their potentially significant costs, which can permeate the global economy, there is a clear case for an evaluation of the implications for other jurisdictions. Ideally, there would be ex ante coordination. But this is rendered difficult because some measures are already well advanced. By developing principles for the evaluation of implications, policymakers could facilitate corrections and thus mitigate adverse implications. These principles may also be useful for future measures that may be contemplated by other jurisdictions. An underlying objective would be to identify areas where the net benefits accrue nationally but the costs are borne globally. From a global perspective, it would be difficult to justify structural measures in such circumstances.

40. The principles could incorporate the following elements:

- **A clear articulation of the objectives of structural measures.** To the extent that objectives are similar across countries, authorities should find a way to close the gaps between the different sets of measures, as applied to large, internationally active banks, especially the G-SIBs.
- **An analysis of their implications for internationally agreed reform of prudential regulation, supervision, and resolution.** Three interfaces are particularly important: (1) the impact of these measures, if any, on the effective implementation of Basel III capital and liquidity rules; (2) whether structural measures will yield outcomes consistent with the implementation of the effective resolution regimes and recovery and resolution plans for the G-SIBs; and (3) the incentives for risk migration into the shadow banking system.
- **An assessment of the implication of these measures on risk-based supervision.** These initiatives could free up supervisory resources by ring-fencing or separating risk from banks. But they could also raise the costs of policing institutional behavior given the increased requirement

for verification of compliance, including at the transaction level. Moreover, imposition of structural constraints on regulated entities such as depository institutions could encourage migration of risk into shadow banking entities. Containing systemic risk in such circumstances would require a corresponding increase in supervisory resources devoted to oversight of such businesses.

- **The assignment of the monitoring of extra-territorial implications of national structural measures to an international body such as the FSB.** This approach has the advantage of offering an existing and effective forum for extracting the enhanced level of international cooperation and political will required. As regards the monitoring of international spillovers, it should be conducted and updated periodically and should include the impact of these measures on domestic markets and institutions as well as on supervisory resources in both home and host countries.

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