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Abstract

This paper focuses on market discipline as a necessary condition to preserve the signaling content of balance sheet indicators and market prices as macroprudential tools. It argues that market discipline enhances the information content of market prices by reflecting the expected private cost of financial distress, including the systemic importance of particular firms. This paper also argues that three conditions are necessary for market discipline to be effective: adequate and timely information on financial institutions' risk profiles; financial institutions' creditors must consider themselves at risk; and the reaction to market signals needs to be observable. The paper relies on the existing financial literature and it is particularly timely because policymakers are considering structural measures of banks' systemic importance as a benchmark for macroprudential policy.

Keywords: Financial crisis, international financial markets, financial regulation, financial institutions, bankruptcy, liquidation.

JEL classification: G02, G17, G19, G21, G29, G34.

Resumen

La disciplina de mercado es condición necesaria para preservar el contenido informativo de los indicadores de balance y los precios de mercado como herramientas utilizadas en el análisis macroprudencial. Tanto los indicadores de balance como los precios de mercado son utilizados como indicadores de importancia sistémica y crisis financiera. Tres condiciones son necesarias para que la disciplina de mercado sea efectiva: información veraz y oportuna sobre el perfil de riesgo de las instituciones financieras; los acreedores deben estar expuestos al riesgo; y la reacción a los indicadores de mercado debe ser observable.

Palabras clave: Crisis financiera, mercados financieros internacionales, regulación financiera, instituciones financieras, quiebra, liquidación.

Códigos JEL: G02, G17, G19, G21, G29, G34.

1 Introduction

The present financial crisis, whose epicenter was in the most sophisticated financial markets in the United States and the European Union (EU), has tested the national and international preparedness to deal with financial instability.[1] In their quest to ensure financial stability, governments launched bail-outs that have been costly for taxpayers and have prompted policymakers to review a wide range of policy areas including monetary policy, prudential supervision and resolution of failed financial institutions. In this context, central banks´ macro prudential policy has attracted particular attention. Although the theoretical and empirical literature is still in its very early stages, there is a consensus among policymakers that the main objective of macroprudential policy is to reduce systemic risk and enable the continuous functioning of the financial system, without costly bail-outs for taxpayers. In contrast to microprudential policy, macroprudential policy takes into consideration risk factors that go beyond individual financial institutions, including shock correlations and interactions between institutions in their response to shocks. The macroprudential approach relies on the notion that "risk" is endogenous.

For the purpose of this paper, systemic risk is defined as the risk of a widespread crisis in the financial system. Other definitions also highlight the impact on the real economy. IMF/BIS/FSB (2009) define systemic risk as "a risk of disruption to financial services that is (i) caused by an impairment of all parts of the financial system and (ii) has the potential to have serious negative consequences for the real economy." Systemic risk is a negative externality that policymakers need to tackle via macroprudential regulation.

The only recent academic and policy literature on the operational framework of macroprudential policy has focused on crisis prevention and not on crisis management (Borio and Drehman, 2009). The present paper challenges Borio and Drehman´s view that crisis management policies are not pre-emptive in their orientation and are relevant only when the crisis has unfolded. Their view neglects the preventive policy aspects of failed bank resolutions that aim at minimizing the aggregate credit and liquidity losses to the financial system by allowing markets to continue functioning. Supervisors´ prompt corrective policy together with banks´ mandatory contingent convertible bonds and a credible resolution regime if an institution is clearly insolvent, and ideally combined with bail-in approaches, contribute to preserving not only financial stability but also the information content of market signals.

This paper focuses on market discipline as a necessary condition to preserve the signaling content of balance sheet indicators and market prices as macroprudential tools. It argues that market discipline enhances the information content of market prices by reflecting the expected private cost of financial distress, including the systemic importance of particular firms. This paper also argues that three conditions are necessary for market discipline to be effective: adequate and timely information on financial institutions´ risk profiles; financial institutions´ creditors must consider themselves at risk; and the reaction to market signals needs to be observable. The analysis relies on the existing financial literature and it is

1. No generally accepted definition of financial stability exists. See Padoa-Schioppa (2003), Schinasi (2004) and Goodhart (2009) ; these definitions emphasize the robustness of the financial system to either external shocks or shocks originated within the financial system and the sources of systemic risk for which there is a consensus definition.

particularly timely because policymakers are considering structural measures of banks´ systemic importance as a benchmark for macroprudential policy.

The remainder of this paper is divided into three sections. Section one elaborates on the necessary conditions for effective market discipline and analyzes its role in enhancing the information value of market indicators. Section two briefly comments on the use of market and balance sheet indicators in macroprudential policy as measures of the systemic importance of financial institutions and risk indicators of financial instability. The last section concludes and presents some policy recommendations that focus mainly on three aspects of market discipline: reorganization and resolution of failed financial institutions; accounting frameworks; and supervisory disclosure and financial information gaps.

2 Effectiveness of market discipline in its supporting role of macroprudential policy: Preconditions for effective market discipline

Neither policy makers nor academics have paid much attention to the supporting role of market discipline in macroprudential policy in spite of the fact that, at this point in time, macroprudential policy importantly relies on market prices and balance sheet indicators as measures of systemic importance and future financial distress. Academics often assume that market prices reflect all the available public and private information. However, a macro prudential framework that relies on market prices only assumes that markets are informationally efficient, hence, the importance of transparency and disclosure in the effective functioning of a market discipline regime. The underlying rational is that disclosure allows counterparty surveillance and makes markets more efficient in the sense that they embody the knowledge that market participants have. However, disclosure is only one condition for the effectiveness of market discipline. Disclosure provides investors with the necessary information to assess the risk that they will have to bear including the possibility of losses, and that promotes better risk pricing. Market discipline could be understood as higher rates on liabilities associated with higher risk, which reduces the risks taken by banks. In sum, it is the expectations that financial costs will have to be borne that makes market discipline work.

The effectiveness of market prices and balance sheet indicators as measuring tools of systemic importance and financial distress rests on the presumption that markets can be relied upon to exert discipline on risk taking of financial institutions. Market indicators have the advantage of being available frequently (mostly daily) for financial institutions that tap funds from the markets and that makes them particularly useful in macroprudential policy. Since the 1990´s, policy makers have stressed the role of market discipline as a pillar for a safe and efficient financial system. However, the crisis has considerably weakened policy makers´ reliance on market discipline, interestingly enough, in part, as a result of their intervention. Large market failures that occurred in the run up to the financial crisis were caused to a substantial extent by an inappropriate institutional framework that made bail outs of financial institutions inevitable. Three conditions are necessary for market discipline to be effective: adequate and timely information on financial institutions´ risk profiles; financial institutions´ creditors must consider themselves at risk; and the reaction to market signals needs to be observable.

Adequate and timely information on financial institutions' risk profiles:

In practice, even if markets are efficient from the informational point of view, all relevant private information may not be available at all times because information is costly. As compared to markets, prudential supervisors have a comparative advantage to compel revelation of private information from financial institutions. If prudential supervisors have access to private information that allows a more accurate assessment of their financial condition on a timelier basis, market discipline might be improved by the public disclosure of supervisors´ ratings. All of this raises a number of policy issues: Are markets or prudential supervisors more timely and accurate in assessing a financial institutions´ financial condition? Should prudential supervisors disclose more information? Is publicly available information sufficient? What needs to be disclosed and to whom should the disclosures be made?

Berger *et alli*. (1998) study the policy choices regarding supervisory versus market discipline based on the timeliness and accuracy of the information sets of supervisors and bond ratings and stock returns of large U.S. bank holding companies.[2] In their study, bank supervisors and bond rating agencies primarily represent debt holders and, as such, their ratings reflect the probabilities and severities of default. The authors conclude that bond rating agencies tend to predict future bank defaults consistent with their incentives regarding default risk, while supervisors do not contribute substantially to predicting future values of large banks´ performance after taking into account market assessments. Supervisors emphasize "current" condition and when their assessment is "fresh" after an inspection, they "generally contribute substantially to forecasting future performance and often exceed the contribution of market´s assessments." Evanoff and Wall (2002) found that subordinated debt yield spreads produced more accurate predictions of upcoming confidential supervisory ratings than did bank's risk-based regulatory capital ratios. This was partly explained because accounting measures were not market based and allowed for supervisory discretion. However, because they also found that both risk measures contain substantial noise, they suggest limiting the use of subordinated debt only as a failsafe mechanism to identify critically undercapitalized banks. In sum, the findings of Berger *et alli*. (1998) and Evanoff and Wall (2002) seem to leave quite unresolved the question of whether markets or supervisors are the best governance over large banks in the US. Notwithstanding, both seem to imply that more supervisory disclosure would enhance the accuracy of market indicators. Against this background, it could be argued that supervisors´ communication of their monitoring and systemic assessments to the financial institutions as well as communication of the changes in the stringency of their supervisory approach to the market could be considered macroprudential policy instruments. By influencing the behavior of market participants, supervisors´ communication may help to contain system-wide risks (BIS, 2010 p.9). In turn, supervisors´ forbearance introduces uncertainty as to the timing and amount of losses to which creditors are exposed.

The market assessment of risks relies on auditors and supervisors to enforce not only honest accounting but also accounting frameworks that allow for the prompt recognition of losses.[3] The first line of defense for enforcing compliance with accounting rules is the external auditors of a financial institution. However, the total impact of external auditors is hard to judge, as there is rarely any public disclosure when a financial institution changes its balance sheet valuation in response to its external auditor's opinion. Moreover, legally accepted accounting frameworks allow for a considerable degree of discretion. In an environment of depressed asset prices, Huizinga and Laeven (2009) analyze a good example of accounting discretion as a mechanism to reveal asymmetric information to investors that weakens market discipline. The authors show that banks use accounting discretion to maintain accounting solvency by overstating the value of distressed assets in their portfolios of assets held to maturity (mortgage backed securities –MBS– and real estate loans), which are carried at amortized cost. This was reflected in the market value of banks with large portfolios of MBS reacting favorably to accounting rules amendments aimed at allowing additional discretion in the determination of fair value of securities when markets are illiquid. Against this background, Huizinga and Laeven conclude that replacing the mixed model of accounting based on both amortized cost and fair value with a model based entirely on fair value accounting would mitigate incentives for accounting arbitrage and could serve to

2. These authors consider the timeliness and accuracy of the information in the supervisory and market assessments but they do not consider its costs. Their study assumes that information is costless.

3. Bank supervisors do not always enforced timely recognition of losses as suggested by Eisenbeis and Wall (2002) in the context of the implementation of Prompt Corrective Action in the US.

improve the information value of public accounts. However, the effectiveness of capital requirements depends entirely on the proper valuation of assets and liabilities and the timey recognition of impairment. In times of crisis, market prices are driven by liquidity provision incentives and not fundamental values; hence, an accounting framework that entirely relies on mark-to-market values is not adequate to assess the solvency of financial institutions as a "going concern." However, accounting standards and regulatory standards have different objectives and goals. Most important is that prudential regulators are accountable for explaining deviations from accounting standards. Publication of stress tests could be an *ex ante* accountability mechanism. Also, for the sake of transparency for markets and policy makers, market prices could be supplemented with both model-based and amortized cost valuations in financial crisis situations.

Both prudential supervisors and market participants also rely on the availability of sufficient and comparable information in order to comprehensively and accurately assess both the systemic importance of financial institutions and the signals of financial distress. Financial information needs to be comparable in terms of valuation criteria for assets, liabilities and off-balance sheet items.[4] Moreover, because macroprudential policy takes into consideration shock correlations and interactions between institutions in their response to common shocks, financial information on "interconnectedness" and "substitutability" is necessary. Regarding "interconnectedness" among financial institutions both domestically and internationally, the most obvious data gaps are the information on the detailed composition by asset type of the "trading" and "available for sale" assets´ portfolio; detailed information on the lending to and borrowing from banks and non deposit financial institutions; and the information on the counterparties of credit lines and other off-balance sheet items. Regarding "substitutability", the obvious data gaps are the value of assets for which banks act as custodians, the values and shares of large value payments settled by banks and the values and shares of global securities settled by banks. This information is of utmost importance for macroprudential policy makers, but financial institutions would be reluctant to publicly disclose it out of competitiveness concerns. To the extent they do not embed market views about "interconnectedness" and "substitutability," market prices would only partially reflect credit risk, limiting their usefulness as macroprudential indicators. Nonetheless, policy makers could use private information on "interconnectedness" and "substitutability" to supplement market prices as indicators of systemic importance of financial institutions and signals of financial distress.

Financial institutions´ creditors must consider themselves at risk and the reaction to market signals needs to be observable

The disciplinary role of markets requires allowing for failure of individual institutions within the context of a credible resolution regime that limits its wider impact both in the financial sector and the general economy, while also limiting moral hazard. In order to fulfill these objectives, the absolute priority of claims needs to be protected so that shareholders need to be first in taking losses and creditors know *ex ante* the repayment priority (Hart, 2002). It is for this reason that a number of legal scholars have argued for reliance upon traditional bankruptcy statutes or, at least, special laws designed for banks, which still include some involvement of the Courts of Justice in the actual insolvency procedures rather than the bank closure model

4. The G-20 reform agenda for improving the resilience of the international financial system includes the objective of a single set of global accounting standards by June 2011. In the European Union, harmonization has taken place in the recent years to comply with the International Financial Reporting Standards (IFRS). In addition, EU bank prudential supervisors aim at streamlining financial reporting under IFRS, focusing on harmonization of reporting formats and convergence of supervisory reporting requirements.

based exclusively on special administrative rules. Only under a regime that secures the priority of claims would creditors be fully able to evaluate their risk and market spreads would effectively reflect the differences in the probability of default and loss given default of individual institutions (i.e. a government bail-out would yield PD = 1 and LGD = 0 ex post). In order to secure creditors´ risk monitoring and PD ≠ 0 and LGD ≠ 0, Hart and Zingales (2010) propose a resolution mechanism in which all non systemic creditors receive a haircut of at least 20%. Furthermore, a prompt corrective action policy on the part of prudential supervisors not only helps to protect the value of the assets and reduce bank managers' incentives to engage in moral hazard behavior (Benston and Kaufman,1988 and Kaufman, 2004) but also limits the probability of systemic spill over to the extent that depositors have access to their funds, qualified borrowers can make use of their existing credit lines and their collateral and counterparties can settle their hedging contracts. Moreover, by allowing markets to continue functioning, prompt corrective action and a credible resolution regime preserves the information value of market indicators for policy makers.

A widely cited body of research shows that investors in subordinated debt appear to rationally discriminate between different risk profiles of banks, which imply that banks´ unsecured creditors consider themselves at risk. Only in these circumstances, creditors would have ample incentives to fully exploit that information and incur the costs to analyze it. Hence, the potential for market discipline relies not only on the assumption that publicly available information reflects in a timely and adequate manner financial institutions´ risk profiles but also on the assumption that investors in unsecured debt have no limitations on analyzing that information and do not suffer from co-ordination failure when monitoring. Retail investors are more likely to have these limitations and, for this reason, the market discipline potentially provided by customer depositors may be close to valueless. In the context of the present crisis, the lack of a credible resolution regime for allocating banks' losses to groups of creditors has compelled governments to bail-out all creditors of banks in order to pre-empt runs that could have threatened the stability of the financial system as a whole. Hence, the relevance of understanding the impact of governments´ bail-out on market signals. Balasubramnian and Cyree (2010) analyze the sensitivity of yield spreads on bank-issued subordinated notes / debentures and trust preferred securities (TPS)[5] to the "Too-big-to fail" (TBTF) policy in the US. The authors conclude that prior to the TPS issuance and the LTCM intervention, yield spreads of subordinated notes / debentures were sensitive to conventional firm-specific default risk measures, but not after. The government´s intervention in the LTCM signaled the return of implicit guarantees in spite of the existing credible resolution regimen established in the Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991.

The principle that creditors need to be at risk for effective market discipline has inspired academics to propose approaches that make it mandatory for financial institutions to issue subordinated debt on an a regular basis, arguing that the quality of the signal obtained may be improved. More recently, Flannery, 2005; Squam Lake Working Group on Financial Regulation (2009); Hart and Zingales (2010) propose market-based corrective mechanisms, which include the financing of a given percentage of financial institutions´ balance sheet by unsecured debt that includes convertibility into stock (going concern) and/or bail-in procedures in a recovery situation. Contingent capital instruments (Flannery, 2009; Squam Lake Working Group on Financial Regulation, 2009) would provide automatic recapitalization via mandatory conversion of debt into equity either at supervisors´ discretion or automatically when a predetermined trigger based on market conditions is activated. Bail

5. Hybrids included in the definition of T1 capital. In the US, banks started issuing TPS in 1996.

in approaches establishes mandatory write downs of banks´ Tier 1 non common equity and unsecured debt at supervisors´ discretion at the point of non viability. In the Hart and Zingales proposal, the loss absorption capacity applies to all "non-systemically relevant" obligations (e.g. long-term debt). These approaches are better suited to deal with tail risks. To the extent that triggers are based on market signals, such mandatory requirements under a rule-based regime together with a credible resolution process for failed institutions would provide the adequate incentives to shareholders and uninsured creditors to engage in risk analysis and act consequently (see Table 1).

Table 1: Comparison between Squam Lake Working Group (2009) and the Hart and Zingales (2010) proposals

	Squam Lake Report (2009)	**Hart and Zingales (2010)**
Differences		
Approach	Contingent capital	Bail-in
Trigger	• Market price of equity • Accounting value • Prudential supervisor decision	CDS premium + Supervisor based on stress test
Action taken	Debt converts into equity	Resolution / Take over
Similarities		
	• Mechanism shifts gov´t trade off between restructuring and bail out in favor of restructuring • Limits systemic risk (Probability and/or cost) but do NOT address problems of all institutions having problems simultaneously • Regulatory requirement additional cushion of Jr LT debt: extraprotection + financial instrument –mkt price- • Effectiveness relies on rule based PS + credible resolution regime	

Source: Author´s analysis

3 Balance sheet and market indicators in macroprudential policy: The relevance of market discipline

Borio and Drehmann (2009) argue that the ideal measurement tool of financial instability would permit generating the *ex ante* probability distribution of financial distress and the *ex post* identification of financial instability. These authors conclude that there are no satisfactory models of the economy as a whole linking balance sheets of the financial sector to macroeconomic variables. As a result, policy makers need to rely on to a variety of much more limited quantitative tools to measure financial instability, such as balance sheet and market indicators.

Balance sheet indicators of financial institutions are mainly obtained from audited statements and regular call reports submitted to supervisors. This raises questions about the public availability (call reports are not public in numerous countries) and quality of the information (audit statements are mostly required for banks quoted on the stock market) as well as about its timeliness since call reports, supervisors assessments and audited financial statements are only available at certain times and may not represent the actual financial condition at all times.

In contrast, market indicators, although only available for financial institutions that obtain finance from the market, are not only publicly available but also are available at high frequency (at least daily). As an example, in the European Union (EU), out of the total of almost 7,800 institutions[6], 54 banks have Credit Default Swaps (CDS) traded in the market (see Annex 1), 312 banks are listed in the stock markets and 737 banks have outstanding debentures as of September 2010. Market indicators can be used directly or they can be used to obtain estimates of PD. However, CDS spreads reflect factors other than credit risk such as liquidity risk and market conditions (e.g. risk aversion).

Market prices and balance sheet indicators as measuring tools of systemic importance

One facet of systemic risk is the propagation of adverse shocks through the rest of the financial system (and the real economy). The failure of some financial institutions considered systemically important can create systemic risk. The ideal measure of systemic importance must capture the potential spill overs or contagion effects from the institution whose systemic importance we want to measure to the rest of the financial system. Such measure is of utmost importance for macroprudential regulation whose main objective is that systemically important institutions internalize the costs that their failure imposes on others including the costs associated with moral hazard. However, measuring systemic importance faces mainly two methodological challenges: (i) the time dependence character of systemic importance and (ii) the difficulty to separate the externalities that the failure of a large firm can cause on the financial system (spill overs) and the externalities associated with common exposure to a common shock (common exposure effects). These challenges render the *ex ante* assessment of systemic importance very difficult. Goodhart refers to the "fuzzy outlines of the definition of systemic importance."

6. As per the ECB definition of credit institutions, it includes the credit institutions incorporated under the law on any EU country regardless whether or not they are subsidiaries of foreign banks but excludes foreign branches of EU and non EU banks.

Broadly speaking, there are three approaches to measure systemic importance (Castro and Ferrari, 2010). First, the indicator approach uses quantitative indicators such as total assets, total interbank operations, trading securities or fee and commission income[7] that proxy for factors that policy makers consider *ex ante* as determinants of systemic importance such as size, interconnectedness and substitutability. The balance sheet indicators are highly positively correlated. Scores of each indicator and financial institution are used to produce a synthetic measure of systemic importance that captures the structural rather the cyclical aspect of systemic importance. The main limitations are the considerable data gaps particularly for interconnections among financial institutions including non banks.

Secondly, the network approach uses the network theory to map interconnections between financial institutions. The simulation of shocks to specific institutions allows policy makers to assess the domino effects on other institutions in the network. This approach allows for a better identification of the exposure to a common shock and the spill over. The main limitations in terms of data gaps are the same as in the case of the indicator approach.

Thirdly, market information based approaches use the information content of market prices such as CDS spreads and equity prices as inputs to assess the systemic importance of financial institutions. These approaches have received considerable attention by academics and policy makers because of the public availability and frequency of market data for those financial institutions that tap the markets. While balance sheet data are considered lagging indicators in terms of the information they incorporate, the information content of market prices is superior to the extent that markets are informationally efficient and incorporate both public and private information. Moreover, to the extent that they embed views about common exposures and interactions among financial institutions (at least on the financial system as a whole), market information based approaches can bridge the information gaps of indicator based and network approaches. In sum, market information based approaches are useful for macroprudential policy even if only as a complement to other measures of systemic importance.

Market prices and balance sheet indicators of financial instability

The main objective of macroprudential policy is to limit systemic risk by reducing the probability of financial distress occurring. The effectiveness of macroprudential measures of financial instability depends in part to the extent that they are "leading" measures of financial distress (Borio and Drehman, 2009). In order to be useful as forward looking indicators, balance sheet indicators need to be incorporated into a model of the dynamics of financial instability. Rating agencies use these publicly available balance sheet indicators to elaborate their own assessment of the strength of the financial system as a whole that is intended to be forward looking to the extent that ratings are not "sticky" because they use methodologies based on "through the cycle" PD.[8] The measure of strength of the financial system is the bottom up aggregation of each financial institution individual rating. Hence, this measure does not take into consideration the interconnections between financial institutions and potential domino effects.

Market prices present their own limitations as indicators of financial distress. For example, CDS spreads reflect factors other than "the collective view of credit risk" (IMF, 2006) and policy makers need to know the exact causes that explain changes in CDS spreads in

7. These indicators are not an all encompassing list.

8. Individual ratings are estimates of the probability of default. The measure of strength of the financial system is the bottom up aggregation of each financial institution individual rating.

order to use them as indicators of financial instability. Annaert *et alli*. (2010) study the determinants of the changes in CDS spreads of euro area credit institutions and analyze the marginal contributions of credit risk, liquidity, market conditions and business cycle factors over the period 2004-08. The authors conclude that determinants of banks´ CDS spreads vary strongly across time. If policy makers base their policy action on CDS spreads changes (e.g. Increase capital requirements; margin calls), CDS spreads need to be re-estimated frequently. Moreover, the market liquidity component explains changes in CDS spreads before and after the financial crisis and, in the period immediately before the crisis, CDS changes hardly seemed to be explained by economically sensible variables, undermining their usefulness as indicators of financial distress.

Market prices can also be used to derive estimates of the probabilities of default for individual institutions or the financial sector. These estimates are designed to be forward looking, at least to the extent that policy changes are made public and policy makers do act within the established policy framework. Policy makers´ intervention (e.g. bail out) outside that framework results in paradigm changes in the determinants of both ratings and market prices. This hinders their use as macroprudential indicators. In sum, balance sheet indicators, CDS spreads and ratings are rather imperfect measures of future financial distress.

In fact, one of the main challenges that macroprudential policy makers face is that the market discipline of potential bank failure and creditors´ loss absorption apply both to small but also to large and complex institutions, while still avoiding systemic risk. Precisely, the Squam Lake Working Group (2009) and Hart and Zingales (2010) proposals aim at correcting the market perception of government intervention (i.e. bail out) and the resulting paradigm changes in the determinants of both ratings and market prices. The proposals would fulfill this objective to the extent that supervisors use triggers in a transparent and predictable fashion and, to the extent that conversion rates deter shareholders *ex ante* excessive risk taking. In turn, the conversion at supervisors' discretion reduces the attractiveness for investors to the extent that supervisors maintain flexibility in determining when regulatory capital is insufficient, for example, if conversion relies on the results of stress tests that are not public. In this regard, it is worth making a reflection on the recent proposal by the Basle Committee on Banking Supervision to ensure the loss absorbency of regulatory capital at the point on non-viability (August, 2010) whose success also heavily relies on the regulatory transparency to estimate trigger breaches. The market signals from all non-common Tier 1 instruments and Tier 2 instruments compliant with the Basel proposal will be signals of the market's perception of the probability that the supervisors will trigger write-downs and not solely a market signal about the actual financial condition of the issuer. Importantly, this will likely mean that the market signal from the pricing of otherwise identical instruments issued by banking groups in different countries will not necessarily be comparable. Indeed, if supervisors do not have a time consistent rule based policy for banks over time, the market signals may not even be comparable within a country.

4 Policy conclusions

In spite of their many limitations as described in this paper, balance sheet indicators and market prices, whether "raw" or as part of a methodology, are under consideration as measuring tools in macroprudential policy. In particular, balance sheet indicators and market prices are used as structural measures of systemic importance. The usefulness of these indicators to inform policymakers´ decisions resides heavily on the ability of markets to price the risk profile of the financial institutions themselves and to take into consideration risk factors that go beyond individual financial institutions, including shock correlations and interactions between institutions in their response to shocks. Reliance on market prices as indicators of systemic importance and financial distress implicitly assumes markets are perfectly efficient in their strong form. Moreover, policymakers should only rely on market prices to provide meaningful signals about systemic risk if they have a reliable way of separating out the impact of implicit government guarantees beyond the existing legal framework of the safety net, including a credible resolution regime. Against this background, market discipline is a necessary, if not sufficient, condition, to ensure the information quality of balance sheet and market indicators. In this respect, market discipline has a supporting role in macroprudential policy.

In general, three conditions are necessary for market discipline to be effective: adequate and timely information on financial institutions´ risk profile; financial institutions´ creditors must consider themselves at risk; and the reaction to market signals needs to be observable. More specifically, the following policy initiatives would greatly contribute to enhancing effective market discipline: external auditors and prudential supervisors to enforce not only honest accounting consistent with the applicable accounting standards but also accounting frameworks that allow for the prompt recognition of losses. In normal market circumstances, fair value accounting of balance sheet (and off-balance sheet) items better reflects fundamental values than amortized cost accounting. However, in times of crisis and thin markets, market prices are driven by liquidity provision incentives and not fundamental values, and mark-to-market values cannot be used to gauge the solvency of financial institutions as a "going concern." In financial crisis situations, market prices should be supplemented with both model-based and amortized cost valuations. Publication of stress testing of banks´ financial statements would contribute to the transparency of discrepancies between fair value and amortized cost accounting. The benefits of these options should be assessed against the costs of lengthy and difficult-to-comprehend annual reports.

Financial information needs to be sufficient and comparable in terms of valuation criteria for assets, liabilities and off-balance sheet items since the definition of a systemically important institution is global. This demands convergence between accounting standard-setters over global accounting rules. Because macroprudential policy takes into consideration shock correlations and interactions between institutions in their response to common shocks, financial information on "interconnectedness" and "substitutability" among financial institutions - including non-banks - is necessary. Such information could reveal strategic decisions, and managers could be reluctant to provide it to the market out of concern over competitiveness. As compared to markets, prudential supervisors have a comparative advantage in making the disclosure of private information by financial institutions obligatory. Policymakers could use this private information on "interconnectedness" and "substitutability" to supplement the signaling content of market prices.

Prompt corrective action by supervisors limits the probability of systemic spillover to the extent that market participants can fully anticipate policymakers´ reaction. Moreover, by allowing markets to continue functioning, prompt corrective action and a credible resolution regime also preserve the information value of market indicators. In the case of liquidation, the absolute priority of claims needs to be legally protected. In such a regime, creditors know *ex ante* the repayment priority. All of this challenges the view that crisis management policies are only relevant when the crisis has unfolded and, hence, they are not pre-emptive in their orientation and as such outside the scope of macroprudential policy. Such a view neglects the preventive policy aspects of crisis resolution.

Creditors of financial institutions have to consider themselves at risk. Only in these circumstances would creditors have ample incentives to fully exploit the information available in the market and incur the costs to analyze it. Against this background, prudential regulators should consider mandatory requirements of financial institutions that a given percentage of their balance sheet be financed by long-term debt which includes convertibility into stock (going concern) and/or bail-in procedures in a recovery situation. Ideally, triggers for conversion and/or bail-in should be based *prima facie* on market prices.

Supervisors´ communication of their monitoring and systemic assessments to financial institutions, including the stress tests and communication of the changes in the stringency of their policy measures to the market, could improve the information content of balance sheet indicators and market prices. Furthermore, by influencing the behavior of market participants, supervisors´ communication may help to contain system-wide risks.

These policy recommendations are not intended to be an all-encompassing list of reforms to improve the information content of market prices and balance sheet indicators. Other aspects that demand policy attention and would result in enhanced market discipline are, among others, moving key markets to organized exchanges where possible, improving the transparency of OTC markets and, in general, reducing incentives in order to avoid regulatory arbitrage.

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ANNEX 1: LIST OF EU BANKS WITH LARGEST AVG. NOTIONAL CDS QUOTED IN THE MARKET (SEPTEMBER, 2010)

Allied Irish Banks PLC
Banco Bilbao Vizcaya Argentaria SA
Banco Comercial Portugues SA
Banco Santander SA
Anglo Irish Bank Corp Ltd
Governor & Co of the Bank of Ireland/The
Lloyds TSB Bank PLC
HSBC Bank PLC
Standard Chartered PLC
BNP Paribas
Natixis
Societe Generale
UniCredit SpA
Banco Espirito Santo SA
Mediobanca SpA
Commerzbank AG
Deutsche Bank AG
Dresdner Bank AG
UniCredit Bank AG
NIBC Bank NV
Skandinaviska Enskilda Banken AB
Svenska Handelsbanken AB
Banca Nazionale del Lavoro SpA
Alpha Bank AE
Danske Bank A/S
IKB Deutsche Industriebank AG
Erste Group Bank AG
Raiffeisen Zentralbank Oesterreich AG
Intesa Sanpaolo SpA
DnB NOR Bank ASA
Rabobank Nederland NV
Barclays Bank PLC
Caja de Ahorros y Monte de Piedad de Madrid
BAWAG PSK Bank fuer Arbeit und Wirtschaft und Oesterreichische Postsparkasse
Landesbank Baden-Wuerttemberg
Fortis Bank SA/NV
Banca Monte dei Paschi di Siena SpA
Royal Bank Of Scotland NV
Bayerische Landesbank
FCE Bank PLC
ING Bank NV
Caja de Ahorros de Valencia Castellon y Alicante
SNS Bank NV
Banco de Sabadell SA
Banca Italease SpA
Nordea Bank AB
Banco Popolare SC
Standard Chartered Bank
Royal Bank of Scotland PLC/The
Dexia Credit Local
HBOS PLC
Credit Agricole SA
WestLB AG
Unione di Banche Italiane SCPA

Source: Dealogic.

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