



# IMF Working Paper

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Bank Debt in Europe:  
“Are Funding Models Broken?”

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Are Funding Models Broken?”**

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**Abstract**

The crisis in Europe has underscored the vulnerability of European bank funding models compared to international peers. This paper studies the drivers behind this fragility and examines the future of bank funding, primarily wholesale, in Europe. We argue that cyclical and structural factors have altered the structure, cost, and composition of funding for European banks. The paper discusses the consequences of shifting funding patterns and investor preferences and presents possible policy options and bank actions to enhance European bank funding models' robustness.

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## I. INTRODUCTION

1. **The importance of bank funding and liquidity resurfaced after the global financial crisis.** Prolonged periods of market turmoil since 2007 in the United States and Europe illustrated the speed at which bank funding and liquidity can evaporate. Many banks—despite adequate capital ratios—experienced funding difficulties. Strains in funding markets forced national and supranational authorities to provide liquidity and funding support to frail banks. These pressures were amplified by structural vulnerabilities in the funding models of certain banks and jurisdictions, particularly in Europe.
2. **Why examine European bank funding now?** The financial crisis underscored the risks of dysfunctional markets and the interconnections between liquidity/funding and solvency. Funding pressures may constrain lending, and together with deleveraging, could hamper economic growth. Interventions by the European Central Bank (ECB) have reduced, but not removed, funding strains in the euro area. A vast literature links bank funding models to risks, and the Liikanen report<sup>2</sup> provides a useful summary about the influence of funding structures on crisis propagation mechanisms and individual bank performance. Understanding the underlying drivers of funding, including the impact of regulatory reforms, would help identify possible bank actions and policy responses to consolidate funding models and restore credit flows in Europe.
3. **Bank liability and funding composition represent a valuable early warning indicator of vulnerabilities,** perhaps more powerful than conventional capital ratios or than asset-side indicators such as nonperforming loans. A greater proportion of funding from non-retail deposits can result in a higher vulnerability to a setback in capital markets. Weak bank funding models may not only adversely impact individual banks and financial systems but also affect more widely economic growth and public finances.
4. **Are European funding models broken?** European bank funding currently looks more fragile than in other regions. This paper will address wholesale funding and funded balance sheet, with a focus on recent developments relative to *senior unsecured debt*. Our analysis will also focus on *Europe*, which appears the most vulnerable region (with differences among “core” and “peripheral” countries).
5. **The intent of this paper is to assess whether bank funding models are irrevocably or temporarily damaged.** The paper will (i) highlight the importance of funding; (ii) compare funding models between Europe and other regions; (iii) discuss cyclical and structural shifts in European funding models; (iv) present the main implications of dysfunctional funding models in Europe; and (v) conclude with a range of options that could be considered to strengthen funding models. An analysis of the broader liability

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<sup>2</sup> European Commission, EC 2012, box 3.4.

structure (including derivatives and off-balance sheet liabilities, deposits and capital) and a discussion of structural changes to business models (e.g., Liikanen, Vickers and Volcker proposals) are beyond the scope of this study.

## II. AN INTRODUCTION TO BANK FUNDING AND LIQUIDITY RISK

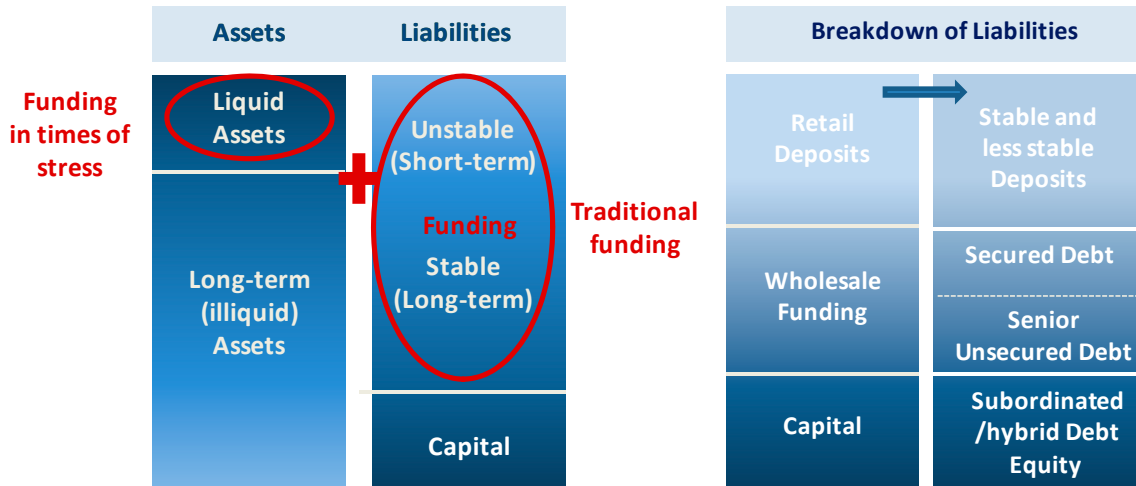
6. **Banks rely on wholesale funds to supplement traditional retail deposits.** During credit booms, the increase in bank lending may outstrip the pool of available retail deposits, especially with intense competition for household and corporate savings among banks and from alternative investment institutions. Many banks turn to wholesale funding to fill their funding gap and finance a broader range of activities.
7. **Retail and wholesale counterparties provide bank funding.** Retail deposits come primarily from “natural persons” (including small business customers) and deposits from non bank financial intermediaries (NBFIs). Wholesale funding is “raised from nonnatural persons” (e.g., legal entities and institutional investors) and comes in the form of unsecured and secured funding. Unsecured liabilities are “not collateralized by legal rights to specifically designated assets owned by the borrowing institution in the case of bankruptcy, insolvency, liquidation or resolution.” Conversely, secured funding is collateralized by specific assets, which protect secured creditors in a bankruptcy.
8. **The maturity and stability of funding depends on providers and instruments.** Retail deposits<sup>3</sup> encompass “stable” deposits covered by a deposit guarantee scheme unlikely to be withdrawn rapidly and “less stable” deposits (not guaranteed, and from more sophisticated depositors, such as corporates, high net worth individuals, or those denominated in foreign currencies). Institutional wholesale funding is provided by financial institutions, such as banks, securities firms, insurance companies, asset management companies, and money market funds (MMFs), along with nonfinancial corporate, sovereign, central bank, and public sector entities. Insurance and pension funds are the main providers of long-term funding to match their long-term assets; MMFs provide the bulk of short-term funding. Wholesale funds may be raised on a short-term basis through instruments such as commercial paper, certificates of deposits (CDs), and repurchase agreements (repo) and on a longer-term basis through instruments such as term debt (senior or subordinated) and covered bonds. Short-term wholesale funding is defined here as overnight deposits, repo funding, and money market fund shares.
9. **Funding should be assessed based on a holistic balance sheet approach.** The adequacy of funding should also be measured alongside capital and liquid assets to determine resiliency of bank funding, both in normal times and in times of stress

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<sup>3</sup> BCBS, 2010 a.

(Figure 1). The robustness of funding stems as much from the composition of funding as from the liquidity, maturity, and types of assets funding is meant to finance.

Figure 1. The Robustness of Funding Depends on Both Assets and Liabilities



10. **Bank funding and capital both contribute to a bank’s strength.** Robust capital is traditionally conducive to more favorable funding terms, as higher capital indicates a lower probability of default. Similarly, cheaper funding costs improve profitability and facilitate internal capital generation. Frontiers between funding (primarily term debt) and capital instruments are increasingly blurred as the characteristics of subordinated and senior debt converge towards more loss absorption features due to regulatory developments, debt restructuring initiatives, and bail-in proposals. This evolution has implications for balance sheet structure, composition, and priority of claims, as well as for the overall cost of capital and funding, which will be discussed in section IV and VI.
11. **Banks are inherently vulnerable to liquidity and funding risk** due to their structural role in the maturity transformation of short-term deposits into long-term loans. “Liquidity” is the ability of a bank to fund assets and meet obligations as they come due without incurring unacceptable losses<sup>4</sup>. “Funding liquidity” risk is the risk that a bank will be unable to meet efficiently expected and unexpected current and future cash flow and collateral needs without affecting daily operations or the financial condition of the bank. These risks may materialize at a specific bank or be systemic.
12. **Since 2008, public intervention to support funding and liquidity proved necessary, albeit costly.** To stem the crisis and offset the abrupt withdrawal of institutional and retail funding, authorities around the world acted forcefully to prevent individual and systemic bank failures. Official support came through a mix of funding guarantees,

<sup>4</sup>BCBS 2010 a.

liquidity facilities, and backstop deposit guarantee schemes. Capital injections and asset protection schemes were also part of the broader public intervention toolkit.

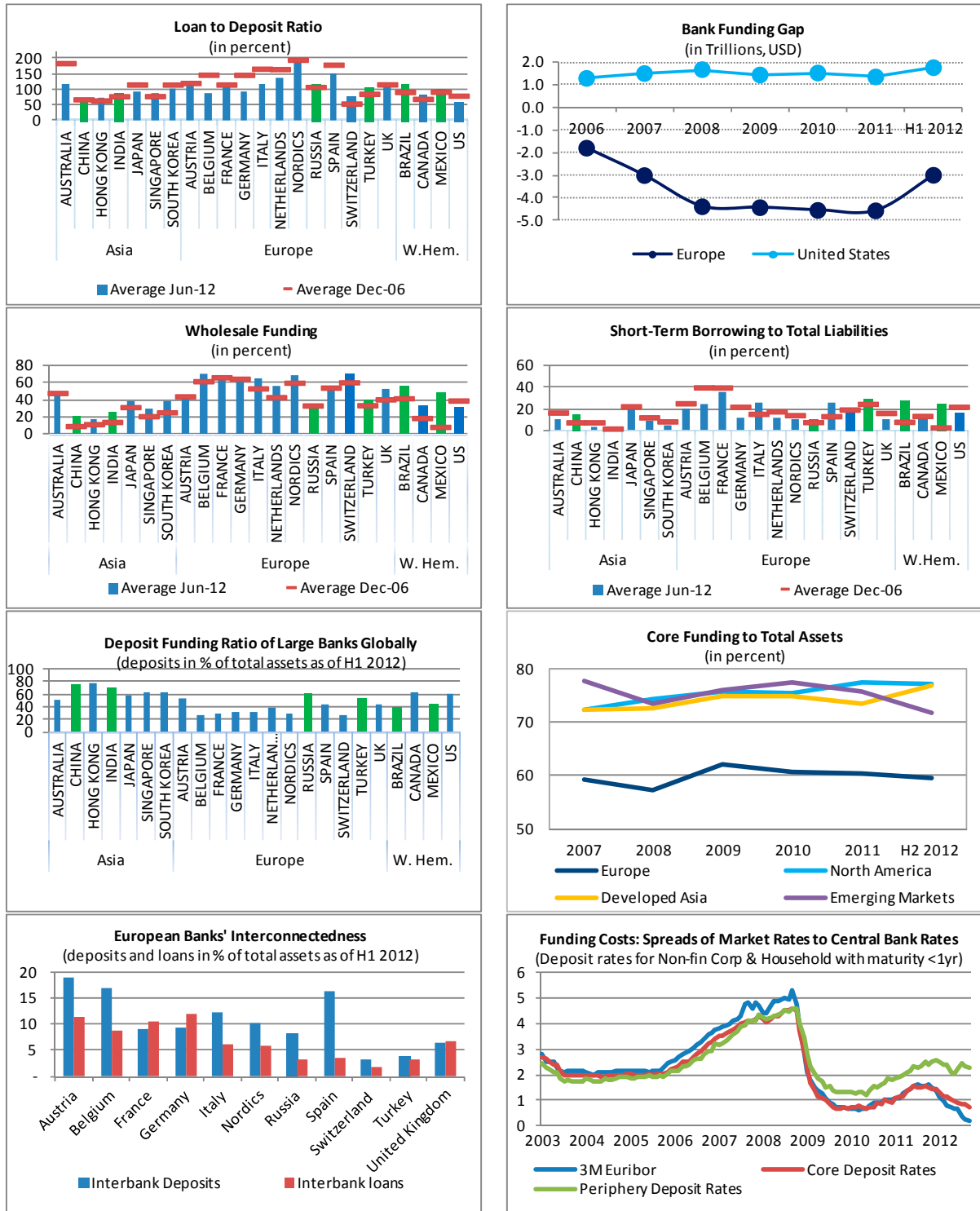
### III. WHAT MAKES EUROPEAN BANK FUNDING MODELS VULNERABLE?

13. **European bank funding metrics compare unfavorably with international peers.** European banks underperform based on a selection of ratios (Figure 2), such as (i) the loan-to-deposit ratio (LDR), which assesses the extent to which customer loans are financed by customer deposits; (ii) the funding gap, which estimates the potential shortfall of customer deposits to support customer loans; (iii) the level of reliance on wholesale funding to finance the funded balance sheet, both long-term; and (iv) short-term wholesale funding; (v) the deposit funding ratio, which compares the share of customer deposits versus total assets; (vi) the core funding ratio, which sums all stable funding liabilities (deposits, term debt and equity) as a percentage of total assets; (vii) interbank exposures, measured by the share of loans to and deposits from other banks; and (viii) deposit rates versus 3 months EURIBOR.
14. **Caveats.** It is important to note that aggregate country data masks significant differences in funding conditions across individual banks. Arguably, 2006 represented the peak of excesses in the financial system, when funding conditions were too easy and funding structures used by some financial institutions were unsound and unsustainable. Using 2006 as a benchmark for comparison is not intended to be the level at which banks should converge back to; rather, the benchmark should underline general trends between pre- and post- crisis. Metrics are not adjusted for differences in accounting standards (IFRS versus US GAAP), which may make comparisons relative to total assets detrimental to European banks. Finally, the definition of customer deposits varies across banks and countries, and some instruments could be classified into wholesale in one jurisdiction and retail in another.
15. **The usefulness of ratios is constrained by differences in countries' financial system structures, and banks' business models.** Europe follows a bank-led credit model, while the United States has a market-led model, with a larger shadow banking sector. Retail banks, which are geared towards traditional retail banking activities, are mostly financed by customer deposits. LDRs carry more significance for banks with a strong focus on retail operations. Investment banks, which are active in trading and in providing sophisticated services to institutional customers, are financed primarily through wholesale financing; thus wholesale funding ratios are more appropriate. Universal banks, which combine retail operations with a wide range of activities, including investment banking, asset management, and insurance, rely on a combination of retail and wholesale funding, and both LDR and wholesale funding ratios are meaningful.
  - **European banks LDRs remain elevated...**

16. **Average LDRs of European banks compare unfavorably.** Typically, a low/robust LDR (below 100 percent) indicates customer loans are funded by customer deposits, while a LDR above 100 percent wholesale funding is needed to complement insufficient deposits. LDRs average 118 percent in Europe (down from 140 percent in 2006), well above the United States (62 percent, down from 80 percent) and Japan (78 percent, down from 116 percent). Emerging markets post an average LDR of 100 percent, up from 87 percent, as they remain on an upswing growth cycle.
17. **Europe follows a bank-led credit model** for corporate financing (versus market-led in the United States). Bank loans account for 80 percent of corporate financing, and debt is estimated around 10 percent of total credit (Dealogic). This figure compares to 60 percent in the United States, where corporates primarily raise funds on capital markets. The reliance on securitization is also more developed in the United States (in aggregate, 25 percent versus around 15 percent in Europe, with variations across countries). Samuels (2012 f) projects that if Europe's corporate bond markets were to deepen along levels seen in the United States, European banks' LDRs would decline by around 15 percent.
18. **U.S. and emerging economy bank funding models face their own vulnerabilities and constraints, and their apparent soundness may conceal some specific legacy weaknesses.** Going into the 2008 crisis, wholesale funding ratios for many U.S. banks did not properly reflect the intensive use of off-balance sheet funding vehicles and the fragility of their funding structures. Similarly, various funding ratios may look overly favorable, as they do not capture the importance of nonbank intermediaries in funding chains in the United States. In emerging economies, low LDRs and the dominance of deposit funding are the legacy of two historical factors: financial repression/fiscal dominance and financial market underdevelopment. Banks' forced financing of fiscal deficits resulted in the undersupply of saving vehicles (i.e., forced purchase of "liquid asset" for banks), a low remuneration of deposits (most often below inflation), and elevated reserve requirements, all of which help banks deal with low-yielding "mandatory investments" in public debt (see Reinhart et al. on financial repression through the ages). As emerging economies' banking systems grow more mature, their liability mix could become more similar to those of European banks and the funding challenges facing European banks could become a global concern.
19. **European banks also have high asset-to-deposit ratios (ADRs).** More than elevated LDRs, European banks (especially investment or universal banks) are vulnerable owing to high ADRs, which result from a large asset base geared towards non-lending operations rather than to a small deposit base. Different regulatory backgrounds have led to different outcomes: Basel II risk-based capital ratios did not obstruct bank balance sheet expansion in Europe, whereas U.S. banks (still reporting under Basel I) were primarily required to comply with leverage ratios and had smaller balance sheets.



Figure 2. Key Funding Metrics of European Banks Versus International Peers



Sources: Bloomberg, SNL Financial, ECB, and Fund staff estimates. Based on a sample of 109 banks from 23 countries with systemically important financial sectors. The sample comprises 48 banks in Europe, 27 in the Western Hemisphere and 34 in Asia Pacific, and is a mix of 8 Investment Banks, 30 Retail Banks and 71 Universal Banks, and covers all 28 G-SIFIs.

- **...Prompting excessive reliance on wholesale funding...**

20. **Wholesale funding is needed in Europe to plug the “funding gap”.** The customer funding gap, the amount by which customer loans exceed customer deposits, is the highest in Europe. Our sample<sup>5</sup> of large European banks runs an aggregate “funding gap” of over \$3 trillion, while our U.S. bank sample runs a funding surplus (i.e., deposits exceeding loans) of \$1.8 trillion. After peaking in 2008, the funding gap is gradually narrowing in Europe. Deleveraging through asset sales and portfolios de-risking (e.g., reduction of capital intensive activities and activities/geographies with high funding needs, including in USD) have helped European banks reduce their financing needs. Weaker credit growth also contributed to reducing the funding gap.
21. **European banks have the highest level of reliance on wholesale funding,** averaging 61 percent of total liabilities, twice more than in Asia (33 percent) or emerging economies (37 percent), where retail funding dominates and loans are primarily financed by deposits, reflecting low levels of private sector debt and high savings ratios. Large U.S. banks, despite high debt levels and low savings rates in the United States, have an average wholesale reliance of 31 percent, thanks to large deposit and small asset base funding structures. Australian, Japanese, and South Korean SIBs remain more reliant on wholesale funding than their Asian peers, as capital markets are more developed.
22. **Short-term wholesale funding remains elevated in Europe.**<sup>6</sup> A heavier reliance on shorter-term funding (with a maturity less than one year) makes banks more susceptible to external shocks, the abrupt withdrawal of funding, and rollover risks (such as shortening of maturities and a higher pricing of new issues). The proportion of short-term funding declined from 25 percent in 2006 to 19 percent for Europe (still above 30 percent in France) and 16 percent in the United States (from 22 percent). Emerging economies, on the contrary, have increased their reliance on short-term wholesale funding from 8 percent in 2006 to over 17 percent in 2012 to expand their lending activities.
23. **Core funding ratios are lower in Europe than in the United States.** Deposits finance a small proportion of assets in Europe (36 percent versus 62 percent for North America and Asia). More broadly, “core funding”, which refers to the most stable liabilities (deposits, total equity—including goodwill—and unsecured long-term debt), has grown less rapidly than European bank balance sheets, weakening their funding structure. In the United

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<sup>5</sup>Based on a sample of 16 European and 14 U.S. banks. In Europe, where over 8,000 banks operate, a broader sample including smaller deposit-rich retail banks would likely reduce the funding gap. Our sample still allows cross-Atlantic comparisons and captures the existence of a surplus in the United States and a deficit in Europe.

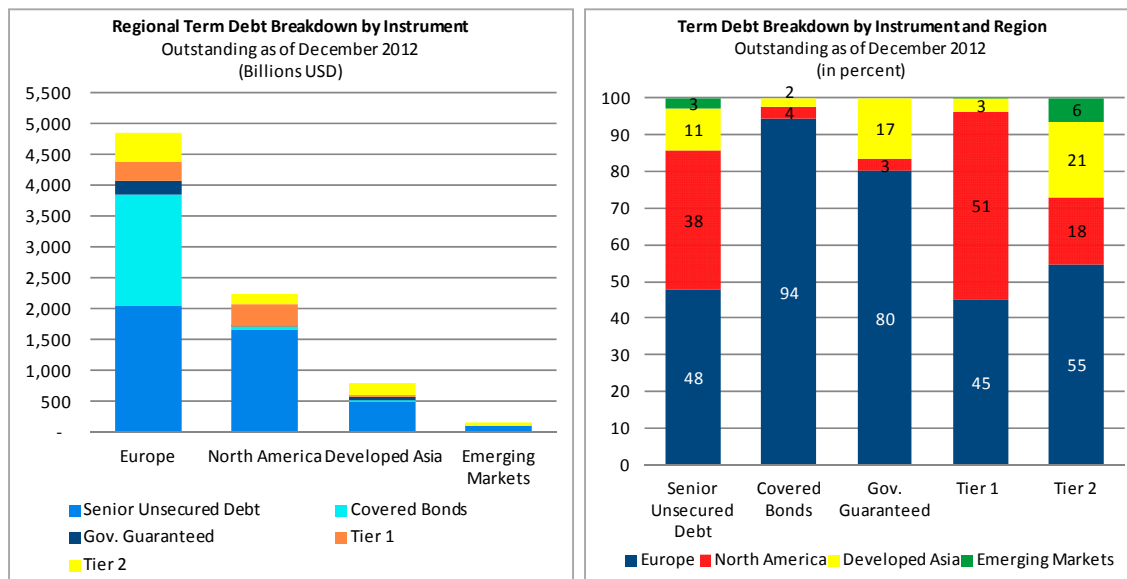
<sup>6</sup>Levels of short-term funding change quickly, and more recent trends may not be fully reflected.

States, the core funding ratio reaches almost 80 percent of assets and is mostly composed of deposits, versus 60 percent for Europe, where the proportion of term debt is larger.

- ...Leaving them exposed to capital market fluctuations...

24. **European banks' reliance on wholesale funding increases their vulnerability to market shocks** (Figure 3). Bank debt issuance in Europe, both senior and subordinated, towers above the amount issued by banks in the United States, Asia, and emerging economies (EEs). EE banks' liability structure is less complex, composed mostly of equity, senior debt, a small proportion of dated subordinated debt, and no perpetual hybrid Tier 1. Covered bonds are a European funding vehicle, whereas U.S. banks tend to prefer off-balance sheet securitizations. Term debt in Europe and the United States is made up primarily from senior unsecured debt (41 percent and 66 percent of total, respectively).

Figure 3. Breakdown of Term Debt by Region and by Instrument

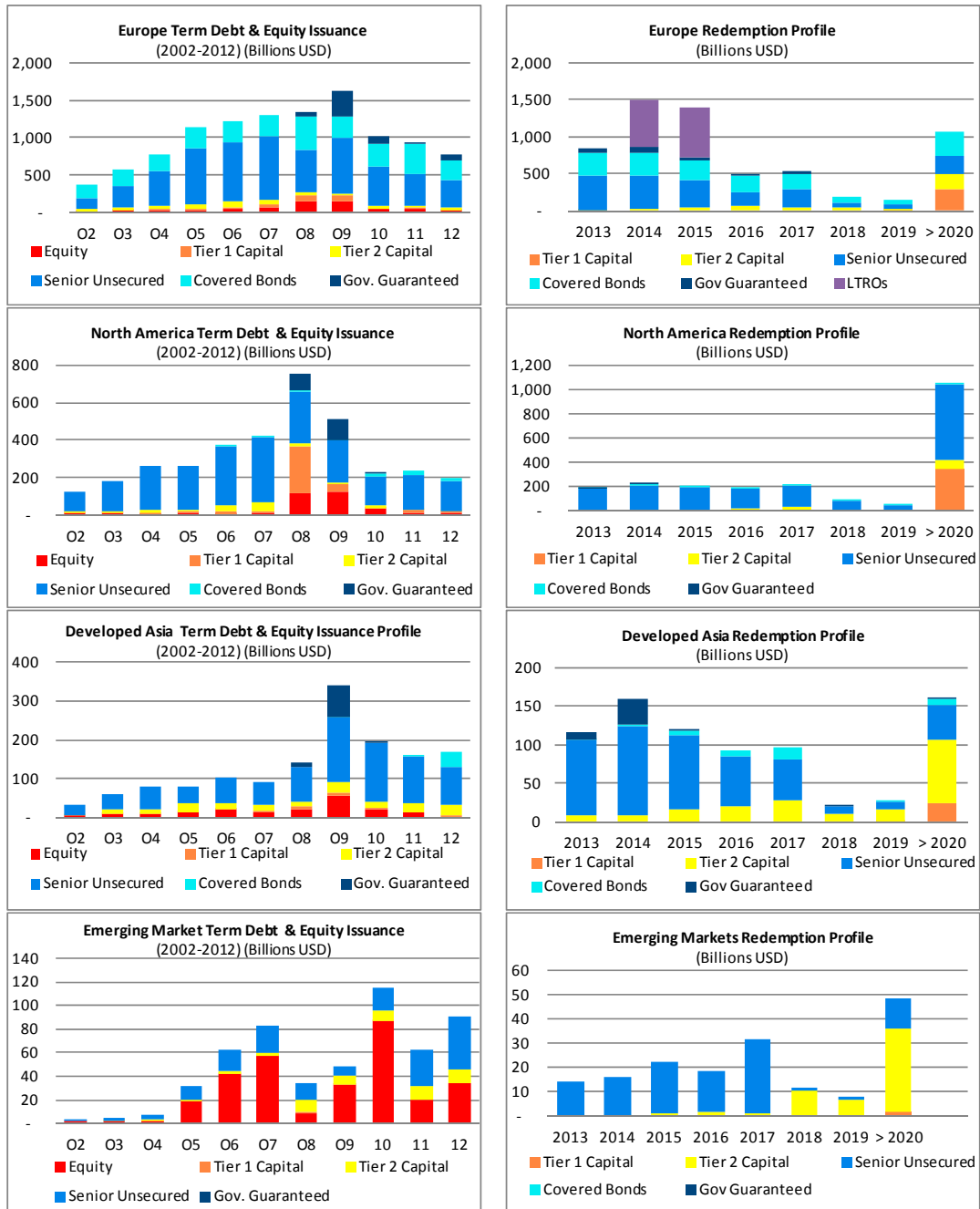


Source: Dealogic.

25. **Interbank market conditions diverge between “core” and “peripheral” Europe.** The ECB's actions eased tensions in the interbank market, with the EURIBOR spread significantly down from its 2011 peak. While the deposit rate (less than one-year maturity) for euro area core countries has trended down in step with the three-month EURIBOR spread, the deposit rate for peripheral countries remains around 150 basis points above, as funding tensions continue to fragilize peripheral countries.
26. **Funding pressures have recently eased but not disappeared.** Ample central bank funding has improved wholesale funding conditions and allowed for a reduction in deposit rates. Cheap liquidity supported various forms of “carry trade”, including the

swapping, or buyback, of expensive debt or the purchase of government bonds. The recent easing in funding conditions helped reduce spreads and allowed for a return to their first half of 2011 levels. The drivers of improvement were central bank support, investors' search for yield, and a relative scarcity of bonds as primary supply declined.

Figure 4. Year-to-date Issuance and Redemption Profile Across Select Regions



Source: Dealogic.

27. **Replacing public funding with private funding might prove challenging.** ECB liquidity must be repaid by 2015. Current aggregate net issuance for senior unsecured debt has turned the most negative in 15 years, which may indicate that banks have replaced expensive debt funding with cheaper ECB long-term refinancing operations (LTROs) and imply that certain banks could face difficulties in repaying the LTROs. As noted by analysts, the pick-up in unsecured debt issuance in the second half of 2012 is promising but does not affect all banks the same. Funding conditions remain polarized, with stronger banks on their way to normalization and expected to pay down LTRO funds in early 2013 (unless they keep ECB funding to manage their exposure to peripheral Europe and any redenomination risk) and weaker banks likely to rely on public support much longer because they could find it more profitable to wait until LTRO maturity.
- **...And less prepared to meet the new Basel III liquidity requirements**
28. **Basel III liquidity rules will be challenging to implement in Europe.** European banks in aggregate do not yet comply with the liquidity coverage ratio (LCR) and net stable funding ratio (NSFR). These measures will not be in place (and may change) until 2015 and 2018, respectively, rendering it difficult to judge at the current juncture. The latest European Banking Authority (EBA, 2012) quantitative impact study, however, indicates that progress is still needed. The EBA monitored the liquidity of 157 European banks based on June 2011 data. The average LCR was 70–71 percent, which represented an aggregate shortfall of liquid assets of €1.2 trillion, or 3.7 percent of the sample's €31 trillion in total assets. Similarly, NSFR was below the future requirements and came in at an average of 89–90 percent, representing a need for stable funding of approximately €1.9 trillion. Santos and Elliott (2012) show that estimates of net liquid assets and net funding needed in the United States and Japan are lower than for Europe.
29. **European banks, however, boosted liquid assets** to buffer against negative shocks. Liquid asset ratios, while not yet at levels required by Basel III, are still well above pre-2008 levels.

**Box 1. Two New Regulatory Liquidity Standards have been Adopted**

**The Basel Committee adopted two new liquidity measures, the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR),** in December 2010. Following an observation period that debuted in 2011 and could lead to some fine-tuning, both standards will become regulatory minima in 2015 and 2018, respectively. The new liquidity regime should help level the playing field by replacing the 25 or so liquidity regimes that previously co-existed among Basel member countries.

**The new liquidity standards have separate but complementary objectives.** The LCR aims to promote the short-term resilience of a bank's liquidity risk profile by ensuring it has sufficient high-quality liquid assets to survive a significant stress scenario lasting for one month. The NSFR aims to provide a sustainable maturity structure of assets and liabilities and to strengthen funding resilience over a longer time horizon (>1 year).

**The LCR requires banks to maintain a stock of high-quality liquid assets easily convertible into cash to meet liquidity needs** (or "net cash outflows") for a 30 calendar day time horizon under a severe liquidity stress scenario. The 100% threshold will be a minimum requirement in normal times. During a period of stress, banks would be expected to dip into their pool of liquid assets and could be allowed to fall temporarily below the minimum requirement.

**The NSFR is structured to ensure that long-term assets are funded with stable liabilities** in relation to their liquidity risk profiles. The NSFR is designed to promote structural changes in the liquidity risk profiles of banks away from short-term funding mismatches and toward more stable, longer-term funding.

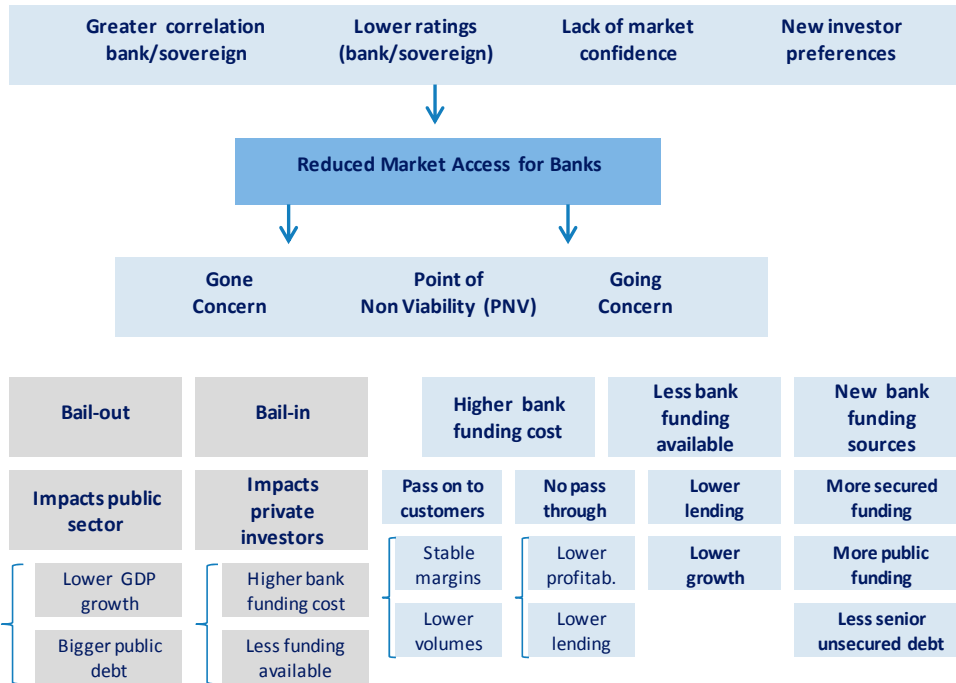
**IV. CYCLICAL AND STRUCTURAL SHIFTS EXACERBATE THESE VULNERABILITIES FURTHER**

30. **This section discusses the main drivers behind European banks' less robust funding models.** Section III established that European bank funding metrics compare unfavorably with their international peers. Some European banks have recently faced a *perfect storm* for funding based on a simultaneous shutdown of capital markets, deposit outflows, significant declines in asset values, and a weak sovereign.

**A. A Tougher Operating Environment**

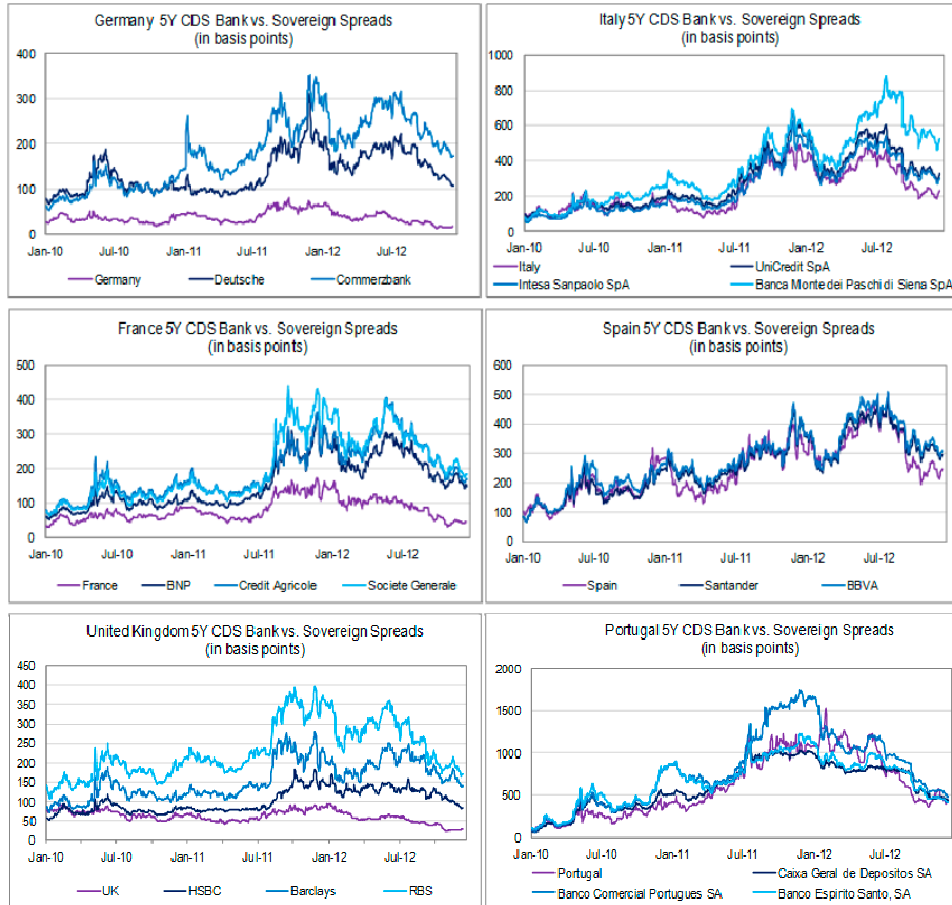
31. **A combination of operational factors created negative headwinds** for European banks' access to and cost of funding (Figure 5).

Figure 5. Implications of Reduced Market Access on Bank Funding



32. **The European sovereign crisis exposed the link between weak banks and weak sovereigns** and partly explains elevated wholesale funding costs in parts of Europe. Bank spreads, traditionally driven by a bank’s individual financial metrics and broader market conditions, now respond primarily to sentiment towards the sovereign. This observation is particularly true for bank spreads in the European periphery, which co-move with the spreads of their sovereigns (Figure 6). Similarly, deposit rates are higher in the periphery.

Figure 6. Select Sovereign and Bank Spreads Seem Across Europe



Sources: Bloomberg and Datastream.

33. **Rating downgrades remain a major headwind.** Ratings are migrating downward, reflecting the decline of some European sovereigns' creditworthiness and reduced ability to financially support the banks adverse operating conditions, asset quality and profitability deterioration, restricted market funding access, and persistent investor concerns. Senior ratings are falling by two to four notches, depending on the banks and credit rating agencies (CRAs). Lower ratings could limit access to funding, increasing refinancing costs, and may also prevent banks from acting as counterparties (e.g., on derivatives) or investment options. They could also force banks to issue more secured funding, which carry a higher rating than senior unsecured debt. The rating sensitivity of many investors' mandates could also reduce their ability or willingness to hold bank debt, particularly if the latter migrated from investment grade to high yield.
34. **Investor preferences are shifting away from euro area banks' senior unsecured debt.** Long-term investors, such as insurance companies, are likely to adjust their portfolios' composition in line with the upcoming Solvency II requirements. Bank covered bonds will increase due to their preferential capital treatment, while term unsecured debt (both senior and subordinated) will decline. Similarly, the punitive



treatment of equity should discourage insurers to purchase bank debt with contingent capital or bail-inable features (where debt may be written off or converted into equity), which may hamper the development of these new asset classes. Short-term investors, such as money market funds (MMFs), have reduced their exposures to European short-term bank debt, with euro area banks declining the most (70 percent below May 2011 allocations according to Fitch).<sup>7</sup> This “partial disengagement” was accompanied by higher CDS premia and by an increasing reliance on secured transactions (repos).

35. **Banks are turning to new types of funding.** As traditional sources of funding become scarcer, new and untested funding instruments are emerging. In the United Kingdom, the Financial Policy Committee (FPC), based on a review by the Financial Services Authority (FSA) of 23 U.K. banks, found that “collateral swaps” between banks and insurance companies are on the rise.<sup>8</sup> They see this practice, whereby banks swap their lower quality and usually less liquid assets for higher quality and more liquid collateral from other financial institutions, as entailing risks, especially for insurance companies.

### B. Increased Subordination and Greater Burden-sharing

36. **Structural changes impact liability structures and borrowing costs.** Even if cyclical and operational headwinds were to abate, European banks would still face structural pressures on their funding model, primarily (i) increased subordination and (ii) greater burden-sharing. *Subordination* of senior unsecured debt (the traditional bedrock of funding) occurs primarily via two trends: (i) asset encumbrance and (ii) developing preferred creditor status. Both trends undermine senior unsecured debt, as more creditors rank ahead in a liquidation and the layer of protection provided beneath by regulatory capital remains limited (Figure 7). *Burden sharing* results from ongoing legal efforts to implement resolution regimes (including bail-in measures) and from the ad hoc treatment of subordinated and senior creditors in banks that have received state aid.
37. **Asset encumbrance is rising.**<sup>9</sup> Both central banks and covered bond funding immobilize large pools of assets (through haircuts and over-collateralization) not available to unsecured creditors (including depositors) in a liquidation. Recently, encumbrance reflected banks’ greater reliance on public funding, particularly in peripheral countries,

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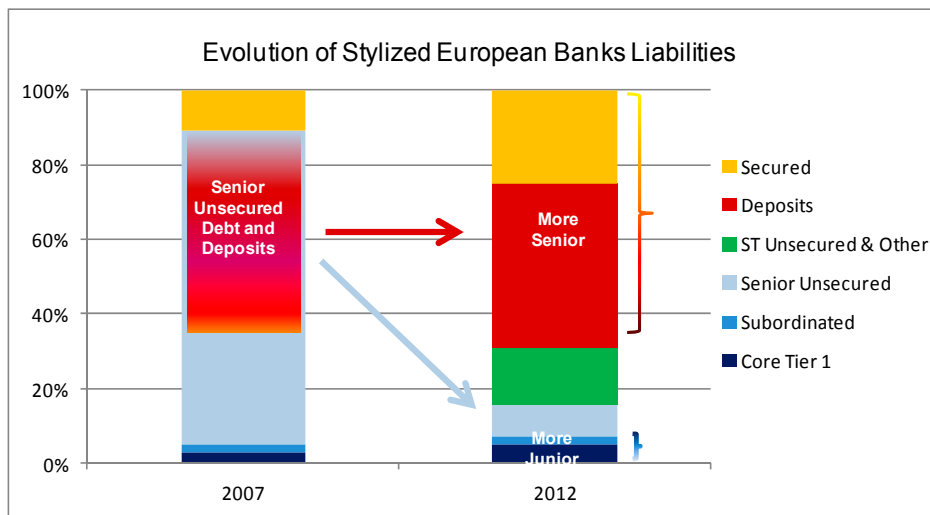
<sup>7</sup>Grossman 2012. It should be noted that many European banks responded to the shortage in US dollar funding by disposing of US dollar assets and are thus much less reliant on this funding source.

<sup>8</sup>FSR, December 2011.

<sup>9</sup>It refers to the pledging of collateral to one group of creditors at the expense of another, which reduces the available collateral to unsecured creditors in insolvency and reduces their rate of recovery (or increases their loss given default, “LGD”). Encumbrance encompasses instruments such as covered bonds and repurchase agreements (repos), collateral swaps and securitized funding, or any instruments where collateral must be granted in exchange of funding, as in ECB operations.

which were most reliant on ECB and national central bank funding (e.g., close to 30 percent of funded assets in Greece and above 10 percent in Ireland and Spain). Analyst estimates (and definitions) of asset encumbrance levels in Europe vary, but averages range between 15 percent and 25 percent of funded liabilities (or assets), with some banks reporting higher levels. Encumbrance is not riskier per se, as illustrated by the robust track record of mortgage banks in Denmark, which fund via covered bonds (with low overcollateralization) and do not take deposits. Elevated asset encumbrance, however, may limit funding options and deter unsecured creditors.

Figure 7. Evolution of Stylized Stacked Liabilities for Select European Banks (In Percent)



Sources: Citigroup, Morgan Stanley, Company Reports, Fund staff estimates.

38. **In Europe, the ranking of depositors pari passu with senior unsecured creditors is under review.** Placing retail (domestic) deposit liabilities above unsecured debt in the credit hierarchy would be consistent with policymakers' objectives to make bondholders a more equal partner in burden sharing while minimizing losses for deposit insurance schemes and taxpayers. Depositor preference is credited with multiple advantages, such as increased depositor confidence (and lower risk of deposit run), improved financial stability and reduced contagion in the financial sector (due to lower mutualization of losses arising from an individual bank failure), and easier use of resolution tools, including bridge banks and property transfers.
39. **Several countries adopted or are considering adopting depositor preference legislation** (Table 1). The Financial Stability Board (2011 a) discussed and sought consultation on the pros and cons of depositor preference. Depositor preference has already been applied on an ad-hoc basis to resolve troubled banks in program countries via the separation of liabilities into a "good bank-bad bank". Steps towards a banking union in the euro area could accelerate the formal adoption of depositor preference legislation, even if the directive on resolution and recovery does not clearly advocate

depositor preference. By placing deposit liabilities ahead, unsecured creditors would see their recovery prospects dramatically reduced in a liquidation (Ineke, 2012 b), particularly in banks with broad deposit franchises. Wholesale funding may be less forthcoming if depositor preference became the new norm, even if the latter could stabilize retail funding and reduce the ultimate risk to the taxpayer.

Table 1. Select Countries With Some Form of Depositor Preference Legislation

Asia	Europe	Emerging Economies	Western Hemisphere
Australia	Austria	Argentina	United States
China	Belgium	Russia	
Hong Kong SAR	Germany		
Singapore	Italy		
	Latvia		
	Norway		
	Portugal		
	Romania		
	Switzerland		
	United Kingdom		

Source: IMF.

### Greater burden sharing may increase losses for senior and subordinated bondholders

40. **International and European regulatory initiatives should strengthen the liquidity and funding profiles of European banks over time.** In addition, lower leverage and higher capital should also contribute to improving banks' liability management. However, the ongoing crisis complicates the transition to the steady state, which makes the individual and combined impact of new regulations, as well as their possible unintended consequences, hard to disentangle.
41. **Policymakers are taking steps to protect taxpayers' money and shift losses to bank creditors.** In response to the financial crisis, many jurisdictions intervened and provided substantial support to banks. The cost of public support proved high, and national and international initiatives are underway to mitigate negative externalities associated with bank failures and to ensure that burden sharing with private creditors (including via bail-in) precedes bail-out to rescue ailing banks. Among the key changes, three have significant implications: (i) greater loss-absorption for subordinated bondholders through the implementation of Basel III requirements that regulatory capital instruments be fully written down or converted to equity at the "point of non-viability" (PNV); (ii) debt restructuring associated with official sector recapitalization; and most importantly (iii) the development of a bail-in regime in Europe (Box 2).
42. **Basel III and CRD4 aim for greater loss absorption mechanisms for subordinated debt instruments.** After the 2009 wave of liability management exercises (LMEs), renewed exchanges, tenders, and buyback have been conducted since the summer 2011 to take advantage of deeply discounted bond prices or to lock in capital gains related to the

unwinding of hedges. Banks have targeted subordinated debt (Tier 1 and Tier 2 instruments), senior unsecured debt, and even covered bonds. Various reasons underpinned those operations, including eliminating expensive debt and improving profitability, reducing leverage, and improving the quality of capital by replacing instruments with lower loss-absorption features with cash that will be immediately accretive to the P&L and equity base. LMEs, however, also entail risks to banks' liquidity positions, as banks must use cash to repay bondholders, which creates an immediate outflow. The use of liquid assets to phase out illiquid long-dated liabilities may seem to run against the objective of improving the liquidity position of banks. In addition, LMEs on subordinated debt instruments places senior bondholders at greater risk to a bail-in should one be necessary.

### **Burden sharing and debt restructuring associated with state aid recapitalization**

43. **In a debt restructuring associated with public sector bank recapitalizations, senior and subordinated bondholders have been treated differently.** Senior bondholders have not been affected in restructuring outside resolution because they rank *pari passu* with depositors in most of Europe (contrary to the United States). In addition, market considerations limited policymakers' ability and willingness to impose losses on senior unsecured debt. On the contrary, subordinated bonds have been subject to burden sharing on a voluntary (market-driven) or coercive basis (public-sector driven), as illustrated by sizeable LME operations for banks that received state aid.<sup>10</sup>

### **The expected adoption of bail-in measures will affect senior unsecured creditors**

44. **National and international initiatives to move away from “bail-out” to “bail-in”** have been undertaken in response to costly government support of banking systems.<sup>11</sup> Bail-in regimes, where certain creditors are forced to take losses while preserving others before banks benefit from public support, are one of the resolution tools under consideration. The FSB (2011 a and b) has included bail-in as one of the key attributes of effective resolution regimes. In Europe, resolution regime precedents with bail-in features include the United Kingdom, Germany, and Denmark. The European Commission (EC) recently proposed a bail-in regime, with additional options discussed in the Liikanen report (Box 2). Regulators enjoy discretion to determine when the bail-in should occur, which could be on a “going concern” basis (the bank remains open and continues to exist as a legal entity, albeit with a fundamental reorganization of the business) or on a “gone concern” basis (i.e., in liquidation or orderly wind-down).

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<sup>10</sup>Including in the United Kingdom, Ireland, and Spain.

<sup>11</sup> Bail-in is defined as is a statutory power of a resolution authority to restructure the liabilities of a distressed financial institution by writing down certain bank liabilities and/or converting them to equity.

## Box 2. Bail-in Proposals in the EU

**The EC is implementing a European framework for Bank Recovery and Resolution.** In June 2012, the EC (2012 c) put forward a draft directive, which sets out resolution measures and bail-in powers. The directive is expected to come into force on December 31, 2014, and bail-in from January 2018. In October 2012, the high level expert group on reforming the banking sector (“Liikanen report”) came with its own suggestions on bail-in and argued that bail-in requirements should be “phased in over an extended period of time”.

The scope of “bail-inable” liabilities under EC proposals looks broad, but **most of the burden sharing through bail-in is expected to rest on subordinated and senior unsecured creditors.** Table 1 outlines the many exemptions, which could expand further with the possible adoption of depositor preference legislation across the EU. Existing debt and eligible liabilities will not be grandfathered. While EC proposals broadly consider all existing subordinated and senior unsecured debt as “bail-inable”, the Liikanen proposals support the use of *designated* bail-in instruments, which would be applied explicitly to a certain category of debt (or banks could issue common equity).

**Table 1. Eligible and Exempted Securities: The Possible Bail-in Perimeter under EC Proposals**

Eligible liabilities for bail-in	Exempted liabilities
Senior and subordinated unsecured debt with a maturity greater than one month	Short-term liabilities (less than one month to maturity)
OTC Derivatives liabilities, according to their maturity	Derivatives cleared through CCPs and derivatives excluded by national authorities <b>could be exempted</b>
Deposits exceeding the guarantee ceiling (€100,000 per depositor per bank), such as corporate or high net worth individual deposits. DGS schemes are included	Guaranteed deposits up to the limit
Secured liabilities not fully covered by collateral	Secured liabilities (e.g., covered bonds) up to the value of collateral Client assets and money, and other operating liabilities (e.g., due to employees, tax authorities)

**It remains unclear whether bail-in proposals will lead to more depositor preference across the EU.** According to EC proposals (article 99 (2)), uninsured deposits would be subject to bail-in, and Deposit Guarantee Schemes (DGS) rank *pari passu* to all other creditors eligible for bail-in. Covered deposits, however, could be made whole by national DGS, and bank deposits are likely to get preferential treatment if established under national solvency laws. Depositor preference is already in force in several European countries, with others expected to follow.

**Bail-in proposals would broadly respect the traditional waterfall of payments.** The EC establishes that equity, preference shares, and hybrid Tier 1, followed by subordinated debt (Tier 2), will absorb losses first, irrespective of whether capital triggers have been breached. Shares should either be significantly diluted or cancelled (article 42). Contingent capital instruments will then be converted into equity or written down before other bail-inable senior unsecured debt. For senior unsecured creditors, the EC opted for a regime respectful of the hierarchy of claims in an insolvency and abandoned the “sequential” bail-in option (where certain creditors within the same class bear loss prior to others based on the maturity of the debt).

**The EC leaves the amount of bail-inable debt to the discretion of national authorities on a case by case basis.** Earlier consultation documents, however, considered 10 percent of total liabilities (excluding regulatory capital) as an appropriate threshold for bail-inable debt. Fixing the threshold of minimum bail-inable instruments as a percentage of *total liabilities* rather than of *risk-weighted assets* appears more severe for senior unsecured bondholders than other proposals under consideration, such as primary loss-absorbing capacity (PLAC) recommendations from the ICB in the United Kingdom, where proposals target total capital plus best quality bail-in debt at 17% of RWAs.

45. **Bail-in objectives are positive, but bail-in regimes’ effectiveness remains to be tested.** Successful bail-in can help reduce the public cost of bank rescue and contingent liabilities and help remove the perceived implicit guarantee (for “too big to fail” banks). A credible bail-in regime should also reduce moral hazard and improve market discipline, and help decouple the link between sovereign and bank funding. Nonetheless, the transition to a steady state may prove challenging, particularly in the current crisis context. Bail-in regimes need a robust design that balances efficiency and financial stability while reflecting market realities to be effective. The introduction of bail-in should be carefully timed: if implanted too early, it would unwind the positive effects of ECB’s LTRO interventions; if implemented too late (2018), it would not be an immediate crisis resolution tool.
46. **The Liikanen report proposals may present new funding challenges for certain activities**<sup>12</sup>. The proposed legal separation of activities between retail and investment banking entities is expected to have an impact on their respective funding cost. Retail activities, primarily funded via deposits, could benefit from a cheaper and more stable funding structure if segregated. Conversely, investment banking activities, viewed as riskier, less likely to benefit from public support in times of stress, and less able to rely on intra-group funding and liquidity transfers, would probably face increased funding costs. Such a radical overhaul of business models could be accompanied by a more differentiated intra-group funding structure. It remains to be seen if banking groups and the banking system would benefit overall and whether implementation challenges and risks of regulatory arbitrage would not undermine the objective of protecting depositors, taxpayers, and activities with a high social value.

## V. WHAT ARE THE MAIN IMPLICATIONS OF WEAK FUNDING MODELS?

### A. Impact on Cost and Structure of Funding

47. **Bank funding models in Europe are changing.** While anticipating what the future funding model will look like is challenging, especially in a context of broader business model transformation, two trends are already visible: (i) a higher cost of funding and (ii) a different structure of liabilities.

#### **The cost of funding is likely to rise**

48. **Funding costs** are mostly **driven by a bank’s probability of default (PD)** and the ensuing expected losses, as measured by **loss given default (LGD)**. PD reflects the overall resilience of a bank and its ability to make creditors whole. A higher PD may result from many individual factors, including insufficient capital, weak funding, low

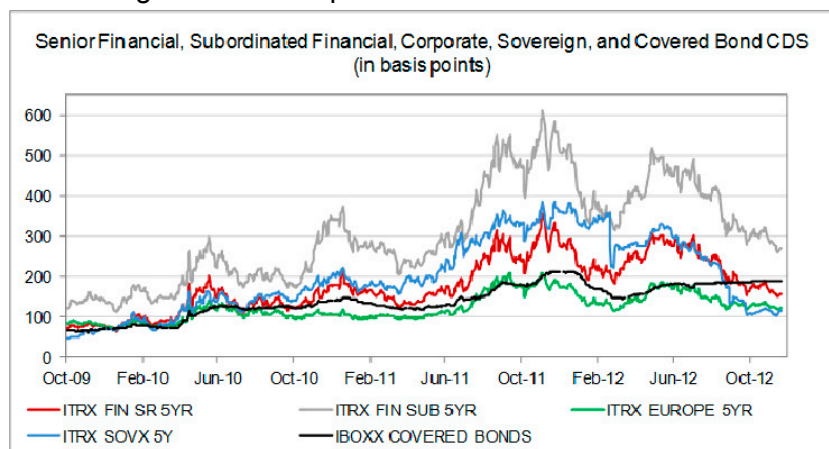
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<sup>12</sup> European global SIFIs may also be impacted by measures in the Vickers and/or Volcker proposals.

profitability, and deteriorating asset quality. External factors, such as reduced official sector support, would also drive weak banks' PD higher if the likelihood of public sector intervention were reduced. LGD and PD may evolve in different directions. For instance, the ECB's LTROs drove PD down but most likely drove LGD up (due to asset encumbrance). LGD could be driven up by increased subordination (especially if depositor preference legislation is adopted) and increased asset encumbrance that reduce the rate of recovery for unsecured creditors in a liquidation. The implementation of bail-in may reduce PD by intervening early but increase LGD for bailed-in creditors.<sup>13</sup>

49. **Bank funding costs have risen substantially since 2009.** One positive result of higher funding spreads and lower lending is the re-pricing of risk, which should render banks safer than in pre-crisis times. Beyond the increase in secured and unsecured debt spreads, the price of deposits has also been driven upwards, particularly in countries where banks recorded large funding outflows. In turn, banks face increased competition and higher costs to attract and retain deposits. Higher funding costs come in addition to rising costs of capital (equity as well as Basel III new capital instruments with stronger loss-absorption features), overall leading to a more elevated cost of liabilities. Various parts of the liability structure will be impacted — some positively and others negatively — and the combined impact may vary from one bank to another.

Figure 8. Bank Spreads on the Rise Since 2009



Sources: Markit, Bloomberg.

50. **Funding strains in Europe have receded but not disappeared.** The ECB's LTROs introduced in late 2011, followed by supportive announcements over summer 2012, helped ease euro area banks' access to term funding. A recent re-opening of primary markets illustrates this improvement, with two notable positive developments: the pick-

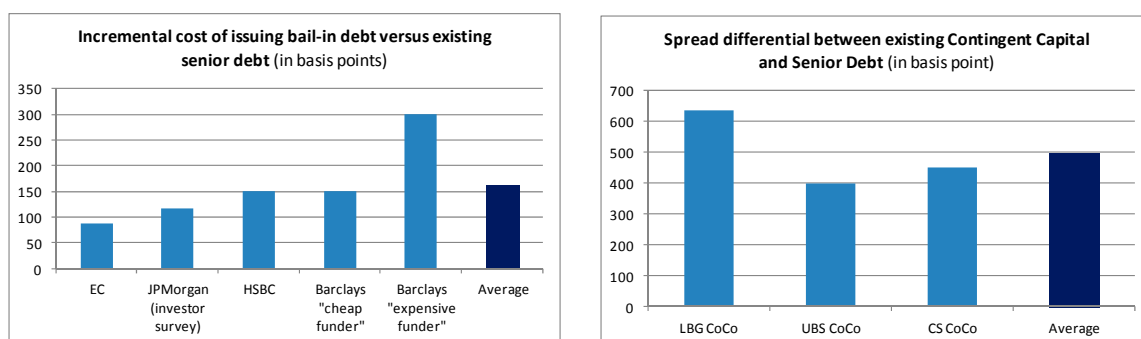
<sup>13</sup>In an insolvency, recovery rates could trend down from their historical averages (above 80 percent for senior unsecured creditors) and converge close to zero, as observed in the United States (Glionna, 2012 a).

up in dollar issuance for the first time in 18 months and the strong issuance by banks from peripheral countries. Issuance volumes, however, remain below historical trends and are still vulnerable to a renewed deterioration in sentiment. Bank markets remain polarized, with strong banks enjoying a return to more favorable funding conditions, while others could continue to depend on public support or to fund at elevated costs.

### Box 3. The Implementation of Bail-in Regimes is Expected to Result in Higher Costs

Analysts' estimates vary, but a comparison of the incremental cost of existing contingent capital instruments (which have characteristics broadly similar to future bail-in instruments) versus senior debt of the same issuer shows bail-in cost could come to an average of 500 basis points. In steady times, it would cost on average 160 basis points more to issue bail-in debt versus similar maturity senior unsecured debt (Figure 1) but with wide variations among banks (stronger issuers may pay less and weaker issuers are expected to pay more). The availability of bail-in instruments as well as their acceptance by investors would also dictate issuance costs.

Figure 1. Projections and Actual Incremental Cost Versus Senior Debt for Issuing Instruments with Contingent Capital/Bail-in Features—Analyst Estimates



Sources: EC, JPMorgan, Barclays, and Individual Banks.

### Bank liability structure is expected to change

51. **Bank funding patterns and investment incentives of bank creditors are changing,** altering the composition of funding (away from senior unsecured debt). Net senior unsecured issuance has been negative since 2011. Despite a recent rebound, the outlook for future issuance of senior unsecured debt remains challenging. Faced with bail-in and greater burden sharing, investors are incentivized to increase the portion of secured funding, thereby tying up a growing portion of banks' balance sheets and increasing the competition for collateral.
52. **Spread differentials between tiers of debt could change.** Spread differentials between tiers of liabilities should change over time. Dated subordinated debt (lower tier 2) currently trades wider than senior debt, notably because subordinated debt has a lower rate of recovery in liquidation and in debt restructuring initiatives. Going forward, when the bail-in regime is implemented, senior debt will also experience increasing LGD, and senior spreads should converge up towards subordinated spreads. In the short term, however, there is a decompression between senior and subordinated debt spreads, as the



latter has been affected in restructuring of distressed banks, while senior debt was left untouched. Covered bond spreads should continue to benefit from a relative “safe haven” status and trade tighter than senior unsecured debt.

53. **Mitigating actions.** Banks may have to pay more for term funding, which will affect their margins and profitability and may trigger some changes in their asset and liability composition. Banks have mitigating avenues. They could pass on part or the full additional funding cost to customers through re-pricing assets, reducing new lending, allowing assets to mature, disposing of certain assets, or changing the source of their funding. Banks are proactively engaging in restructuring efforts by reorganizing not only their liabilities but also their assets structure, as discussed in section VI.

### **B. Evolving Funding Models May Impact Growth and Public Finances**

Changes in funding models, especially relative to senior unsecured debt in Europe, have implications beyond banks for (i) public finances and debt sustainability; (ii) financial stability; and (iii) economic growth and macroeconomic prospects.

#### **Contingent and real bank liabilities may weigh on public finances**

54. **Bank losses have been primarily borne by national taxpayers** through bail-out and the restructuring of fragile banks. Even if state aid rules often involved burden sharing with the private sector, burden sharing applied exclusively to subordinated debt and only marginally reduced government capital injections. In Ireland, for instance, LMEs generated over €15 billion during 2008–11, representing 10 percent of GDP, while state recapitalization accounted for 40 percent of GDP. In Spain, burden sharing by subordinated bondholders is expected to amount to €10 billion, compared to €37 billion in capital to be injected by the European Stability Mechanism (ESM) and the Spanish FROB.
55. **The ECB is likely to be involved for a prolonged period of time.** The ECB has expanded its crisis-mitigation toolkit, including the covered bond purchasing program (CBPP) and securities markets program (SMP), LTROs, and, more recently, outright monetary transactions (OMT)<sup>14</sup>. Repeated official sector actions have alleviated funding strains for European banks and sovereigns. An important risk, however, would be the absence of normalization over time, resulting in ECB support becoming a permanent feature of funding models. By increasing balance sheet encumbrance for banks, central bank liquidity also subordinates unsecured creditors and may complicate future bank self-financing efforts. Institutionalized central bank funding could ultimately burden the public sector with more real or contingent debt.

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<sup>14</sup> The SMP and CBPP are now terminated, and the OMT has not been used yet.

## **Implications for financial stability, policymaking, and the economy**

56. **Building a market for bail-inable debt may prove challenging.** By 2018, when bail-in comes into place, some 80 percent of eligible liabilities will have matured (Henriques, 2012 a). Limited investor appetite and uncertainty regarding the future regulatory framework may hamper the ability of weaker banks, or banks headquartered in weaker sovereigns, to fund themselves. In turn, weaker banks, in most need of bail-in instruments to reduce the likelihood of bail-out, will also experience the most difficulty in finding private sector investors willing to purchase bail-inable securities.
57. **Shifts in the bank funding mix may reduce policymakers' ability to maneuver in a resolution.** Higher balance sheet encumbrance reduces available assets in a liquidation and increases potential costs for governments of protecting depositors if they must do a full bail-out or complete insufficient deposit guarantee schemes.
58. **Bank failures have elevated social and economic costs.** The forced liquidation of assets depresses the value of other asset classes and propagates the crisis to other parts of the financial sector while reducing the overall lending capacity to the economy. Burden-sharing initiatives should be viewed positively since they aim to contain the negative externalities associated with bank failures and to spread the rescue costs between private and public sector. If bail-in precedes bail-out, public finances are more robust and can redirect efforts to support economic growth. Burden sharing, however, could also translate into higher funding costs and constrain the availability and cost of credit (from banks) to the economy. Bank lending typically rises in good times and falls in bad times and is motivated by creditworthiness and profitability considerations, as well as by the slack in banks' balance sheet capacity, including capital and liquidity management and the ability and willingness to take on more risks.
59. **The choice between reducing assets or improving liabilities may be constrained by political and social pressures** as policymakers may encourage banks to maintain lending, possibly at uneconomical costs, to support economic growth. Any decrease in volume or increase in cost not accompanied by re-pricing will affect banks' profitability prospects and ability to generate capital organically. In turn, weaker capitalization and profitability may erode investor confidence and appetite in bank debt. Ultimately, illiquidity and funding problems could generate insolvency and trigger state intervention.

## **VI. WHAT COULD BE DONE TO IMPROVE FUNDING MODELS?**

### **Objectives of Reforms and Guiding Principles**

60. **Securing robust bank funding is important for banks, creditors, and the official sector.** Banks need stable and cheap funding conditions with no disruption in market access or spikes in cost of funding to fulfill their intermediation role. Bank creditors want

investment and deposit protection, as well as access to fair treatment in a restructuring. The official sector has a triple objective in ensuring robust bank funding: to minimize bail-out costs on taxpayers' money; to ensure financial stability, preventing individual or systemic bank runs; and to encourage banks to lend to the economy. Other considerations may underpin policymakers' objectives, such as avoiding a deep, fast, and undifferentiated deleveraging; minimizing reliance on public funding support; reducing banks/sovereign links; and ensuring that any migration of risks to shadow banking does not lead to the emergence of new risks for financial stability and public finances.

61. **Improvements in bank funding will be maximized by joint efforts** from banks, regulators, and market participants. In a steady state, funding should come from retail or institutional private sources. While temporary official support in exceptional circumstances may be warranted, public funding should not become a permanent feature of European funding markets.
62. **Actions should be pursued simultaneously at the bank and system levels.** Banks are tasked with improving the quality and liquidity of their assets, along with the stability and affordability of their liabilities. Policymakers should reduce uncertainty and offer a predictable regulatory and operating environment, predicated on clear and fair rules for banks and investors. Wider economic measures to foster growth would support asset quality, profitability, and capital while facilitating funding access. Targeting the right level of interest rates would also help underpin asset and liability management.
63. **Addressing liquidity and funding problems can be completed in stages.** "Containment," the first phase, alleviates acute liquidity stress by providing a large amount of liquidity and/or funding guarantees from the public sector to stem market panic and contagion risks. The second phase stabilizes liabilities and restructures the balance sheet by distinguishing between insolvent and viable banks. The former must be wound down; the latter should be recapitalized and restructured. The third stage, based on structural reforms, is longer term and should address impaired assets and strengthen capital and liquidity management. Structural reforms of bank business models are another avenue explored by international policymakers.

#### **A. What Are the Key Attributes of a Successful Funding Model?**

64. **Successful funding relies on a set of "best practices"** that can mitigate risks from a withdrawal of funding, either at the bank or system level. Some key balance sheet characteristics may help banks withstand adverse and prolonged shocks. Both sides of the balance sheet are equally important in supporting robust funding in normal times and in times of stress (Table 2).

Table 2. Key Assets and Liabilities Characteristics for Robust Funding

Assets	Liabilities
Strong <b>asset quality</b> , based on the resilience of (i) borrowers and (ii) collateral value	<b>Diversity of funding</b> by (i) investors; (ii) instruments; (iii) geographies; and (iv) currencies
High level of <b>liquid assets</b> easily sold with minimum loss in value, even in times of stress	<b>Stability</b> of both retail and wholesale investor base, based on (i) their investment constraints and preferences; (ii) their own resilience; and (iii) their behavior
Limited leverage	<b>Limited mismatches</b> between assets and liabilities by (i) maturity and (ii) currency
Limited <b>asset encumbrance</b>	High level of capital and deposits
Simple assets and appropriate disclosure	Limited level of complex funding instruments

65. **A holistic approach, based on asset and liability management, is essential to reduce mismatches between assets and funding.** Excessive gaps in maturity or currency must be monitored carefully and be offset by adequate hedging measures. A successful funding approach is predicated on (i) having medium- to long-term (“MLT” is greater than 1 year) funding (defined as capital, deposits, and long-term wholesale funding) that exceeds MLT assets (defined as fixed assets, loans, and held-to-maturity securities) and (ii) having more short-term assets (shorter than 1 year and usually deemed liquid) than short-term wholesale funding that could be unavailable in the case of a prolonged market shutdown. As encouraged by the NFSR, long-term liabilities should finance long-term assets as much as possible, even if the linchpin of banking is the transformation and intermediation of shorter liabilities into longer assets.
66. **Bank funding strategies must be dynamic and forward looking,** building on scenario forecasts ranging from "business as usual" to "stress tests" and covering both idiosyncratic and systemic liquidity and funding risks. Beyond projecting funding needs, income trends, and balance sheet growth (including deposits), banks have to anticipate the extent of contingent liabilities and risks of market disruption and to factor in various responses (including asset sales). All projections must be assessed against a bank's stated risk appetite and back-tested to evaluate performance against objectives.
67. **Liabilities should be diverse, stable, and simple.** The reliance on a combination of investors, instruments, and geographies helps reduce the potential impact of funding shocks. Funding instruments should not be overly complex, lest they become hard to assess, value, and trade, especially if the asset class is untested and illiquid. Conversely, assets that are liquid, “safe”, and transparent may provide a cushion of liquidity that can be tapped into to mitigate a lack of capital market access. A caveat is the evolution and rarefaction of what can be defined as safe and liquid assets (IMF GFSR 2012).

68. **Retail funding, while important, is no panacea.** Retail deposits are typically safer, cheaper, and more stable. Exclusive reliance on retail funding, however, is not exempt of risks. Banks that rely heavily on retail deposits could be vulnerable to deposit runs. Another systemic risk arises if banks try to simultaneously shift away from wholesale funding and into deposit gathering, possibly increasing competition to attract and retain deposits. Higher competition leads to banks paying higher fees to customers, and this may result in behavioral shifts as depositors “shop around” and move from bank to bank more frequently. In turn, the stability and predictability traditionally associated with retail deposits would be reduced.
69. **The crisis in Europe underscores the risk of deposit outflows,** especially in some peripheral countries. Banks’ structural exposure to a deposit run due to their intermediation activity is based on a mismatch between long-term lending and collecting short-term deposits. In normal times, retail deposits are stable; in times of stress, deposits may be withdrawn at short notice, either at an individual bank or at the system level. The existence of deposit guarantee schemes and repeated public interventions have mitigated the risks of sudden retail deposit withdrawals but any deterioration of public finances or the perception of insufficient deposit guarantees may alter this trend.
70. **BIS has provided guidance on “principles for sound liquidity risk management and supervision”** (BCBS 2008), which include (i) a clearly defined liquidity risk tolerance limit; (ii) the maintenance of an adequate level of liquidity, including through a cushion of liquid assets; (iii) a proper allocation of liquidity costs, benefits, and risks to all significant business activities; (iv) the identification and measurement of the full range of liquidity risks, including contingent liquidity risks; (v) the design and use of severe stress test scenarios; (vi) the need for a robust and operational contingency funding plan; (vii) the sound management of intraday liquidity risk and collateral; and (viii) a strong public disclosure to promote market discipline.
71. **Fine-tuning of regulatory reforms.** Draghi (2012) called for a recalibration of liquidity rules to address the risks of “financial fragmentation”, as illustrated by bank retrenchment within national boundaries, local sourcing of liabilities within cross-border groups, and increasing regulatory preference for ring-fencing of liquidity (and capital) positions. Draghi insists this reexamination is essential to restore the functioning of interbank markets. The Basel Committee is reviewing the LCR and considering a wider pool of eligible liquid assets.

## **B. How Can European Banks Converge Towards More Robust Funding Models?**

72. **Policy and bank responses should adopt a two-pronged approach to reduce PD and LGD.** Reducing a bank’s PD hinges upon (i) restructuring banks’ balance sheet; (ii) increasing bank capital; (iii) de-linking banks and sovereigns; (iv) improving the macroeconomic environment; and (v) changing their business and funding profile.

73. **Restructuring of balance sheets may offer a long-lasting solution to restore robust funding.** The European banking sector has engaged in a process of deleveraging and cleaning up of its balance sheet, which has improved funding prospects. Over time, further restructuring and streamlining of assets and liabilities would cement the consolidation of funding (Figure 9).

Figure 9. Possible Restructuring Actions on Assets and Liabilities

Possible Actions	Assets	Liabilities	Possible Actions
<ul style="list-style-type: none"> <li>• Increase liquid assets</li> </ul>	ST Assets	More Senior Liabilities	<ul style="list-style-type: none"> <li>• Strengthen Deposit Insurance Funds</li> </ul>
<ul style="list-style-type: none"> <li>• Revive private securitization or Consider public vehicles</li> </ul>	Mortgages		<ul style="list-style-type: none"> <li>• Impose maximum threshold on secured funding</li> </ul>
<ul style="list-style-type: none"> <li>• Offload assets to AMC / APS</li> </ul>	Corporate loans	Senior Unsecured Debt	<ul style="list-style-type: none"> <li>• Impose minimum threshold on senior/bail-in instruments</li> </ul>
<ul style="list-style-type: none"> <li>• Sell assets (impaired; non core; capital intensive; USD funding)</li> </ul>			<ul style="list-style-type: none"> <li>• Retain existing or issue new subordinated debt as cushion</li> </ul>
<ul style="list-style-type: none"> <li>• Develop corporate bond markets</li> </ul>	Other LT Assets	More Junior Liabilities	<ul style="list-style-type: none"> <li>• Issue contingent capital</li> </ul>
<ul style="list-style-type: none"> <li>• Group structure and separation of activities</li> </ul>			<ul style="list-style-type: none"> <li>• Raise more equity; Higher capital retention</li> </ul>

74. **Group structure impacts the funding model of cross-border banks.** Fiechter (2011) shows that no obvious structure is intrinsically better for cross-border groups, as choosing between branch and subsidiary entails trade-offs between funding/operational efficiency, as well as resolvability, in times of stress.<sup>15</sup>

- The branch model, often associated with centralized funding models, has been credited with lower issuance costs (if the parent is strong) and greater intra-group transfers of funding and liquidity that provide growth opportunities and support to distressed entities. Recent ring-fencing initiatives and regulatory reforms, however, created barriers to internal flows and reduced the benefits of centralized funding.

<sup>15</sup> “The funding costs for the wholesale group are likely to be lower under the branch structure, given the flexibility to move funds to where they are most needed. A subsidiary structure, in contrast, puts constraints on the banking group’s ability to transfer funds across borders and hence may be less suitable for wholesale activities. For a global retail bank, however, a more decentralized subsidiary model may work better because of its focus on serving local retail clients and its reliance on local deposits and local deposit guarantees.”

- The subsidiary structure is associated with a more decentralized funding model, where funding is raised locally to match local claims. This model typically allows for a better matching of assets and liabilities, as well as fewer currency mismatches. Local funding is primarily in the form of retail deposits and is less reliant on international wholesale funding markets, offering greater protection against global capital market volatility.

75. **Authorities' preferences for a branch or a subsidiary structure will depend on a country's status as a home or a host to cross-border banks.** In the EU, however, the single passport regime has led to the predominance of the branch model. More recently, European and international regulators have outlined the merits of the subsidiary model to resolve cross-border groups in times of stress, as affiliates operating as subsidiaries may be better shielded from the problems of their parent (or vice-versa) or other affiliates, with the caveat that the organizational and legal structure does not protect them from reputational and contagion risks within the group.

76. **Asset growth is increasingly dictated by the availability, cost, denomination, and localization of liabilities.** Liabilities are no longer following assets. The proliferation of ring-fencing measures means that excess deposits (or wholesale funding) are no longer channeled to a centralized treasury and reallocated elsewhere within a cross-border group. Instead, a developing trend has been to grow assets locally in jurisdictions with deposit-rich franchises and to bring assets to jurisdictions with more favorable wholesale and retail funding conditions. Some market participants cite a risk of "balkanization" of funding in Europe and point to emerging evidence that European banks are modifying their funding management practices to incorporate certain tail-risk scenarios. For instance, to reduce possible redenomination risks, some banks have started to match assets and liabilities on a country-by-country basis.

- *Asset side*

77. **Increase liquid assets to provide additional funding in times of stress.** Liquid assets are easier to fund and to dispose of in crisis periods. The LCR buffer should provide an important counter-cyclical safeguard, protecting both capital and funding, and reducing the risks of asset fire sales. Clarifications about the definition of eligible liquid assets and their treatment in the calculation of the leverage ratio are important steps to encourage banks to build liquidity buffers. A caveat is that the growth of liquid assets is positive but would largely be offset if banks mostly invested their liquidity in domestic government debt, which could deteriorate liquidity and solvency and increase sovereign-bank links.

78. **Ensure that lending standards are appropriately conservative through the cycle.** Banks can reduce credit risk through price and quantity rationing of credit, particularly to borrowers with higher risk credit profiles. Lower lending reduces funding needs; wider lending margins better account for the cost of funding and support profitability, which in

turn is supportive for capital generation and funding conditions. While positive at individual bank level, tight lending conditions and reduced balance sheet may not be the optimal outcome for the economy on a system-wide basis and illustrate the complex trade-offs between measures that make sense at bank level and those that are systemically beneficial or dangerous. Macro-prudential and counter-cyclical measures may provide a more efficient tool to control the supply and price of credit on an aggregate basis.

79. **The revival of securitization markets in Europe** could alleviate bank funding by transferring assets off-balance sheet. While private sector solutions to pool assets via securitizations would be preferable, the creation of a centralized and government supported mortgage agency could also be considered by drawing on the lessons from existing country experiences (e.g., in the United States). Further research to assess the merits, limits, and practical modalities of creating European GSEs is still needed.
80. **The prime collateral securitization (PCS) initiative could improve funding and support lending** by encouraging the development of “best market practices” and a more standardized market for securitization in Europe<sup>16</sup>. This initiative involves labeling securities that meet criteria of transparency, structural simplicity, and underlying asset quality. It could foster primary issuance and liquidity (maybe with the exception of existing deals with no PCS label), as well as revive investors’ appetite, provided it received favorable capital treatment. PCS-eligible assets are centered on the real economy to incentivize greater lending through a revival of securitization and to cover residential mortgages (but not commercial ones), SME loans, auto loans, and credit cards.
81. **Foster corporate bond market growth.** For three years until October 2012, the traditional pecking order between financing costs of various sectors was inverted. For instance, many euro area corporates funded more cheaply than banks. With bank funding costs and CDS spreads often higher than those of the corporates they finance, capital markets may deepen in Europe. As bank disintermediation accelerates, large and healthy corporates may find greater incentives to turn to bond markets rather than bank loans, especially if accompanied by tax incentives. With smaller (large) corporate loan books, banks might dedicate greater resources to the financing of SMEs. Favorable capital treatment (possibly via a review of risk-weighted assets) could also support SME lending. Of course, no liquidity and capital requirements can offset proper risk analysis, and banks will primarily lend based on their risk assessment and appetite.
82. **Authorities could make cheap funding available to banks to support domestic lending, particularly to SMEs and households.** For instance, the “Funding for lending scheme” (FLS), recently initiated by the Bank of England and HM Treasury in the United

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<sup>16</sup> The initiative has been developed by the Association for Financial Markets in Europe (AfmE) and the European Financial Services Roundtable (EFR), two banking and financial services trade bodies.



Kingdom, could foster bank lending to U.K. households and businesses by providing funding to banks and building societies “for an extended period, at a price below current market rates”.<sup>17</sup> Participating banks will be able to borrow up to 5% of their stock of existing lending to the real economy. The price of each institution’s borrowing in the FLS will depend on its volume of lending to the real economy. One caveat is whether these “quasi-fiscal” operations would undermine the long-term objective to reduce public involvement in funding markets. Indicating the temporary nature of the scheme and planning a clear exit strategy would help anchor expectations that funding should ideally come from private sources.

83. **Address asset quality problems.** Impaired assets bloat balance sheets and require a disproportionate amount of capital and funding while limiting profitability prospects . During a period of market stress, uncertainty about the “true” value of certain assets may lead to banks’ inability to refinance these assets. A lack of confidence has been one of the main drivers behind the freezing of interbank and capital markets. The immediate effects of deteriorated asset quality can be fire sales and mark-to-market losses. Asset management companies (AMC) and asset protection schemes (APS) imply a ring-fencing, or the moving of troubled assets offbalance sheet, and may pose a constructive avenue to offload impaired assets and allow banks to focus on their core assets. By de-risking and reducing balance sheets, AMCs and APSs may alleviate funding pressures.
84. **Reduce leverage and shrink the balance sheet size.** Lower leverage may reduce insolvency risks and expected losses while positively influencing creditors’ perception of a bank’s riskiness. By reducing the asset pool size and refinancing needs, lower leverage eases rollover risks and provides more funding flexibility and less volatility. A potential risk, however, is an increase in “high returns-high risks assets” to offset the negative impact of reduced balance sheets on banks’ profitability.
85. **A reexamination of the appropriate operating model is underway.** Exploring the merits and limits of the separation of retail and investment banking activities, however, is worth considering, as advocated by the Liikanen report in the EU, the ICB (Vickers) report in the United Kingdom, and the Volcker rule in the United States. A return to the narrow retail banking model, where loans are primarily financed by deposits, would alleviate funding pressures, compared to larger banks with more diversified assets. A full discussion about the merits and limits of reducing the size and scope of activities of banks is beyond the focus of this paper, and further IMF research on this topic is forthcoming.

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<sup>17</sup>Available via the internet:<http://www.bankofengland.co.uk/publications/Pages/news/2012/067.aspx>

86. **Limit asset encumbrance.** Several policymakers have warned about the harmful effects of excessive asset encumbrance, and regulatory caps on encumbrance levels have been adopted in some countries. In a world with scarcer “safe assets”, a rise in competition for collateral is pro-cyclical and amplifies downside risks in times of stress.

- *Liability side*

**Strengthening deposit guarantee schemes (DGSs) is important to foster deposit stability**

87. **More robust DGSs are vital to preventing deposit outflows in times of stress.** Due to negative newsflows surrounding banks in certain European countries, the risk of depositor runs may increase. EC efforts for harmonization and simplification of protected deposits,<sup>18</sup> faster payouts, and improved financing of schemes, coupled with borrowing arrangements and DGSs across the euro area, are a first step towards improving depositor confidence. However, common safety nets would be more effective in delinking banks and sovereigns and in stemming capital flights and deposit outflows. Pan-European (or euro area) insurance or reinsurance mechanisms over time would bring greater benefits, including more risk diversification, lower resolution costs, and less competitive distortions across retail markets.

**De-link banks and sovereigns**

88. **Euro area countries are taking steps towards a “banking union” to sever the link between banks and sovereigns.** The banking union was initially designed around four elements: (i) a single rule book; (ii) a single supervisory mechanism (SSM); (iii) a common resolution framework; and (iv) common backstops. “Deeper integration” (Lagarde) could help break the negative feedback loop. Convergence of various national legal and institutional frameworks would be necessary for the implementation of a harmonized common regime<sup>19</sup> and is likely to be a gradual process. Ultimately, with progress on all elements, crisis management mechanisms would be enhanced and banking sector stability would be improved. Among other benefits, banks (particularly in weaker European countries) would likely have lower (wholesale) funding costs and common safety nets would help prevent retail deposit runs.

**More robust capital and funding management**

89. **Stronger capitalization would facilitate the normalization of funding costs.** Parts of the European banking system are still undercapitalized. Higher capital, both core and total, would reduce PD and LGD and help lower funding costs to more sustainable levels,

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<sup>18</sup>EC, 2010.

<sup>19</sup>Available via the internet: <http://www.imf.org/external/np/speeches/2012/041712.htm>

even if returning to pre-crisis funding levels is not achievable. Higher capital retention and issuance of new capital instruments would create a more robust buffer below senior unsecured debt. Funding conditions would also benefit from enhanced confidence in capital ratios, particularly in risk-weighted assets (RWAs) calculations. Greater credibility, consistency, and transparency in RWA methodologies would bolster investor confidence in banks' overall solvency and funding positions (Le Leslé).

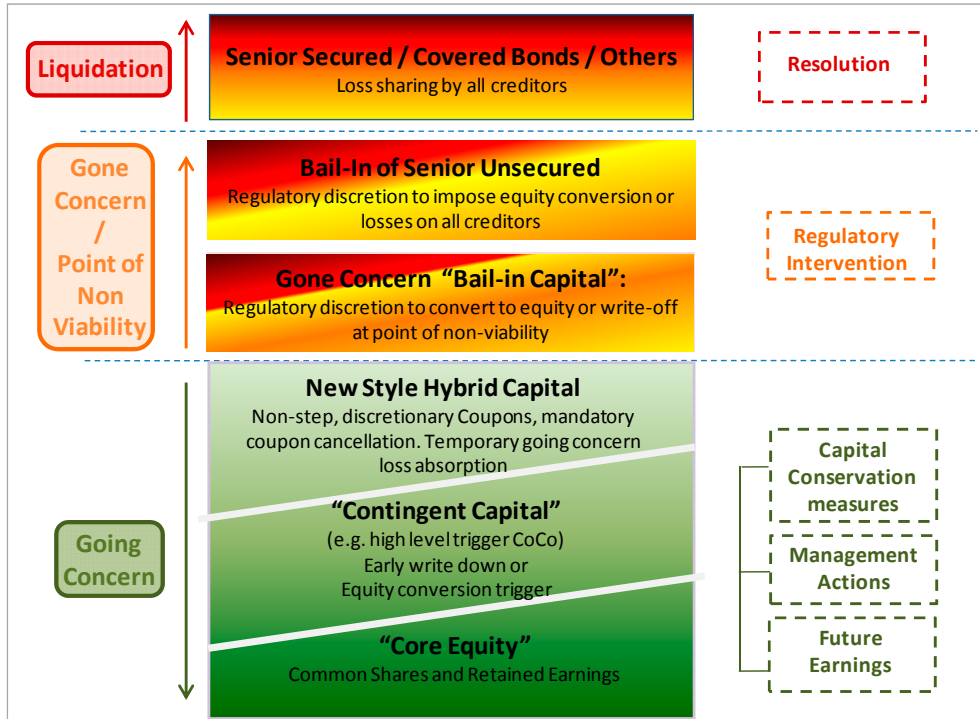
90. **Active liability management could help capital and funding.** Debt buyback, particularly of expensive debt or of instruments that no longer qualify as capital, helps reduce funding costs and leverage. Solvency and profitability benefit from these operations, and voluntary liability management exercise is a positive development as long as banks have sufficient liquidity to repurchase expensive senior and subordinated debt. Opportunistic pre-funding when favorable market conditions permit and more dynamic funding management have been observed. The pursuit of a wider investor base and tailor-made private placements can also provide flexibility.
91. **Could contingent capital (CoCos) be the way forward?**<sup>20</sup> Issuing common equity in current conditions seems costly and difficult. Imposing losses on senior bondholders may result in negative signaling effects and spread market contagion. A possible alternative to address these problems is the issuance of contingent capital, which may help create a buffer of capital available in times of stress to absorb losses and protect more senior bondholders. More CoCos would reduce the likelihood of bail-in mechanisms affecting senior unsecured debt and reassure investors to bolster bank funding. CoCos could help fill any existing gap between capital plus subordinated debt and the 10 percent liability threshold recommended for bail-in. CoCos could also offset capital shortfalls and enable CDS spread compression.
92. **Bail-in could further blur the frontier between debt and capital.** Previously, capital was considered as the ultimate safeguard against losses, both in going and gone concern. Debt, on the other hand, was viewed purely as a funding instrument to support day-to-day business. Until now, senior debt ranked pari passu with depositors in most European countries, offering protection for these creditors in a resolution. The scope and extent of burden sharing are increasing and now encompass debt instruments gradually becoming part of the resolution toolkit (Figure 10).
93. **Funding is not a substitute for capital.** Standard & Poor's (Brennan, 2012) argues that "the role of bail-inable debt might best be played by nonviability contingent capital instruments, such as hybrid capital instruments and subordinated debt, *instead of specific rules for a bank's senior funding strategy*. We believe maintaining a clear distinction

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<sup>20</sup>Pazarbasioglu, 2011.

between capital and funding characteristics leads to more clarity about capitalization and a more stable and efficient funding market, potentially reducing the number of banks that resort to central bank funding in stress situations.” If the ultimate objective is to preserve solvency (and not deal with a temporary liquidity stress), regulators should ask banks to issue more capital instruments, be it equity, contingent capital, or other loss-absorbing subordinated debt.

Figure 10. How Do Liabilities Stack Up in Going and Gone Concern?



\* Bail-in should also be available in going concern resolution (Pazarbasioglu)

**Improving transparency and communication**

94. **Increased and timely bank disclosure would reassure investors** on bank resilience. Enhanced disclosure about the risks and returns associated with different funding instruments and about funding strategies (in normal and in stressed times) would mitigate pro-cyclical behaviors (e.g., could mitigate the impact of external credit rating downgrades). Investors seek greater clarity about the type, amount, and ranking of instruments to assess their positioning in the event of insolvency and their ranking relative to other creditors. Additional disclosure on encumbered assets (e.g., assets used for collateral in covered bonds and repo transactions) would also be a welcome development. Regular communication with investors on banks’ funding and liquidity strategies would help reduce execution risks and secure investors’ support in times of crisis.

## VII. CONCLUSION

95. **Concerns on bank funding have receded after massive liquidity injections from the ECB.** Underlying funding challenges of European banks, however, have abated rather than disappeared. A number of headwinds continue to undermine funding models across Europe. It is difficult to disentangle long-standing funding problems from the current challenges created by the crisis and associated policy interventions. Both cyclical and structural factors have altered the availability, composition, and cost of funding. Some effects are temporary in nature, but others will require funding model adjustments.
96. **Are funding models broken?** There are encouraging signs that European bank funding models are damaged, but not irremediably broken. In aggregate, bank funding could come back to life once the crisis is over, provided that banks and policymakers address certain weaknesses in a timely manner. A radical overhaul of business models and of asset and liability management may be necessary for some banks, while a more limited transformation might suffice for others. Efforts should prioritize measures targeted towards the weakest banks to break the vicious circle between weak funding metrics and greater failure risks. In turn, these containment measures would help restore confidence in the wider banking sector and stabilize funding markets. The creation of the banking union in Europe is a welcome development that could be supportive for broader funding conditions.
97. **Joint efforts by banks, market participants, and regulators are needed** to allow for a normalization of funding conditions. A combination of measures will be necessary to improve the macroeconomic backdrop and de-link banks and sovereigns, reduce regulatory and operating uncertainties, and restructure balance sheets. Individual bank reforms will have to be balanced against systemic considerations on financial stability, public finances, and economic growth.
98. **Bank funding should lead to further studies**, which could explore how changes to business models and group structure can improve bank funding and resilience. Other areas for exploration include funding inter-linkages, as well as asset and collateral movements between the banking sector and the nonbank financial sector.

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