

Contingent capital

Possibilities, problems and opportunities

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Global Markets
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Not an easy equation to solve

Contingent capital has emerged as a possible solution to the “too big to fail” problem, but the discussion of its merits and shortcomings has proven to be complex. This piece is a guide to contingent capital that first establishes a common vocabulary, and then outlines the differing needs and preferences of the participants in a potential contingent capital market.

At its core, contingent capital is a security that recapitalizes a troubled financial firm without recourse to taxpayer funds. In doing so, it can contain the fallout from a single bank failure and potentially the follow-on failures that can spiral into a systemic crisis. While the underlying recapitalization function of contingent capital is relatively straightforward, “why,” “when” and “how” it operates can vary substantially.

Existing proposals tend to fall into one of two broad buckets. The first is gone-concern contingent capital, which operates when a firm is near insolvency, and is thus a resolution mechanism. The second is going-concern contingent capital, which operates well before resolution mechanisms come into play, potentially containing financial distress at an early stage. Both seek to reduce the economic and systemic consequences of a bank failure by placing business liabilities ahead of financial ones, but they differ in their timing and in the degree of reorganization involved.

Well-structured contingent capital can be a positive for banks

Whether going- or gone-concern, developing effective contingent capital securities requires a range of decisions on key structuring points. Participants in a potential contingent capital market – the issuing financial firms, investors and regulators – will likely favor different structures. Thus it will be critical to strike an appropriate balance between their competing interests, so that a sizeable, cost-effective market can develop.

A key issue for investors will be their ability to assess the health of a financial firm. Enforcing more rigorous and standardized disclosure requirements that improve transparency is critical in this regard.

While much remains uncertain, it appears likely that contingent capital securities will – in one form or another – be part of the future bank capital landscape. If they are structured well, they can be a positive for global banks and a viable solution to too big to fail.

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Contingent capital: Going ... going ... gone

Contingent capital has emerged in recent years as a potential solution to the too big to fail problem, but the discussion of its merits and shortcomings has proven to be anything but simple. This is not only because the words “contingent capital” are often used to mean very different things, but also because the sometimes competing interests of different stakeholders need to be disentangled before effective contingent capital securities can be created.

This paper is intended to shine some light on these issues. It does so first by establishing a common vocabulary around contingent capital, and then by discussing the major considerations, requisites and preferences of the different participants – including the issuing financial firms, investors and regulators – in a potential contingent capital market. We summarize here what we have learned from conversations with various regulators, investors and issuers around the world, but we would note that opinions vary and thus some views will diverge from those we present here.

At its core, contingent capital is simply a security that recapitalizes a troubled financial firm. It does so without recourse to taxpayer funds, which is why it is seen as such a promising solution to the too big to fail problem. By recapitalizing the troubled firm, contingent capital can contain the fallout from a single bank failure and potentially the follow-on failures that can spiral into a systemic crisis. By reorienting the incentives of the firm itself and its stakeholders, contingent capital can even be designed to reduce risk in the financial system, well in advance of a crisis.

While the underlying recapitalization function of contingent capital is relatively straightforward, “why,” “when” and “how” it operates can vary substantially. Current proposals tend to fall into one of two broad buckets: **gone-concern** or **going-concern** contingent capital (see Exhibit 1 for a snapshot).

Gone-concern contingent capital

Gone-concern contingent capital is a debt security designed to absorb losses when a financial firm is at the point of non-viability or insolvency. It is in essence a more rigorous version of the existing hybrid capital securities that failed to absorb losses during the financial crisis. Because insolvency is not usually marked by a specific moment in time, regulators typically have significant discretion to decide whether and when to use this type of contingent capital to recapitalize a firm.

Gone-concern contingent capital is a “resolution” tool and thus should be thought of in the context of other resolution proposals, including bail-in¹ and orderly liquidation. Resolution would likely involve the creation of a new entity that would be capitalized, at least initially, through the conversion of these contingent securities. This type of contingent capital makes financial liabilities junior to business ones, allowing the business to operate during the resolution process and reducing the economic and systemic impacts of reorganization. Because failure would imply large losses and thus a significant capital shortfall, gone-concern contingent capital would likely need to be issued in large size in order to be effective. The concept of gone-concern contingent capital is not entirely new: it effectively exists already in jurisdictions where resolution regimes allow for regulatory reorganization

¹ Bail-in is a potential resolution tool designed to protect taxpayer funds by converting unsecured debt into equity at the point of insolvency. Most bail-in proposals would give regulators discretion to decide whether and when to convert the debt, as well as how much.

There is an active discussion under way as to whether bail-in should be a tool broadly applicable to all forms of unsecured credit (including senior debt) or whether it should be a specific security with an embedded write-down feature.

of a group’s capital structure, even when the individual securities are not required to allow for loss absorption. This is the case today in both the United States and the United Kingdom.

Going-concern contingent capital

Going-concern contingent capital differs substantially from the gone-concern kind. It is designed to operate well before resolution mechanisms come into play, and thus to contain financial distress at an early stage. The recapitalization occurs at a time when there is still significant enterprise value, and is “triggered” through a more objective process with far less scope for regulatory discretion. **For investors to view objective triggers as credible, however, better and more-standardized bank disclosures will be needed on a regular basis.** Because this type of contingent capital triggers early, when losses are still limited, it can be issued in smaller tranches. This, in turn, allows for greater flexibility in structuring its terms.

When the early recapitalization occurs, control of the firm can shift from existing shareholders to the contingent capital holders, and a change in management may occur. The threat of the loss of control helps to strengthen market discipline by spurring the firm to de-risk and de-leverage as problems begin to emerge. As such, going-concern contingent capital can be an effective risk-mitigating tool. See Exhibit 1.

Exhibit 1: A snapshot of gone- and going-concern contingent capital

	Gone-concern contingent capital	Going-concern contingent capital
Overview	<ul style="list-style-type: none"> - Operates at the point of non-viability - Significant regulatory discretion is usually involved - Financial liabilities are made clearly junior to business ones - Should be thought of as a resolution mechanism 	<ul style="list-style-type: none"> - Operates well before resolution mechanisms come into play - Recapitalization occurs when significant enterprise value still remains - Control of the firm may shift when contingent capital is triggered, and a change in management may occur, creating incentives for banks to de-lever and de-risk earlier
Other considerations	<ul style="list-style-type: none"> - Enhanced and standardized disclosures are crucial 	

Source: Goldman Sachs Research.

Contingent capital will only be viable as a large market if it is treated as debt

Whether “going” or “gone,” contingent capital will only be viable as a large market if it is treated as debt. This is not just a question of technical issues like ratings, inclusion in indices, fixed income fund mandates and tax-deductibility, though these issues are important. More fundamentally, contingent capital must be debt in order to appeal to traditional fixed income investors, the one market large enough to absorb at least \$925 billion in potential issuance over the next decade.² Contingent capital that does not appeal

² We estimate that the potential issuance of loss-absorbing securities could be between \$926 billion and \$1.9 trillion. We derive this estimate by assuming loss-absorbing capital required is 4% to 8% of the risk-weighted assets of the 50 largest banks globally. Risk-weighted assets are based on the latest filings and converted into US dollars per Bloomberg.

to these investors may still be able to be sold, but to a more limited universe of hybrid, equity and retail investors, among others. This market is dwarfed by the traditional US bond market (worth more than \$35 trillion, of which \$7 trillion is corporate debt), however, and is unlikely to be large enough on its own to absorb mandatory contingent capital issued by all of the major international banks.

Debt treatment is important from the issuers' standpoint as well, because contingent capital will need to be priced like debt in order for banks to issue it in size. If contingent capital becomes too expensive, banks are likely to substitute equity instead, or simply bear the burden and then pass on higher costs to their customers – with potentially negative consequences for the availability of credit and economic growth.

Ultimately, debt treatment is critical for regulators – even if today they see the market's response as a secondary consideration. If banks cannot issue contingent capital in size, or if investors shun the securities, then contingent capital will not be a viable solution to the problem of too big to fail. The challenge will be in bridging the gaps that exist between the "best" solution from a regulatory, issuer and investor perspective. Moreover, a deep contingent capital market may not form if banks are required to issue both going- and gone-concern securities simultaneously, as this creates the potential for fixed income investors to absorb losses mandatorily if the going concern capital is not large enough – or dilutive enough – to prevent the insolvency of the institution. Which type becomes the predominant form could therefore depend on decisions around national or regional resolution regimes.

Enhanced and standardized bank disclosure requirements are needed

Finally, both types of contingent capital will be more effective if – and perhaps only if – transparency and bank disclosures are improved significantly. As the experience of the crisis shows all too well, markets cannot find problems that have not been disclosed. Investors will only have faith in contingent capital if they believe that they fully understand the true risks involved. More horizontally comparable, comprehensive and consolidated reporting, along with more robust marks, are vital, whatever the structure of the security. Such disclosures would allow markets to have enough information to actually impose discipline on financial firms.

Getting contingent capital right is worthwhile, and proper structuring is the key to its viability. In a world with well-structured gone-concern bonds, resolutions should be faster and less expensive. In a world with well-structured going-concern bonds, there should be fewer failures to resolve in the first place, less moral hazard and reduced systemic risk.

Structuring an effective contingent capital security

Developing a contingent capital security requires a range of decisions on key structuring points, which we outline below. These decisions will affect the cost of the security and its appeal to potential investors – and ultimately the viability of contingent capital as a sizeable asset class.

The trigger: what, when and why

The core feature of contingent capital is the “trigger” that determines whether and when the debt converts to equity, or is written down, to recapitalize the financial firm. There are three principal options for the trigger: capital ratios, market metrics or regulatory discretion (see Exhibit 2 for an overview).

Exhibit 2: The triggers: what, when and why

Triggers	Capital-based	Regulatory discretion-based	Market-based
Benefits and drawbacks	<ul style="list-style-type: none"> - Benefits: Not subject to market manipulation, transparent and objective - Drawbacks: Difficult to structure as capital thresholds must be set carefully 	<ul style="list-style-type: none"> - Benefits: Gives regulators flexibility and discretion to respond in the face of a crisis - Drawbacks: Is opaque and thus hard to model; likely to operate too late to prevent large losses 	<ul style="list-style-type: none"> - Benefits: Is objective and transparent - Drawbacks: Subject to market manipulation and could result in unnecessary conversions
Preferences of investors	<ul style="list-style-type: none"> - Most investors prefer this type of trigger because it is transparent and can be modeled 	<ul style="list-style-type: none"> - Many regulators seem to prefer this type of trigger - Investors dislike a discretionary trigger because it is difficult to assess the likelihood of triggering or the appropriate price to pay 	<ul style="list-style-type: none"> - A few regulators prefer this type of trigger because it is objective and allows market discipline to play an important role (although disclosure is an important issue here too because markets cannot assess what they cannot possibly know) - Investors generally dislike this kind of trigger because they cannot assess its likelihood
Other considerations	<ul style="list-style-type: none"> - Enhanced bank disclosures and/or regulatory stress tests can bolster confidence in the reliability of the trigger 	<ul style="list-style-type: none"> - The Basel Committee’s gone-concern proposal endorses this kind of trigger - Enhanced bank disclosures would give regulators more comfort that they are not “surprising” the market and would reassure investors that regulatory forbearance is not at play 	<ul style="list-style-type: none"> - The risk of market manipulation and/or a share- or CDS-price “death spiral” is high

Source: Goldman Sachs Research.

A capital-based trigger would force mandatory conversion if and when Tier 1 (core) capital fell below a threshold specified either by regulators (in advance) or in the contractual terms of the contingent bonds. **We think this would likely be the most effective trigger, because it is transparent and objective.** Investors would be able to assess and model the likelihood of conversion if banks’ disclosure and transparency are

enhanced. Critically, a capital-based trigger removes the uncertainty around regulatory discretion and the vulnerability to market manipulation that the other options entail.

Yet structuring an effective capital-based trigger is challenging. If contingent capital is to be the going-concern kind, then the trigger must be set at a high enough capital level that it operates while the firm remains fully viable – but not so high that it is likely to be triggered in only a mild downturn. At the other end of the spectrum, the trigger also cannot be so low that it allows losses to mount for too long, leaving little or no value left in the firm and effectively making the contingent capital the gone-concern kind.

Capital-based triggers are also vulnerable to financial reporting that fails to accurately reflect the underlying health of the firm. Lehman Brothers, for example, reported a Tier 1 capital ratio of 11% in the period before its demise – well above the regulatory minimum and a level most would have considered healthy. The same was true for Bear Stearns and Washington Mutual before they were acquired under distress. We think this issue must be resolved for investors to embrace capital-based triggers.

Fortunately there are several ways to make capital ratios more robust, whether by “stressing” them through regulator-led stress tests or by enforcing more rigorous and standardized disclosure requirements that would allow investors to better assess the health of the bank. Such standardized disclosures could relieve regulators of the burden of conducting regular stress tests, and would significantly enhance transparency. The value of stress testing and greater disclosures is one lesson from the financial crisis. The US Treasury’s 2009 stress test illustrates this point vividly. While not perfect, it offered greater transparency and comparability of bank balance sheets than investors were able to derive from public filings. With this reassurance, investors were willing to step forward and commit capital. The European stress test proves the point as well: it did **not** significantly improve transparency and thus failed to reassure investors or attract capital.

Without greater transparency, capital-based triggers might need to be set at very high levels to reflect the potential for deterioration in a bank’s underlying financials relative to its reported capital levels. This could be an impediment to economic growth, as it would limit the amount of capital banks can make available to lend. It would also raise the cost of capital to the issuer, a point we discuss below, which would also have economic costs.

Some proposals and comments made by regulators have shown a preference for the other two types of triggers, although we would caution that regulatory views do vary.³ A few regulators appear to favor a **market-based trigger**, which would convert when a financial firm’s share price or CDS spread passes a certain level over a set period of time. Market triggers are appealing because market discipline is generally considered less forgiving than regulatory discipline. But where this theory has been embraced in the past, results have

³ A number of regulators have commented on the goals and structure of contingent capital, including: Federal Reserve Bank of New York, “Some Lessons from the Crisis (Speech by William C. Dudley, President and Chief Executive Officer),” October 13, 2009; Bank of England, “Speech by Mervyn King, Governor of the Bank of England,” October 20, 2009; Office of the Superintendent of Financial Institutions Canada, “Too-big-to-fail and Embedded Contingent Capital (Remarks by Superintendent Julie Dickson),” May 6, 2010; Basel Committee on Banking Supervision, “Proposal to ensure the loss absorbency of regulatory capital at the point of non-viability,” August 2010; Swiss Commission of Experts, “Final Report of the Commission of Experts for limiting the economic risks posed by large companies,” September 30, 2010; Bank of Canada and Office of the Superintendent of Financial Institutions, “Contingent Capital and Bail-in Debt: Tools for Bank Resolution,” December 2010; Bank of England, “Financial Stability Report,” December 2010; International Monetary Fund, “Contingent Capital: Economic Rationale and Design Features,” January 25, 2011.

been uneven. The notion that bond markets, for example, would discipline bank risk-taking now appears to have been overly optimistic.⁴

Not only did ratings-based capital market discipline not work as hoped, but the crisis also provides ample evidence that neither ratings agencies nor bond market investors possess any special informational advantages over banks' regulators when it comes to the assessment of bank credit quality – quite the opposite, in fact.⁵ And while market participants may have stronger incentives to monitor bank credit quality, their ability to do so is still constrained by the poor quality of available accounting data for banks. Markets simply cannot know what has not been disclosed, and market discipline cannot function without adequate information.

While the transparency of a market-based trigger is appealing to some, we think it is an unattractive option even in an environment of greater disclosure. This is because there is a clear risk that market sentiment – or even market manipulation – could force a recapitalization unnecessarily. It is not difficult to imagine that a troubled firm could face a share-price or CDS-spread “death spiral” that forces a conversion not genuinely justified by the bank's underlying financial position. A capital ratio, on the other hand, leaves far less scope for markets to directly affect the outcome.

Many other regulators, including the Basel Committee, appear to favor **a trigger based on regulatory discretion** that allows them to decide “why,” “when” and “how much” to convert. This sort of trigger would operate at the “point of non-viability” or just before either bankruptcy or an injection of public-sector funds. Regulators favoring discretion appreciate the flexibility it gives them and believe that the insight they have into the overall operations of the firms they regulate allows them to make a thoughtful decision based on several inputs, as well as considerations about the stability of the financial system as a whole. Some regulators also prefer to retain the flexibility to determine how much contingent capital is ultimately converted, a decision that will be driven by the facts of the case and that may be difficult to assess beforehand.

While flexibility can be helpful, particularly given that no two crises are alike, recent experience shows that some regulators may be hesitant to publicly pronounce that a financial firm is unhealthy, especially during the early stages of distress. There is, after all, always the hope that the firm's problems will be short-lived, or that an alternative solution to the triggering of contingent capital can be found. Thus a regulator may be unlikely to pull the trigger – affecting not only the firm and all of its stakeholders, but also likely raising alarm about the health of other financial firms – unless it is certain of a high degree of distress. By then, losses may have already risen to untenable levels, which is why this type of trigger is associated with gone-concern contingent capital.

It is worth noting that enhanced bank disclosures would be helpful here too. Greater transparency should make regulators less concerned about the market response to the regulator-led decision to require conversion. This is because markets would have already had access to the information that would allow them to assess whether a problem had begun to emerge. It would also help investors make their own assessments, reassuring them that regulatory forbearance is not at play when a bank's health is in question but a conversion has not yet been required.

While regulatory preferences may vary, investors across the board strongly prefer an objective, capital-based trigger that is enhanced by greater, standardized disclosures.

⁴ For an early discussion of this as well as its limitations see “Bond market discipline of banks: is the market tough enough?” Don Morgan and Kevin Stiroh, Federal Reserve Bank of New York Staff Report No. 95, December 1999.

⁵ Although it is worth noting that CDS markets did react to investor concern about the problems in mortgage quality before it was discussed publicly or became a well-recognized problem.

This is because they cannot properly assess the likelihood of whether and when a discretionary trigger could be breached, or how much of the debt might be converted once triggered. This uncertainty prevents them from assessing the risk associated with a contingent capital security, and therefore whether they should buy it or what price is appropriate to pay. However, the difficulty of modeling a discretionary trigger may end up being a secondary issue, as many traditional fixed-income investors could be precluded by their fund mandates from investing in an instrument with a discretionary trigger. Although this latter point may become less of a concern over time as fund mandates evolve, the difficulty of modeling a discretionary trigger is unlikely to abate.

It is worth noting that investors and regulators might be able to find some common ground on the trigger: investors might not object to giving regulators the flexibility to halt a trigger for a set period of time in disorderly markets. This would permit regulators to use their discretion to act in the best interests of the financial system.

The conversion: after the trigger

Exhibit 3: A snapshot of the conversion after the trigger

Type of conversion	Conversion to equity	Write-down of principal
Benefits and drawbacks	<p>- Benefits: If conversion is highly dilutive to existing shareholders, banks can be incentivized to reduce risk and leverage at the early signs of distress; if conversion happens early, contingent debt holders can gain control of a firm with significant value remaining</p> <p>- Drawbacks: If conversion happens late, contingent debt holders gain a firm with little remaining value and perhaps little potential equity upside</p>	<p>- Benefits: recapitalizes a troubled firm without requiring fixed income investors to hold equity, which could violate their mandates; potentially attractive to a larger pool of capital</p> <p>- Drawbacks: Possible that debt holders could take losses before equity owners, inverting the capital structure</p>
Preferences of participants	<p>- Most traditional fixed-income investors dislike conversion to equity because their fund mandates preclude them from holding convertible securities or equities</p> <p>- Regulators should prefer this type of conversion because it can reduce systemic risk</p>	<p>- Fixed income investors prefer this type of conversion, especially if it includes a write-back option</p>
Other considerations		<p>- Does not work with an early trigger, because debt holders would suffer losses well before shareholders</p>

Source: Goldman Sachs Research.

A second critical structuring choice is the “what next:” what happens once the trigger is pulled (see Exhibit 3 for a summary). One option is that contingent capital converts into common equity. If this conversion is done at a highly dilutive rate to existing shareholders – well in excess of 50% – control of the firm would automatically shift to the contingent debt holders. If conversion to equity were paired with an early trigger, the contingent

capital holders would gain control of a firm with significant remaining enterprise value. Once in control of the firm, they could replace existing management and enforce the de-risking and de-leveraging that is needed to put the firm on sounder footing. Conversion to equity is far less attractive if the trigger operates late: this would leave bondholders owning a firm with little remaining enterprise value, and potentially little upside in the resulting equity.

The interests of regulators and investors can conflict here. From the regulatory perspective, the incentives created by a highly dilutive equity conversion are favorable in that they should help to reduce risk and leverage in the system. However, most traditional fixed income investors operate under fund mandates that prevent them from holding equity or convertible securities. There are reasonable ways to structure the securities around this, however.⁶ And, as we mentioned earlier, mandates may evolve as new funds are raised. Nonetheless, it is important to consider that many fixed income investors may still face substantial hurdles to holding convertible securities, and these hurdles could prevent a deep contingent capital market from forming.

The alternative to conversion into equity is a write-down of principal, which most fixed income investors appear to prefer. The write-down could be permanent or it could include a write-back feature if the firm regains its financial health, as seen in the recently issued Intesa Sanpaolo and Unicredit Tier 1 securities. A write-back is attractive to many fixed income investors, not only because it offers the hope of regaining some – or all – of the principal, but also because it addresses another mandate issue: some fixed income fund mandates bar investing in securities with an embedded permanent write-down feature.

A permanent write-down also carries the risk that contingent capital holders could take losses ahead of shareholders, or even ultimately lose more than shareholders – and not have any upside. This would effectively invert the priority of claims of the capital structure. Investors may find that a high new issue spread or coupon can adequately compensate them for this risk – but this in turn would raise the cost to issuers. Banks may ultimately prefer to issue a security with a lower up-front coupon, but allow the investor to benefit from a principal write-back – and we think most investors would prefer this option too.

Finally, contingent capital could offer a partial return of principal to investors at the time of write-down, as Rabobank's security does.⁷ We do not think that most regulators will consider these sorts of securities to be strong regulatory capital securities because they reduce liquidity at a time when it is needed most. This could compound a solvency crisis by introducing a liquidity element as well, making these securities potentially destabilizing and defeating the purpose of contingent capital.

The potential contingent securities: ratings and index inclusion

There are several other important considerations in the design and treatment of potential contingent capital securities themselves. First is the issue of ratings. Many fixed income investors cannot or will not invest in securities with high yield ratings; some will go further and not invest in unrated securities either. These decisions are again largely driven by fund mandates.

Some ratings agencies have said that they will not rate contingent capital, generally due to the challenge of assessing risk in a contingent security, especially one with a subjective

⁶ For example, the contingent capital could convert into shares in a trust, which would be liquidated at a point in the future. At that time the contingent-capital holders would be compensated either in equity or in cash at a level determined by the current equity price. From an economic standpoint this option is not significantly different from a write-down with a write-up feature, although it could allow investors to recoup more than their initial principal if the firm recovered in the intervening time.

⁷ At conversion, 25% of the principal is immediately repaid in cash, while the rest is permanently written down.

trigger. This again, makes an objective trigger more helpful. For some smaller issues, where a deep pool of capital is not needed, the rating issue is less of a concern: the unrated senior Rabobank issue, for example, still raised €1.25 billion. Ratings may also be less important if issuers target retail, high yield and/or equity investors. But the pool of available cash to be invested could also be smaller, a critical point we discuss below.

The inclusion of contingent capital securities in credit indices will also be an important factor, perhaps even more important than achieving a rating. This is because the inclusion itself would attract investors, who otherwise might risk underperforming benchmarks by being underweight a significant component of the index. Credit indices currently do not include mandatorily convertible equity securities, although they can include instruments that allow for loss absorption through a write-down feature. This again contributes to the appeal of the write-down feature (rather than the simple conversion to equity) to most fixed income investors. If contingent capital securities were included in credit indices, this addition would be likely to drive a substantially deeper contingent capital market.

Multiple parties whose interests overlap and conflict

Choices on each of the issues described earlier must balance the views of four separate parties – regulators, taxpayers, issuers and investors. Each has their own interests and priorities. In some cases they overlap, but in many areas they conflict. The challenge will be to devise an effective form of contingent capital that meets as many of these interests as possible.

The regulators and taxpayers: addressing too big to fail

Regulators' first priority appears to be that contingent capital address the problem of too big to fail (please see Appendix C for an overview of regulatory proposals put forth to date). In the narrowest sense, this means that contingent capital should recapitalize gone-concern banks so that they can be wound down in an orderly fashion. For this purpose, a late and discretionary trigger is adequate, and the choice of whether contingent capital is written down or converted into equity is essentially a moot point. This view of contingent capital as a resolution tool rejects the idea that it can be employed to bolster the incentives for banks to de-risk and de-lever during the early stages of financial distress.

A discretionary, "point of non-viability" trigger would likely be attractive to many regulators as it helps them to preserve maximum flexibility in the event of a financial crisis. This can be useful given that no two crises are exactly alike. It could also allow regulators to consider multiple factors – including the state of the overall financial system – when making the decision to pull the trigger. Discretion also gives regulators the opportunity to exercise regulatory forbearance away from the public spotlight.

Yet we believe this preference for discretion and flexibility makes it difficult for regulators to meet one of their most important – yet mostly unspoken – goals, which is to develop a viable contingent capital market. Regulators have certainly solicited feedback from investors, but some seem to believe that simply making contingent capital mandatory for issuers means that investors will buy them. However, from conversations with many investors, we believe that regulators may need to move toward a more objective trigger; if not, the price of these instruments may be prohibitive.

There is another set of participants in a potential contingent capital market: taxpayers. Regulators represent taxpayers' interests by promoting systemic stability and requiring robust loss-absorption capabilities at individual banks. But the interests of regulators and taxpayers may not always be fully aligned. If taxpayers' principal goal is to avoid

socializing private-sector losses, and to prevent the dislocation of a systemic crisis even in its early stages, then they should want a stringent version of contingent capital – one that converts to equity at a highly dilutive rate, based on an early and objective trigger. The discretion and flexibility inherent in regulatory-triggered gone-concern contingent capital may have less appeal to taxpayers. From their standpoint, gone-concern contingent capital might well have allowed a major financial firm to fail, causing job losses and other disruptions across the financial system. Taxpayers may find the potential risk-reducing incentives created by going-concern contingent capital to be a more robust answer to the problem of too big to fail.

The issuers: cost is critical

For issuers, the critical issue is the cost of contingent capital. The cost hinges on two crucial factors. The first is that contingent capital is treated as debt. Debt treatment would keep the cost down because it would allow the interest on these securities to be tax deductible to the issuer. The second is that contingent capital appeals to traditional fixed income investors. This would keep costs down by creating a deep market providing sufficient demand for these securities (we discuss the preferences of investors next).

Unless regulators make contingent capital mandatory (and banks generally prefer that they do not), banks will be able to choose between issuing equity or contingent debt. Given the challenges of building a new asset class, we believe a number of banks will opt for equity unless the cost of contingent capital is significantly lower. While more equity would certainly increase banks' capital cushion, it lacks a key feature of robust going-concern contingent capital: namely the incentives it creates for management to de-risk during the early stages of financial distress. By making equity more economically attractive than contingent capital, regulators would thus forgo the opportunity to enhance market monitoring and systemic stability, even though they would increase banks' loss-absorption capacity. Moreover, consumers and ultimately the economy would bear the cost of more expensive equity. This is because banks must pass on their high capital costs to customers in order to maintain the returns that will be required of them if they are to raise capital in the future.

While cost is the most important factor to issuers (see Exhibit 4), they also generally prefer a discretionary trigger. This would give them a cushion during which regulators might exercise forbearance in the hopes that the bank could earn its way out of difficulty. It is possible, though, that stronger banks may prefer capital-based triggers, because this offers a point of clear differentiation between them and weaker banks that are more at risk of triggering. Issuers across the board would likely not favor a market-based trigger due to concerns about destabilizing price moves and potential market manipulation.

Exhibit 4: New automatically loss absorbing securities are unsurprisingly more expensive than existing capital securities

Select ISPIM EUR bonds	Fixed rate coupon	Announcement date	Coupon after reset date	YTW	YTNC	Next call
Tier 1						
ISPIM 6.988%	6.988%	June-01	3m Euribor+260 bp	3.73%	6.73%	July-11
ISPIM 8.047%	8.047%	June-08	3m Euribor+410 bp	6.70%	8.69%	June-18
ISPIM 8.375%	8.375%	September-09	3m Euribor+687.1 bp	8.44%	8.65%	October-19
LT2						
ISPIM 5% 2019	5.000%	September-09	-	5.19%	-	-
ISPIM 5.15% 2019	5.150%	July-10	-	5.42%	-	-
Loss absorbing Tier 1						
ISPIM 9.5% Perp. ¹	9.500%	September-10	5 year EUR CMS +757 bp	10.26%	10.35%	June-21

¹ Callable at par in 2016 if no longer Tier 1 capital. YTW is based on this date and Yield to next call is based on June 2021

Source: Bloomberg, Goldman Sachs Research.

The investors: their needs may matter most

We expect that contingent capital's yield could be relatively high, in the range of 7.5-10% (which we estimate based on today's spread levels and assuming a dated subordinated security prior to triggering). This is likely to make it attractive to hybrid, equity and/or retail investors. But this market is not, in our view, large enough to absorb the more than \$925 billion in potential issuance that may be needed over the next decade. We derive this estimate by assuming that the loss-absorbing capital required may be in the range of 4% to 8% of risk-weighted assets for the 50 largest banks globally.⁸ This analysis implies that the market could, at a minimum, be over \$925 billion, and at a maximum (although a highly unlikely one), be near \$1.9 trillion.

Another estimate of the potential issuance required could start with the Basel Committee's requirement that all non-common Tier 1 and 2 securities eventually have a loss-absorption feature. Across the bulk of the largest US and European banks, we estimate that there are currently around \$865 billion of these securities outstanding (please see Appendix D for details). Given the proposed increases to risk-weighted assets under the new Basel proposals, the volume of hybrid capital in banks' capital structures may have to increase further.

We would note that we should be careful not to assume that all holders of today's hybrid securities will be willing to replace them with new loss-absorbing ones. We should also be cognizant that changing capital requirements, as well as new national regulations, could dictate that the market be larger. As we have noted throughout this piece, the size of the potential need for contingent capital ultimately dictates that fixed-income investors be active participants. See Exhibit 5.

Exhibit 5: Within the iBoxx US-dollar Banks Index, 29% of eligible bonds may need to be replaced with loss absorbing capital

As of February 9, 2011

iBoxx USD Banks Index		
Seniority	Market Value (\$ bn)	Index Weight %
Senior	591.43	70.91
Lower Tier 2	151.69	18.18
Upper Tier 2	7.84	0.93
Tier 1	84.31	9.98
Total	835.26	100

Source: iBoxx, Goldman Sachs Research.

Traditional fixed-income investors will likely want contingent capital to have a very low probability of triggering, which leads them to prefer an objective, capital-based and disclosure-enhanced trigger. Many investors have indicated their concerns about the challenges of modeling a discretionary trigger: it is very difficult to model the probability of default, the potential loss given default or even the appropriate price to pay for a security that converts under a discretionary and opaque process. Greater transparency is a prerequisite for a capital-based trigger to be seen as credible by investors, because they will need to have greater confidence that banks' balance sheets reflect reality. We also believe that investors would be more likely to embrace a capital-based trigger if the terms were quite stringent, thereby lowering the probability of conversion.

⁸ Risk-weighted assets are based on the latest filings and converted to US dollars per Bloomberg.

Given their mandates, most fixed-income investors would likely prefer a write-down rather than a conversion to equity. And, given their traditional place in the capital structure, they are likely to value write-up features. Conversion into a trust that later paid out in shares or cash might also be acceptable to investors; economically this is not significantly different from a write-down with a write-up option. Investors would also want contingent capital to be rated, preferably at an investment grade level, and to be index-eligible. **Moreover, consistency of structure across countries would improve valuation and investor participation greatly in our view.**

Fixed-income fund mandates are likely to evolve over time, making the pool of less-fettered capital likely to grow. That said, at least in the initial stages contingent capital will need to address the very critical and real needs of investors if it is to be a viable market.

What is the likely outcome?

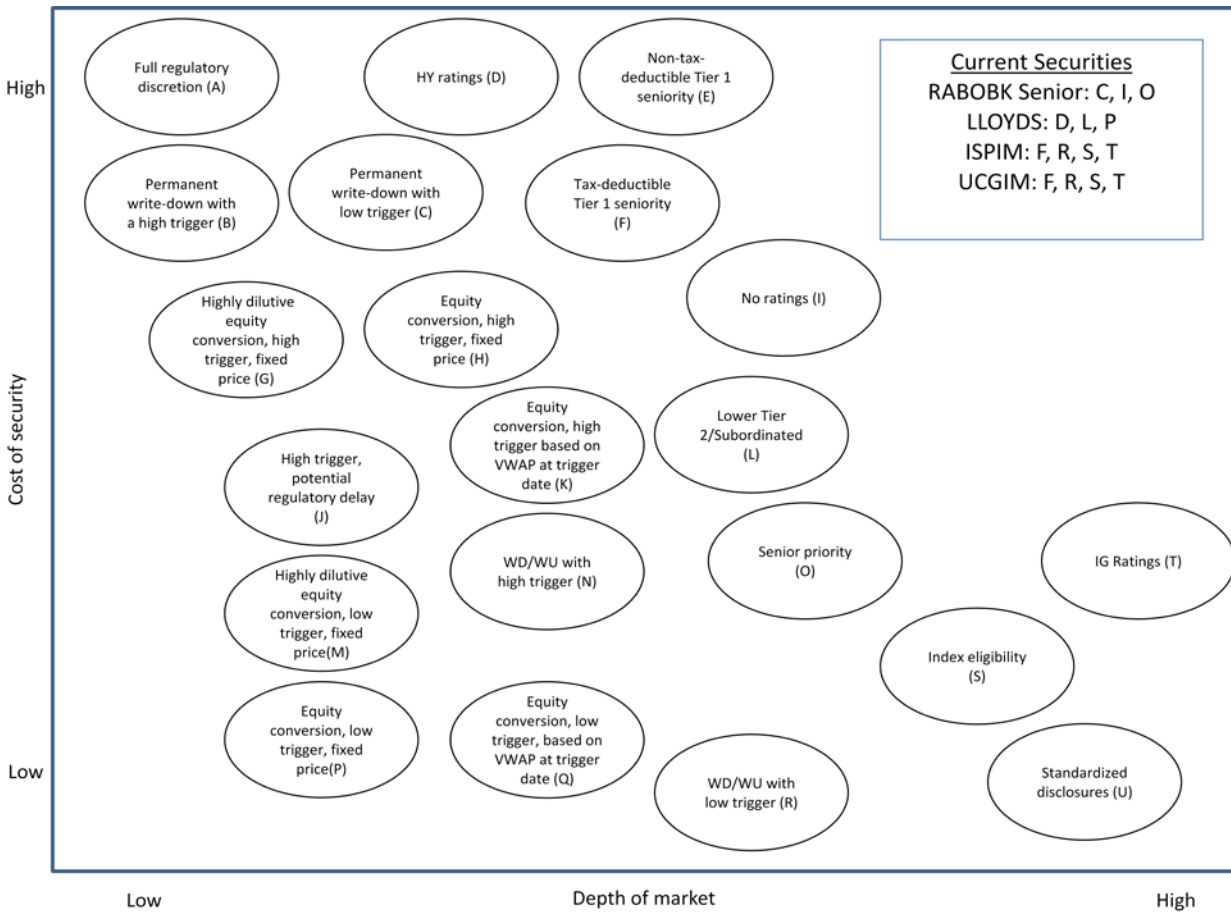
While the contours of a market for contingent capital are uncertain, it does appear fairly likely that these securities will – in one form or another – be part of the future bank capital landscape.

Structuring contingent capital securities to create a viable market will inevitably involve tradeoffs among the competing interests of issuers, investors and regulators. Regulators and issuers will also need to decide what they hope to accomplish with contingent capital securities. Some may opt for going-concern securities that create incentives for banks to reduce risk and de-lever in times of stress, while others may choose to use gone-concern contingent capital as part of a broader resolution regime. These choices will drive the structuring decisions that, in turn, will determine the appeal of contingent capital to investors, who must willingly buy the securities if a robust market is to develop.

Appendix A: Factors to consider for contingent capital

As we have mentioned throughout this piece, the tradeoffs between the needs and preferences of different participants in a potential contingent capital market are significant. In Exhibits 6-7 we attempt to visually represent some of these trade-offs, particularly as they relate to cost.

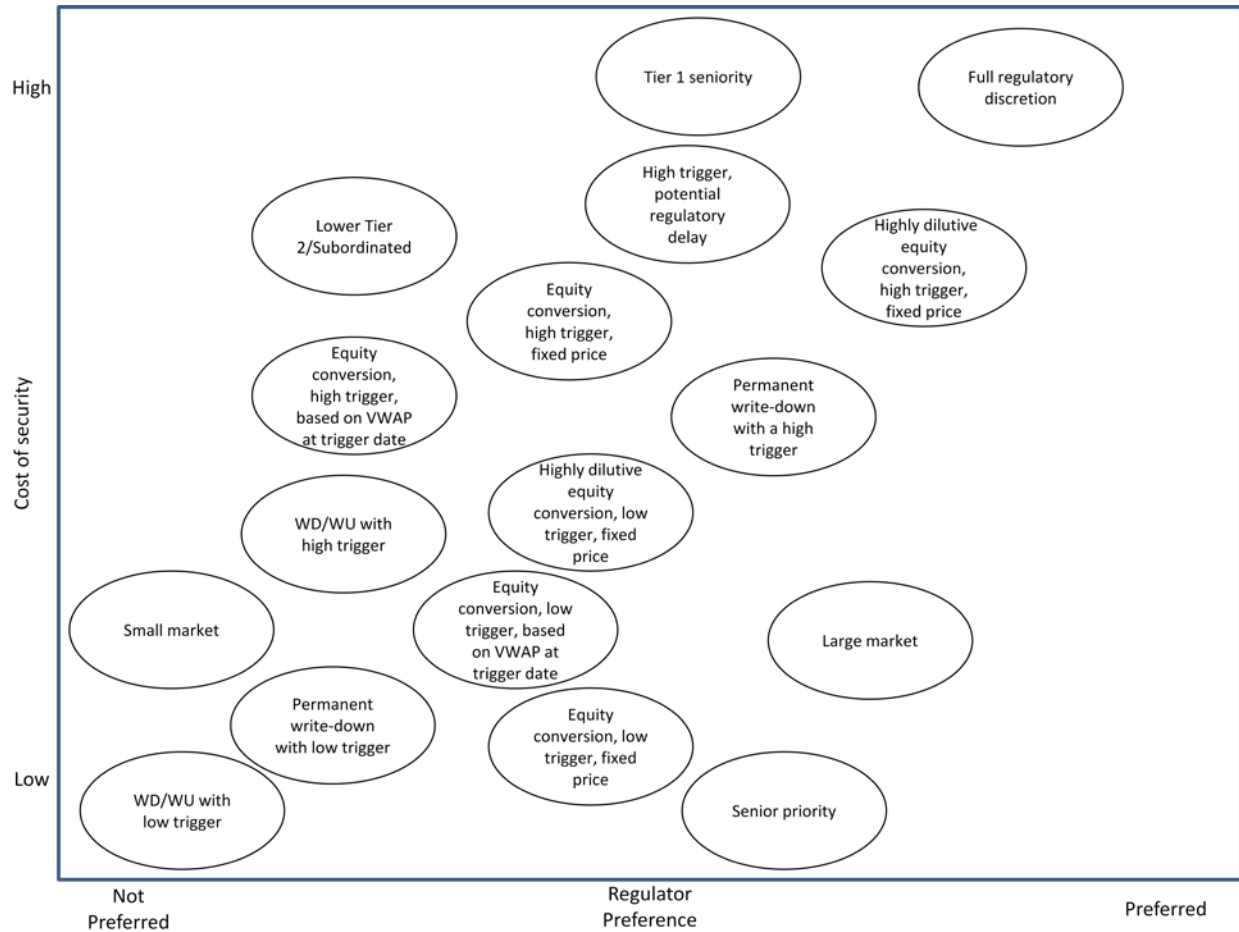
Exhibit 6: Weighing the depth of a contingent capital market against its cost is key to ensuring investor participation



Key of letters listed for the current securities represent the features included in the securities issued to date by these banks to the best of our knowledge. Please check the individual prospectus for full information.

Source: Goldman Sachs Research.

Exhibit 7: Preferences of regulators may not always align with those of investors and issuers



Source: Goldman Sachs Research.

Appendix B: Contingent capital-like securities issued to date

Here we provide an overview of the contingent capital-like securities that have been issued in recent months.

- Lloyds issued the first contingent capital security in late 2009 with roughly £8.5 billion of “enhanced capital notes” that qualify as Tier 2 capital. These securities can be converted into common equity at a pre-determined price if core Tier 1 capital falls below 5% on certain dates. The securities were issued as part of an exchange offer and included higher coupons than did the original securities.
- Rabobank issued €1.25 billion of Senior Contingent Notes with a coupon of 6.875% in early 2010. These securities include a write down of 75% of the principal of the notes if the bank’s equity capital ratio falls below 7%, with the remaining 25% of the notes to be repaid in cash immediately.
- Unicredit issued €500 million of a non-cumulative 9.375% Perp Tier 1 security in mid-2010. This security has a writedown feature triggered if the total capital ratio reaches 6%. The issuer is able to call the security before 2020 if it is no longer tax deductible or no longer counted as regulatory Tier 1 capital.
- In fall 2010, Intesa Sanpaolo issued €1 billion of a 9.5% Perp Tier 1 security containing a loss-absorption feature under which the principal is written down if (1) the bank’s total capital ratio falls below 6% (or other minimum threshold specified by regulators), (2) the regulator determines the capital ratio is likely to fall below 6% in the short term, or (3) a specific financial or solvency condition requires a writedown. The principal can also be reinstated if sufficient total capital has been raised and the bank has reported “distributable profits” following the writedown. The cost of issuing the new security for ISPIM was significantly higher than the other capital securities in the bank’s capital structure. The triggers of a 6% “total” capital ratio in both this security and the Unicredit security are somewhat irrelevant, in our view, if combined with “point of non-viability” language as the proposed requirements are for minimum total capital ratios to be much higher than this to remain a solvent institution.
- In January 2011, Rabobank issued \$2 billion of 8.375% perpetual non-cumulative capital securities which can be written down if the bank’s equity capital ratio falls below 8%.
- In February 2011, Credit Suisse announced that it has reached an agreement with Qatar Holding LLC (Qatar) and the Olayan Group to issue around CHF6 billion equivalent of high-trigger Tier 1 contingent capital notes beginning in October 2013. CS will issue these new CoCos either for cash or as an exchange for some Tier 1 securities issued to the same investors in 2008 (with a first call date of 2013). In particular, CS will issue (1) \$3.5 billion of 9.5% CoCos to Qatar (potentially exchanging \$3.5 billion of 11% Tier 1s) and (2) CHF2.5 billion of 9% CoCos to the Olayan Group (potentially exchanging CHF2.5 billion of 10% Tier 1s). The securities will convert into CS equity if (1) the group’s reported Basel 3 common equity Tier 1 ratio falls below 7% or (2) if FINMA determines that CS “requires public sector support to prevent it from becoming insolvent, bankrupt or unable to pay a material amount of its debts, or other similar circumstances.” The notes will convert at “the higher of five days volume weighted average in the period preceding the notice of conversion or a floor price of \$20 / CHF20 per share, subject to customary adjustments.”

Exhibit 8: Only a few “loss-absorbing” securities have been issued in the European market but terms vary considerably
 Select features of certain outstanding “loss-absorbing securities”

	Lloyds	Rabobank	Unicredit	Intesa Sanpaolo	Rabobank
Announcement date	3-Nov-09	12-Mar-10	14-Jul-10	23-Sep-10	17-Jan-11
Coupon	9.125%	6.875%	9.375%	9.50%	8.375%
Maturity	15-Jul-20	19-Mar-20	Perpetual	Perpetual	Perpetual
Senior debt rating	A1/A/AA-	Aaa/AAA/AA+	Aa3/A/A	Aa2/A+/AA-	Aaa/AAA/AA+
Issue rating	Ba2/BB/BB	-	Baa3/BBB/BBB	Baa1/BBB+/A	-/-/A
First call date	NA	NA	21-Jul-20	1-Jun-16	7/26/2016 and if issued replacement securities ²
Equity conversion or write-down	Conversion	Write-down	Write-down	Write-down	Write-down
Issue amount	£147.6mn ¹	€1.25bn	€500mn	€1bn	\$2bn
Priority	Lower Tier 2	Senior	Tier 1	Tier 1	Tier 1
Write-back	NA	No	Yes	Yes	No
Method of Issuance	On exchange	Primary market	Primary market	Primary market	Primary market
Coupon reset	NA	NA	3m Euribor + 749bp on July 21, 2020	5 year EUR CMS + 757bp on June 1, 2016	5 year UST + 642.5bp on June 1, 2016
Regulatory capital call	Yes	No	Yes at any time	Yes, on or after Jan 1, 2013	Yes, prior to First Call Date. If Basel 3 Event or Capital Event occurs, terms can be varied.
Regulatory capital call price	Par+accrued interest	NA	Par+accrued interest	102% of original principal+accrued interest	Par+accrued interest
Trigger for write-down/conversion	Core Tier 1 capital/RWA < 5%	Equity capital/RWA < 7%	Total capital ratio < 6%	Total capital ratio < 6%	Equity capital/RWA < 8%
Relevant ratio at 1H2010	Core Tier 1 capital: 9%	Equity capital ratio: 13.5%	Total capital ratio: 12.74%	Total capital ratio: 12.2%	Equity capital ratio: 13.5%
Extent of write-down	NA	75% principal write-down with 25% cash recovery	To the extent necessary to enable issuer to continue to carry on its activities in accordance with applicable regulatory requirements	To bring the total capital ratio above the minimum requirements (currently 8%)	To the extent necessary so that Loss Absorption Event is no longer occurring
Price of conversion	£0.592093	NA	NA	NA	NA

¹ Example is based on one ECN security. In total Lloyds issued approximately £8.5bn of LT2 and UT2 ECNs.

² Unless the Capital Securities have previously been redeemed or purchased and cancelled, the Issuer has undertaken to exercise its option to redeem the Capital Securities on the first Interest Payment Date falling on or after Jan. 26, 2041 (i) which is a Relevant Interest Payment Date and (ii) prior to which the Issuer has previously raised (or caused to be raised by a member of the Rabobank Group) the amount of net proceeds which the Issuer determines (at any time prior to such date in its sole discretion but in consultation with the Dutch Central Bank, as necessary) is the minimum amount required by the Rabobank Group to be raised through the issuance of Qualifying Securities to replace the Capital Securities.

Source: Company filings, Goldman Sachs Research.

Appendix C: New regulatory proposals

The Basel Committee continues to review the role that contingent capital should play in the regulatory capital framework. The Committee, along with the Financial Stability Board, has said that systemically important banks should have loss-absorbing capacity beyond the minimum standards, and that they are developing an integrated approach to this issue. Proposals under consideration involve capital surcharges, contingent capital and bail-in debt. Most recently, the Committee has called for all non-common Tier 1 and Tier 2 instruments issued by internationally active banks to allow for a write-off or conversion, with a discretionary trigger to operate at the point of non-viability or just prior to any injection of public-sector capital. The Committee is conducting a study of the magnitude of additional loss absorbency that globally systemic financial institutions should have, along with an assessment of the extent of going-concern loss absorbency that various proposals could provide. They are discussing these in the first half of 2011, alongside broader issues such as liquidity surcharges, tighter large exposure restrictions and enhanced supervision.

The Swiss have been the first national regulators to require contingent capital (see Exhibit 9), in this case for the country’s systemically important institutions (Credit Suisse and UBS, whose balance sheets together are about five times the size of Switzerland’s GDP). The proposed securities must at least meet the criteria for Tier 2 capital and may be structured with either equity conversion or write-down features. The rules actually require two tranches of contingent capital, which are roughly equivalent to going-concern and gone-concern contingent capital. Once the second tranche of contingent capital is triggered, the bank must implement an emergency plan guaranteeing the continuation of the firm.

Exhibit 9: Swiss regulators have been the first to define the new capital rules

	Previous requirements		New requirements	
	Current US standard (Basel I) ¹	International standard (Basel 2) ²	International standard (Basel 3)	Swiss regulations
			Valid as of 2013, with transition period up to the end of 2018	
Minimum requirement	8% total capital, of which at least: 4% Tier 1	8% total capital, of which at least: 2% common equity 4% Tier 1	8% total capital, of which at least: 4.5% common equity 6% Tier 1	same as Basel 3, notably 4.5% common equity ³
Buffer		N/A	2.5% common equity	8.5% of which: min. 5.5% common equity max. 3% CoCos trigger at 7% common equity
Progressive component		N/A	Surcharge for systemically important banks yet to be defined	6% CoCos (given current size and market share of the big banks) trigger at 5% common equity
			10.5% total capital of which min. 7% common equity	19% total capital of which min. 10% common equity

Total requirements:

¹“Well capitalized” minimums are 10% total capital, of which 6% must be Tier 1 capital and 4% must be Tier 1 common capital.

²In autumn 2008, the SFBC adopted two measures to tighten the capital regime for UBS and Credit Suisse. The two measures included (1) a leverage ratio and (2) an increased capital buffer with a target of 200% of the minimum Basel 2 requirement. Both measures have to be implemented gradually by 2013, taking into account the condition of the financial markets. Both banks currently meet the minimum requirements.

³In addition, the Basel minimums regarding total capital (8%) and Tier 1 (6%) must be satisfied. All contingent capital securities of component II and component III are eligible as long as they comply with the relevant criteria of the Basel Committee. All contingent capital securities (in the buffer and in the progressive component) must at least meet the criteria for Tier 2 capital at all times.

Source: Company filings, Commission of Experts, Goldman Sachs Research.

Appendix D: Sizing a potential contingent capital market

Our estimate of the potential amount of contingent capital that might be issued starts with the Basel Committee's requirement that all non-common Tier 1 and 2 securities eventually have a loss-absorption feature. Across the bulk of the largest US and European banks, we estimate that there are currently \$865 billion of these securities outstanding today, as we show in Exhibits 10 and 11.

Exhibit 10: Large US banks have around \$263 billion of outstanding non-core capital securities at 3Q2010

all units in billions unless otherwise indicated

Capital structure as of 3Q2010													
Ticker	Total Assets as of 3Q2010	RWA as of 3Q2010	Tier 1 Common Amount	Tier 1 common capital ratio	Tier 1 Qualifying TruPs	Qualifying preferred stock	Other Tier 1 capital ¹	Total non-core Tier 1 capital amount [A]	Total Tier 1 capital Ratio	Tier 2 capital outstanding [B]	Other Tier 2 adjustments ²	Total Capital Ratio	Current non-core Tier 1 and Tier 2 capital securities [A+B]
Bank of America	2,340	1,476	125	8.5%	21	18.1	0.5	40.0	11.2%	41.7	25	15.7%	81.7
Citigroup	1,983	1,003	104	10.3%	17	0.3	4.9	21.8	12.5%	22.6	14	16.1%	44.3
Capital One	197	125	10	8.2%	4	0	0	3.6	11.1%	2.8	4	16.4%	6.5
JPM	2,142	1,170	111	9.5%	21	7.8	0.1	28.5	11.9%	26.7	15	15.4%	55.2
Morgan Stanley	841	325	35	10.7%	5	10	4.4	18.7	16.5%	2.5	-1	17.0%	21.2
WFC	1,221	968	78	8.0%	12	8.9	7	28.0	10.9%	25.8	13	14.9%	53.8
													262.7

¹Includes other components of Tier 1 capital which may include unit structures (for example HITS, WITS and APEX), mandatory convertibles, and other non-controlling interests

² Other Tier 2 adjustments include allowance for loan loss includible in Tier 2 capital, unrealized gains on AFS equity securities includible in Tier 2 and other Tier 2 components

Source: Company filings, Goldman Sachs Research.

Exhibit 11: Large cap European banks have around \$602 billion of outstanding non-core capital on balance sheet
all units in billions unless otherwise indicated

Current Capital Structure (in reporting currencies)														Current Non-Core Tier 1 and Tier 2 Capital securities	
Banks ¹	Total assets	RWA	Total Core Tier 1		Non-core Tier 1 capital securities [A]	Other Tier 1 adjustments ²	Total Tier 1		Tier 2 Capital (bonds outstanding) [B] ³	Other Tier 2 adjustments ²	Total Tier II Capital	Other non-attributable adjustments ⁶	Total Capital Ratio	[A+B]	USD Equivalent ⁴
			1 Capital	Capital Ratio			Capital Amount	Capital Ratio							
ACAFF	1,725	327	32.0	9.8%	11.6	(10.8)	32.8	10.0%	23.0	(11.2)	11.8	(10.8)	10.3%	34.6	46.9
AIB	169	113	4.3	3.8%	0.4	2.1	6.7	6.0%	4.3	(0.8)	3.5	(0.1)	9.0%	4.7	6.3
BACR	1,587	395	39.6	10.0%	14.2	(1.9)	52.0	13.2%	15.9	(1.7)	14.2	(1.0)	16.5%	30.2	48.3
BBVASM	537	306	25.0	8.2%	5.2	(1.9)	28.2	9.2%	13.0	(1.9)	11.1	NA	12.8%	18.1	24.6
BKIR	180	93	7.6	8.2%	2.5	(0.9)	9.2	9.9%	3.7	(0.5)	3.2	(0.8)	12.5%	6.1	8.3
BNP	2,237	608	54.7	9.0%	13.4	0.0	68.1	11.2%	21.9	0.0	21.9	0.0	14.8%	35.3	47.8
BPCEGP	1,124	403	31.0	7.7%	8.5	0.0	39.5	9.8%	13.5	NA	NA	NA	NA	22.0	29.8
CS	1,067.4	227.7	27.5	12.1%	11.5	(1.1)	37.9	16.7%	13.0	(1.1)	11.9	0	21.9%	24.5	25.2
DB	1,958	277	20.9	7.6%	10.8	0.0	31.8	11.5%	8.8	(6.7)	2.1	NA	12.2%	19.6	26.6
HSBC	2,418	1,075	106.8	9.9%	17.6	(0.3)	124.1	11.5%	47.9	(17.1)	30.8	NA	14.4%	65.4	65.4
INTNED	1,261	332	30.1	9.0%	8.3	0.0	38.4	11.6%	10.0	0.0	10.0	0.0	14.6%	18.3	24.8
ISPIM ⁵	677	355	28.0	7.9%	4.3	0.0	32.3	9.1%	12.8	NA	12.8	NA	12.7%	17.0	23.1
LLOYDS	1,028	463	41.9	9.0%	5.8	0.0	47.7	10.3%	23.1	1.8	24.9	(10.6)	13.4%	28.9	46.3
Nordea	601	207	18.8	9.1%	2.0	0.0	20.9	10.1%	3.8	0.0	3.8	NA	11.9%	5.8	7.9
RBS	1,629	475	48.3	10.2%	10.2	0.7	59.2	12.5%	18.8	(8.9)	9.9	(4.7)	13.5%	29.0	46.4
SANTAN	1,236	594	50.3	8.5%	7.4	NA	57.7	9.7%	21.5	(2.1)	19.4	NA	13.0%	28.9	39.1
SOCGEN	1,150	333	28.0	8.4%	6.7	0.0	34.6	10.4%	12.6	NA	NA	NA	NA	19.3	26.2
STANLN ⁶	481	234	25.7	11.0%	5.5	(0.2)	30.9	13.2%	10.6	(0.5)	10.1	(0.1)	17.5%	16.1	16.1
UBS	1,460.5	208.3	29.6	14.2%	5.2	0.0	34.8	16.7%	10.4	(3.1)	7.3	0	20.23%	15.7	16.1
UCGIM	969	453	39.0	8.6%	4.8	NA	43.8	9.7%	15.0	0.0	15.0	NA	13.0%	19.8	<u>26.8</u> 601.9

¹ CS, UBS, SANTAN, BBVASM, BNP, SOCGEN, Nordea, RBS, ISPIM, ACAFF, BPCEGP, INTNED, UCGIM and DB are as of 3Q10; the rest are as of 2Q10. Please note that total assets for BNP are as of 2Q10 and SOCGEN's Tier 2 capital is as of 2Q10.

² Where NA given, the adjustments are not disclosed separately and thus have been included with the Tier 1 or Tier 2 securities, as applicable.

³ For BPCEGP, we use UT2 and LT2 as of year end 2009 as information for most recent quarter is not available.

⁴ Based on Bloomberg FX rates as of February 11, 2011. The following rates were used: CHF- 1.0275, EUR-1.355, GBP-1.6006

⁵ 3Q10 capital ratios are on a pro-forma basis incorporating estimated benefit of the disposals/acquisitions in the finalization stage and after accrued.

⁶ On a pro forma basis incorporating the rights issue, according to the management guidance in the 3Q IMS

Source: Goldman Sachs Research, company filings.

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