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Disclosure, Transparency, and Market Discipline*

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Abstract:

The aim of this paper is to examine what has been the role of information provision to the market throughout the crisis. We consider two main sources of information to the market, financial statements and information provided by credit rating agencies. We examine how these sources of information work and the effectiveness of their disclosure process during the crisis. Contrary to the commonly held view, fair value accounting did not have a major impact on the crisis development and severity. However, the structure and lack of accountability of credit rating agencies had a profound impact on their incentives, which may have jeopardized the accuracy of the whole rating process. We claim that the crisis experience has changed the way we think about information as well as market discipline and discuss policy implications and proposals for regulation.

JEL Classification: G01, G24, G28, M41, M48

Keywords: Mark-to-Market, Fair-Value Accounting, Credit Rating Agencies, Financial Crisis, Regulation, Financial Institutions, Banks

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1. Introduction

During the recent crisis we have observed how very liquid, highly rated financial assets all of a sudden became "toxic assets", how ratings for structured products had to be continuously downgraded, how several markets such as, e.g., the interbank market, broke down, and how banks faced severe liquidity and funding problems. Information problems were at the heart of many of these problems. The opacity of structured products, which was no issue in the boom, turned into a major drawback in the crisis; credit ratings were no longer trusted as providing reliable information about default risks; banks' reported losses were viewed with suspicion by investors. The decision to relax accounting rules in response to public and political pressure was welcomed by the banks but viewed with suspicion by many investors as an attempt to restrict the quality of information. In contrast, the stress tests conducted by banks that were made public constitute an attempt to improve the quality of information available. These stress tests were quite successful in restoring investors' confidence in the US, but less so in Europe. It is important that stress tests are reliable as any doubt about their credibility undermines their effectiveness.

The crisis experience has changed our view of information transmission, transparency, and market discipline and raised a number of important questions both at the academic and at the policy level on how to improve transparency.

The first general question that is important to address is how information reaches the market both in normal times and during a crisis, because in order to improve transparency and efficiency it is not sufficient to merely increase the provision and disclosure of information. One of the points we emphasize here is that it is important to distinguish between disclosure and transparency. We interpret disclosure as an act of providing information on behalf of firms and issuers. Important characteristics of the level of disclosure are the timeliness, reliability, and comprehensiveness of information. In contrast, we argue that transparency arises when the disclosed information is effective in reaching the market and being adequately interpreted. For a given level of disclosure, transparency depends on investor's information processing capability, behavioural biases, and information needs. Thus, disclosure is a necessary but not a sufficient condition for transparency in the information transmission process.

This will lead us to address more specific questions regarding the incentives of firms and issuers to disclose relevant material information, as well as to ask how the market reacts to this

information. The two sides of this communication process are intimately related. On the one hand, investors react to information by allocating capital and through corporate governance decisions, thereby affecting market prices and influencing managerial actions. On the other hand, a firm's incentives to disclose information depend upon investors' reaction, and investors' incentives to demand information depend on the expected value of this information for their decisions. Management may fear that investors herding and markets sentiment leads to an overreaction of market prices to this information. The market's reaction to negative information may be an increase of spreads or a liquidity shortage that may put the firm in an untenable position, thus generating the incentives not to disclose this information. The process is a complex one as the market reaction will result from a complex game between information providers and investors, where the nature of the equilibrium, pooling or separating, will prove to be crucial. Moreover, investors' incentives to demand, carefully collect, and analyze information may be distorted by regulation, requiring for instance that some mutual funds invest exclusively in AAA issues and by the expectations that some systemically important financial institutions would be bailed out by the government.

By developing this distinction between disclosure and transparency, we expect to clarify the role of information transmission when market discipline plays a limited role as it happened during the recent crisis. This is all the more important because presently, regulatory authorities seem to promote disclosure, as it is the case in the recent proposal by the Bank of England that also emphasizes the higher role of market discipline. However, the efficiency of disclosure depends upon how information translates into transparency in terms of the correct assessment of the probability of counterparty risk in financial operations by investors providing market discipline.

The second general question to keep in mind is that transparency involves trade-offs, which accounting standard setters have to take into consideration. Information disclosure has benefits but also entails costs. Moreover, the different objectives of users and the ability of investors to interpret the information lead to a complex strategy of disclosing some information in the notes or of preferring to disclose a loss in "other comprehensive income" rather than in the net income. The problem is reinforced by a heuristic focus on earnings by managers and, possibly, users of accounting information (Verrecchia, 2010). One important trade-off is the level of reliability in the data disclosed by firms. It implies that regulators and users might require the disclosure of a non-manipulable proxy rather than the disclosure of highly relevant but manipulable information.

Information has to be truthful, timely and material, and again there is a trade-off between, say, accuracy and timeliness.

In the information communication game the issue of market discipline is crucial. As it is well known, market discipline is supposed to be, as the third pillar of Basel II, an essential ingredient of banking stability. As such, it plays a critical role in defining the market feedback to information disclosure. Yet, regulators are often silent about how market discipline should work. Possible problems arise on the two sides and include a lack of incentives of investors to use information, a lack of power or incentives of investors to discipline banks and a lack of incentives of banks to disclose information. The analysis of how effective market discipline is has been the object of a large number of contributions and is beyond the scope of this chapter, as we focus on transparency and not on the mechanism on how this feeds into market discipline. (See, e.g., Flannery (1989), De Ceuster and Masschelein (2003), Hellwig (2005), and Admati et al. (2010) for a discussion of the underlying issues and evidence.) In any case, the faith in market discipline has been hit hard in the financial crisis. It seems that there was a lack of market discipline during the boom as well as in the crisis. In the crisis, access to liquidity was limited for all banks, thus creating more of a panic than an efficient disciplining device, which would discriminate between solvent and insolvent banks. However, it is important to note that the reasons for the lack of market discipline in the boom and in the crisis may be very different. In the boom it is quite likely that the major problem was a lack of market participants' incentives to use or demand information. In contrast, in the bust, the dominant problem seems to be that transparency is most difficult to achieve when it is needed most.

In order to analyze these important issues, it is critical to focus on the main source of information to the market. Our view is that the two main sources of information are financial reports and credit rating agencies.¹ Their role and accuracy both before and during the crisis have been questioned for different reasons.

Regulatory authorities' view of financial reporting and its impact on the crisis has been mixed. On the one hand, in October 2008, by allowing financial institutions to reclassify some

¹ Other third-party providers of information have a minor role. Auditing firms' role is to certify the accuracy of financial statements, and consequently does not provide additional information. Financial analysts focus on stocks and the information they provide has only an indirect impact on an asset's probability of default.

assets on their prices of July 2008, prior to the Lehman bankruptcy, regulatory authorities seem to promote the opacity of financial institutions' balance sheets, prevent investors from distinguishing between different levels of counterparty risk in financial institutions and impair market discipline. On the other hand, the stress tests that regulatory authorities implemented, first in the US and one year later in the EU, were crucial in providing the market with the ability to discriminate among different levels of bankruptcy risk for financial institutions, even if the ulterior Irish banking crisis reduced the credibility of the European stress test exercise.

Regarding credit rating agencies, the issues are completely different. Credit rating agencies played a key role in the development of the market for securitization, by providing good ratings to securitized issues that were later to become "toxic assets". The complexity of the structured issues made it difficult if not impossible for investors to rigorously identify the cash flows associated to each issue and their risks. This made ratings essential to the well functioning and liquidity of the market for mortgage-backed securities, asset backed securities and CDOs. Once the crisis set off, credit rating agencies had to downgrade the issues in order to keep in line with the information provided by market prices.

In order to examine the different issues, we will start by discussing how information is disclosed by firms and issuers and how it is interpreted by investors, thus determining the allocation of capital. Next, in section 3, we examine the specific role of information transmission during the crisis. Section 4 is then devoted to policy recommendations regarding the provision of information to the market.

2. Transparency: benefits, costs and limitations

In order to clarify the role of transparency, we will first consider its role in the general process of resource allocation. We then consider the reasons why investors have to act upon limited information and examine the impact of regulation on the information transmission process. However, we focus on selected issues and do not provide an exhaustive coverage of the issues. For surveys on transparency and disclosure and additional references, see, e.g., Healey and Palepu (2001), Verrecchia (2001), Hellwig (2005), Leuz and Wysocki (2008), Armstrong, Guay, and Weber (forthcoming).

2.1. The role of information

Information is of prime importance to make investment and production decision and to allocate capital to its most productive use. Thus, it is crucial that market participants have access to the appropriate information. This is particularly true of the capital market where financial information allows investors to identify the “quality” of a potential investment in terms of risk and return.

The simplest way to view the role of information is to consider a neoclassical financial model like the Capital Asset Pricing Model where the information is underlying investors’ capital allocation decision and ultimately affects asset prices. However, the implicit assumption of the stylized frictionless capital market where information can be collected, shared and verified at no cost leads to adopting a simplistic view of the world. A richer approach is to consider that different parties have heterogeneous information. The equilibrium information level then depends upon managers’ incentives to disclose information, investors’ incentives to collect additional information and, of course, on the informativeness of asset prices that depend upon the informational efficiency of financial markets. The equilibrium in a “laissez faire” economy may be characterized by extreme forms of adverse selection and moral hazard and their resulting inefficiencies. It therefore seems natural to look for mechanisms that foster information disclosure and transparency and to define legally binding information standards.

In the presence of market frictions and incentive problems, information plays a particularly important role in guaranteeing that capital is used in investors’ best interest, which, in the absence of externalities, corresponds to putting capital to its most productive use. First, in addition to affecting market prices, information is used in contracts, e.g., in covenants on debt contracts or to align incentives in management compensation schemes. For example, according to Holmström’s (1979) informativeness principle, any piece of information that is related to the manager’s unobservable effort level should be included in the compensation contract to reduce the cost of providing incentives. Second, information is relevant for investors to take actions that can discipline management. For example, investors can deprive management of financial resources by not providing or extending funds, withdrawing funds, or firing a manager. Managers will take into account the impact of their decisions on investors’ actions, which aligns the interest of management and investors. This form of market discipline can play an important role in corporate

governance. Its prerequisite is investors' access to accurate, relevant, and timely information, a prerequisite that may not be met when market discipline is limited and managers run the banks.

In this framework, it is important to distinguish between public and private information. Public information reduces the level of asymmetric information, which is beneficial in dealing with incentive problems. It also reduces the risk of market participants to trade with a better informed market participant and thereby increases market liquidity. As public information and transparency usually result in a reduction of the heterogeneity of information, it can be desirable to impose regulation that increases market transparency.

It is also important to realize that investors often have multiple sources of information and can use this information in different ways. An example is the financial statement, which conveys information about a firm through the balance sheet, the income statement, and the notes. Various parties use this information for investment and credit decisions, for private contracting, corporate governance, and regulatory purposes. But in addition, several other sources of information are available that the market participants can use for that purpose. In addition, regulators and investors can and do adjust accounting numbers for regulatory and contracting purposes. It is certainly naïve to argue that specific accounting rules are irrelevant as in the case without market frictions. However, it is equally naïve to believe that market participants do not understand where the accounting information comes from, are easily fooled by different rules or blindly use accounting information for contracting purposes.

For financial statements, but also, more generally, for information disclosure, it is important to distinguish between voluntary and mandatory disclosures and whether information can be certified by third parties (auditors, credit rating agencies, credit registers, financial market regulators) or not.

The increasing perception of the importance of information in efficient capital allocation has been progressively incorporated in financial markets regulation, with rules for information disclosure, utilization, and dissemination becoming increasingly strict. This is now patent in the financial markets with informed trading regulation, regulation FD (Fair Disclosure) to eliminate selective disclosure of material non-public information by public companies, or the third pillar of Basel II (market discipline). The Basel Committee on Banking Supervision introduced new disclosure requirements for banks to make bank management accountable and allow markets to

react if management does not act in its best interest. Market discipline was supposed to complement capital requirements and supervision in the prudential regulation of banks. One conclusion that one might draw from the current crisis is that the market did not have sufficient information or that it did not have sufficient incentives to discipline management. Indeed, both conclusions may well have merit. Market discipline is no panacea. First, transparency is not without cost. Second, market discipline will only be effective if the market has the right incentives to use the information effectively and the adequate mechanisms to affect managerial actions.

2.2. Restrictions to perfect information

As a communication process, information transmission might be hampered by restrictions at the receiving or at the sending end of the communication line.

2.2.1. Market reaction to information

Information is complex and costly to communicate, understand, and interpret. It has to be communicated in a way that is both easy to understand and relevant (material), two features that can be in conflict, with different parties disagreeing about relevance. For market prices and capital allocations to be efficient it is important that market participants process information in an efficient way. Therefore, a potential imperfection corresponds to market overreaction. If market participants overreact to good or bad news, information can actually distort decisions and reduce efficiency. There is a big academic debate about the role of behavioral biases of investors and the efficiency of capital markets. (See, e.g., Shleifer, 2000, and Barberis and Thaler, 2003.) However, we are not aware of any academic papers that would argue that it is optimal for firms to disclose less information because of behavioral biases and potential overreactions. In contrast, some bankers and regulators seem to believe that it is reasonable not to disclose bad news in a crisis to avoid destabilizing overreactions of market participants. Although there may be cases where this type of policy can be effective, it is not clear that overall efficiency is actually increased.

An alternative to assuming market overreaction is to consider the microeconomic foundations of information processing, which constitutes a more interesting approach to investors' reaction to new information. This may take different forms, but basically, it involves costly or limited

information processing or moral hazard, which can result in situations where more information is detrimental.

In a world where investors have heterogeneous skills for the interpretation of complex public information, public information can increase the winner's curse problem if it increases the information advantage of sophisticated investors who are willing and able to read and understand it, a point made by Pagano and Volpin (2009) in the context of credit rating agencies. If information in a crisis is particularly complex, unsophisticated investors will be more wary and react stronger than in normal times. This response might be interpreted as overreaction, but it is a rational response of unsophisticated market participants to increased informational heterogeneity in a crisis.

In a similar vein, if information is disclosed only to some agents, it may create an adverse selection problem leading to an equilibrium à la Akerlof. This idea has been developed by Dang et al. (2009) who explore how asymmetric information may interact with the information sensitivity of a security.

Using the global games approach, Morris and Shin (2002) analyze the welfare effects of increased public information. They take as a starting point the coexistence of public and private information and then consider the impact of agents' decisions on the market allocation. Because agents' decisions will have an impact on the equilibrium allocation, the resulting allocation need not only reflect the averaging of individual information, but will also reflect their decisions and the existing strategic complementarities or substitutabilities. In such a framework, it is not unambiguously optimal to increase the level of public information.

A different issue arises if users of accounting information amalgamate real performance and accounting measures of performance or, for that matter, if managers believe that users can be misled and therefore put too much emphasis on earnings. Verrecchia (2010) refers to this phenomenon as "accounting alchemy" and documents cases where managers seem to believe that the disclosed earnings matter even when real performance is not affected and when it is straightforward for users to look through the accounting number.

2.2.2. Incentives to disclose information

The main difficulties in information communication stem from the fact that firms and issuers may prefer not to disclose information or to distort it. Information, such as, e.g., management's

expectations about the business outlook, is usually private and difficult to verify by outside parties. Whenever information is relevant, there is a legitimate concern that management might misreport and provide biased or even false information. If the market understands management's incentives and the costs and benefits of distorted information, the market may not be fooled and correctly interpret the information. However, this is no longer possible if the costs or benefits of distorting information to management are uncertain (Fischer and Verrecchia, 2000). There are three ways to deal with the problem, all involving their costs and limitations and interacting with each other.

First, incentives can be provided for management to truthfully reveal information. Providing incentives is usually costly because of risk aversion and rents that agents earn.

Second, information intermediaries and gate keepers (e.g., auditors, credit rating agencies and financial analysts) can confirm and certify information and potentially produce additional information. This alternative has its own limitation, because, on the one hand, not all information can be verified and on the other, even if certification is possible, the gate keeper may not have the incentives to incur the monitoring costs and to reveal the information truthfully. Thus, a whole set of new incentive problems arise, which limits the use of information intermediaries.

Third, the market might use as a proxy "second-best information", which is more difficult to manipulate or easier to verify. For example, investors can use interim earnings or cash flows to update their beliefs about the quality of an investment decision. However, such information can, again, cause incentive problems. For instance, Stein (1989) shows that, if investors rely on interim earnings, management has an incentive to choose short-term over long-term projects. Investors are not fooled about the quality of the project, but the choice of the short-term project is inefficient. Also, additional information can be detrimental in the presence of managerial career concerns. For example, information that allows the market to update its beliefs about managerial ability can reduce managerial incentives. Potential reasons are that uncertainty about ability provides management with incentives to exert effort (Holmström, 1999) and makes it easier to being tough after low performance (Cremer, 1995). Thus, if costless first-best information is not available, second-best information can be detrimental and it is not possible to conclude that more information is always better than less information.

2.3. Market failure and regulation

A straightforward but important insight of the discussion above is that information transmission involves benefits and costs. The optimal trade-off is difficult to determine and depends on the specific setting. Therefore, it seems reasonable to leave the determination of the optimal level of disclosure to the market. So, a preliminary point to be understood is why the level of disclosure has to be regulated and, in particular, whether there are specific aspects of the financial and banking industry that makes regulation even more essential.

There are two basic arguments why the market for information has to be regulated: the allocation of the costs of information transmission and the public good dimension.

The allocation of costs in the information transmission is specific because the receiver's cost of decoding information depends upon the coding activity of the sender. So, in order to minimize total costs, regulation has a role in making firms and issuers commit to disclose standardized information. Thereby investors can directly compare firms' performance and interpret information in a cost efficient way. Also, information disclosure is potentially easier to enforce when disclosure is legally required than if agreed to in a contract between private parties.

Potentially more important is probably that information is often a public good and that information causes positive external effects that are not taken into account when the optimal level of voluntary disclosure is chosen. As a consequence, the privately optimal level of information is lower than the socially optimal level. This divergence in the limits to regulation of the privately and publicly optimal level of information is an important reason for regulation.

Limits to regulation

Two phenomena restrict the effectiveness of regulation of information: regulatory competition and government interventions through explicit and implicit guarantees.

First, the issue of regulatory competition constitutes an important constraint for regulators to bear in mind. Indeed, firms and issuers may leave one financial market to operate in another that they consider to be friendlier, because it is less demanding in terms of disclosure and transparency. So, for instance, if disclosure requirements for firms that are listed on the stock

exchange exceed the privately optimal level, some firms might avoid the stock market.² Although the purpose of higher transparency of publicly listed companies will be served, the potential detrimental effect of such a delisting or, more generally, delocalization is that fewer firms use the stock market. Of course, the reverse is also possible, i.e., more firms choose to list if higher transparency requirements reduce incentive and information problems by allowing firms to commit to provide information.³ Financial institutions may shift business to shadow banks and hedge funds if disclosure requirements increase. In this case, a counterargument for the reverse effect of higher disclosure requirements is more difficult to make.

Second, regarding the regulation of information disclosure in the banking industry, a case can be made that government intervention causes market failure in the provision and use of information. The reason is that, because of government bailouts, the government bears a large fraction of the cost of opaqueness in a crisis and is therefore a main beneficiary of information. For example, for mortgage backed securities transparency is particularly important when house prices drop and the probability of default increases. In this case, transparency helps to reduce market failure and inefficiencies. However, due to bailouts and guarantees, the tax payer is a main beneficiary of increased transparency. But since the cost of designing and issuing transparent products is borne by banks' stakeholders, voluntary transparency will be inefficiently low. More generally, banks have no incentives to voluntarily build up an information structure that would help their winding up in a crisis. This includes providing detailed information about structured products such as securitized loan portfolios or a risk map that would help to value the products or identify the exposure of individual banks in a crisis. Put differently, information that would be valuable to investors and therefore provided by banks in the absence of bailouts might not be voluntarily provided with bailouts. For the same reason, even if banks have to disclose more information, bank performance and financial stability may not improve by much. Investors' incentives to use the information will be limited for the same reasons that the market did not

² Chemmanur and Fulghieri (2006) present evidence on the role of listing standards in the presence of competition between stock exchanges, and Leuz, Triantis and Wang (2008) find evidence of firms going dark in response to SOX.

³ The possibility of these two types of outcomes is reminiscent of Morrison and White (2009) result that shows how, in a set up of international integration, imposing a "level playing field" in terms of deposit insurance and capital requirements will lead to a race to the bottom, while laissez faire will give efficient regulators incentives to signal themselves by tough regulatory requirements, so that, depending on the efficiency level of the regulators, it is efficient or not to impose common minimal regulatory standards.

demand the information in the first place: government bailouts. For example, if a financial institution's debt is explicitly or implicitly guaranteed by the government, debt holders do not need information about the bank's risk exposure. Thus, the need to provide the information is greatly diminished compared to a situation where no such guarantees exist. Consequently, a necessary condition for market discipline to work is that market participants bear the consequences of their decisions and not the tax payers. But this condition is not sufficient. Market participants' reaction to information has to affect managerial behavior. For a critical discussion of the possible channels through which investors' information may affect managerial actions and the limited role of market discipline and corporate governance see Hellwig (2005).

3. Lessons from the crisis

The recent crisis has challenged the usual role of information transmission. Information has been scarcer, less accurate, and less timely. The sudden illiquidity of the financial market and its impact on asset prices has definitely had an adverse effect on the level of transparency. In this section we examine how the crisis has affected transparency by considering, first, financial reporting and, next, reporting of ratings by credit rating agencies.

3.1. Financial Statements

As mentioned in the previous section, a key aspect of information transmission is how market participants reacted to the information provided by banks' financial statements. For example, was uncertainty in the market fuelled by accounting? And, if yes, what was the dominant factor, the reporting of losses due to fair value accounting or the fear that banks were hiding potential risks and losses?

Critics argue that fair-value accounting (FVA) forced banks to (excessively) write down asset values, jeopardizing their financial health and contributing to the uncertainty in the market. On the other extreme, users argue that the implementation of FVA allowed banks too much flexibility and that banks used this flexibility to hide losses and their true risk exposure, thereby contributing

to the uncertainty in the market. These two perspectives show that transparency is no panacea or easy to achieve.⁴

One important critique addressed to marking to market is that it has caused downward spirals and contagion as banks were forced to write down the value of their assets to distorted market prices. These problems have been formalized by Allen and Carletti (2008) and Plantin, Sapra, and Shin (2008). In the following subsection we discuss how banks' fair value accounting as implemented in practice radically differs from marking to market, and why some objections of opponents to fair-value accounting are often simplistic and ill-founded. Another issue, which we will address in Section 3.1.2., is the relevance, reliability, and timeliness of accounting information and the reaction of investors to this information.

3.1.1. Assessing the impact of FVA on the severity of the crisis

In its pure form, fair-value accounting involves reporting assets and liabilities on the balance sheet at fair value and recognizing changes in fair value as gains and losses in the income statement. Fair-value accounting in its pure form only applies to assets that financial institutions hold in their trading portfolio. Thus, it is only relevant for investment banks and a few very large bank holding companies in the U.S. and commercial banks with strong investment banking in Europe. Assets held for trading are generally assets that are traded in liquid markets for which market prices are available from orderly transactions (Level 1 inputs) that have to be used as the measurement for fair value. It is this archetype of FVA that most people have in mind when they talk about mark-to-market accounting.

When Level 1 inputs are not available, models are used to determine fair value. Models have to use observable inputs (Level 2), which include quoted prices for similar assets and other relevant market data. If observable inputs are not available, unobservable inputs including model assumptions have to be used (Level 3). According to the IMF Global Financial Stability report, on average, financial institutions value some 69% of their fair valued assets using the level 2 methodology.

⁴ See Laux and Leuz (2009) for a discussion of the different arguments surrounding the use of FVA and references.

Laux and Leuz (2010) analyze the role of FVA for U.S. banks in the financial crisis. Based on their analysis and the available evidence in the literature, they conclude that it is unlikely that FVA contributed to U.S. banks' problems in the financial crisis in a major way for two reasons.

The first reason is that FVA plays a much more limited role for most bank assets and regulatory capital than often claimed. Loans (including mortgages) and held-to-maturity securities are reported at amortized costs so that historical-cost accounting applies. Like trading assets, available-for-sale securities are reported in the balance sheet at fair value. But unrealized fair-value changes of available-for-sale securities only affect book equity, not the income statement. Moreover, unrealized losses of available-for-sale debt securities do not affect regulatory capital. Fair-value changes of available-for-sale securities have to be realized when the asset is sold or other than temporarily impaired. A bank can treat fair-value losses of an available-for-sale debt security as temporary and avoid the effect of these losses on its income and regulatory capital if the bank has the intent and ability to retain the security for a period of time sufficient to allow for a recovery of its market price. Full FVA only applies to trading assets, as for trading assets there is no real alternative to FVA and even the American Bankers Association acknowledges that FVA is appropriate in this case. To be clear, many banks did have huge problems in their trading portfolios, but historical cost accounting for the trading portfolio would not have been an effective or reasonable solution to the problem for reasons that are discussed in greater detail in Laux and Leuz (2010) and below.

The second reason is that FVA offers substantial discretion that banks used in the financial crisis. In particular, banks argued that losses related to mortgage-backed and other securities were temporary, switched to models to value assets, and reclassified assets. For example, Citigroup reported its first other than temporary losses on available-for-sale and held-to-maturity securities in the financial crisis in the fourth quarter of 2008, and the amount was only \$2.8 billion compared to a decrease in fair values of these assets of \$19 billion. In the same quarter, Citigroup reclassified debt securities with a carrying value of approximately \$60 billion to held-to-maturity, for which historical cost accounting (HCA) applies unless the asset is other than temporarily impaired. Moreover, from the third quarter 2007 to the first quarter of 2008, Citigroup transferred assets with a value of \$53 billion into Level 3 and moved to an "intrinsic cash-flow methodology" to value their mortgage-related securities by the fourth quarter of 2007. Thus, the "problem assets" were largely marked to models and not mechanically marked to distorted market prices.

In light of this observation the fierce critique that FVA received in the crisis is surprising. The limited role of FVA for many bank assets and the discretion it offers provide a cushion for banks. This cushion may be good when dealing with procyclicality and market distortions but bad for transparency and market discipline.

3.1.2. The shortcomings of information disclosure during the crisis

One of the main lessons of the crisis regarding the communication of information to the market is the bleak prospect that information is more difficult to transmit when the market needs it most. Of course, it may be the case that the current crisis was “special”, as the level of opacity in financial assets was particularly high. Thus, a second lesson in the crisis is that once a crisis unfolds it is too late to turn opaque assets into transparent assets.

When, in 2007, house prices plummeted and mortgage default rates skyrocketed, there was huge uncertainty in the market for complex, mortgage-backed securities and the market for these securities dried out.⁵ Part of the reason why the market for securitized products dried out was uncertainty about the valuation of these assets and the fear of adverse selection due to the opacity of the products and underlying assets and complexity of the financial arrangements and contracts. (See Ashcraft and Schuermann (2008), Rajan, Seru, and Vig (2008), Hellwig (2009), and Gorton (forthcoming) for a discussions of these problems.)

Many of these securities were held by investment funds and financed with short-term capital and redeemable funds. In the crisis investors withdrew their funds and refinancing of the assets became a huge problem. The originators of the funds bailed out the investment funds by providing guarantees and secured loans and by taking on the special investment vehicles on their balance sheet. Thereby the refinancing problems associated with asset backed securities spilled over to the originators who themselves heavily relied on short-term financing. It was virtually impossible to use some of the asset-backed securities as collateral. In addition, other assets that could have been used as collateral were already leveraged up to the limit and, as price volatility increased, haircuts for these assets increased as well. Thus, as the role of collateralized lending decreased, the level of counterparty risk became more important to obtain financing. However, counterparty risk and uncertainty regarding counterparty risk increased jointly with uncertainty

⁵ Parts of the discussion in this section are based on Laux and Leuz (2010).

about the exposure of individual banks. As the crisis unfolded, the uncertainty about individual assets migrated to financial institutions. Because of the lack of collateral, financial institutions needed unsecured lending, but in order to grant a loan, investors will first check the financial institution's financial statements to obtain information regarding the financial institution's health, but the information was either lacking or unreliable. Indeed, financial statements did not provide the level of transparency to eliminate potential problems of asymmetric information or to calm investors in the financial crisis.

Opponents and proponents of FVA take different views about the source of the problem and its possible solution. Critics fear that FVA forced banks to report excessive losses which contributed to the uncertainty in the market. On the other extreme, there is the fear that FVA allowed banks too much flexibility, which banks used to hide losses and their true risk exposure, thereby contributing to the uncertainty in the market. It is interesting to look at the way information was communicated during the crisis to understand some of the limitations and trade-offs that regulators face.

First, financial statements are not the only source of information that investors use. Thus, it is not possible to calm investors by a mere change of accounting rules. The uncertainty about the value of structured subprime products did not originate from the balance sheet of investment banks or bank holding companies. It is certainly naïve to believe that Bear Stearns, Merrill Lynch, and Lehman Brothers could have been saved if they could have reported their problem assets at historical cost. All three investment banks had substantial subprime exposure and experienced bank runs by other large and sophisticated financial institutions (Morris and Shin, 2008, Brunnermeier, 2009, Gorton and Metrick, 2009). These investors are not easily fooled by accounting numbers and are concerned about a bank's exposures to certain assets and risks. In making this assessment, investors are interested in (market) expectations of the future values of the assets and cash flows of the bank. So, even if it was desirable, an assumption with which we do not agree, the availability of other sources of information would constrain the possibility to control the flow of information to the market through accounting.

Second, financial statements provide information in an aggregate and condensed way to reduce the costs of providing and processing information. This is especially true for the balance sheet where not only each financial asset is reported using one number (usually its fair value or its

historical cost). In addition, financial assets are aggregated and not reported individually. Thus, the balance sheet does not provide detailed information regarding the type of financial assets or their risks. However, as we will discuss below, additional information is provided in the notes to the financial statement.

Third, accounting numbers always have to be interpreted. Even seemingly straightforward accounting ratios such as a bank's book debt-equity ratio are not straightforward to interpret and compare. First, the debt-equity ratio has little meaning if the risks of the underlying assets are not taken into account. Second, the de facto leverage ratio is directly affected by the types of assets. For example, a long position in a forward contract on a stock market index is akin to a debt financed position in the index, but the book leverage ratio in both cases looks very different. Third, the book equity depends on the accounting rule. For example, the effect of unrealized fair value losses of debt securities on book equity and regulatory capital depends on whether it is held as trading asset, available for sale, or to maturity. The views about what is appropriate and meaningful differ. Those who are interested in the leverage ratio might therefore want to make appropriate adjustments. Accounting rules should not be based on the presumption that market participants are systematically naïve.

Another example is the interpretation of profits due to a decrease in banks' liabilities after an increase of their own credit risk. There was a big outcry about the craziness of FVA when banks chose the fair-value option and reported profits from a loss on their liabilities. However, it is unclear what the fuss was all about. These profits did not relax bank's regulatory capital constraints because the relevant rules require banks to take these profits out when calculating their regulatory capital.⁶ Wary investors can certainly do the same and given the extensive coverage in the press, even naïve investors should have been aware. Indeed, proponents of FVA for liabilities argue that profits that stem from a bank's liabilities are an important piece of (negative) information that market participants should have.

Fourth, reliability of information is a big concern in any crisis. Both opponents and proponents of FVA criticize models as not being reliable. However, the conclusions that both parties draw differ. Opponents of FVA say that historical cost accounting (HCA) would have

⁶ A possible concern might have been that these gains increased managerial bonuses. However, we are not aware whether this was the case.

been more reliable in the crisis. But this argument ignores that impairments also have to be recognized under HCA and that, in a crisis, when asset prices decrease and counterparty risk increases, the flexibility of determining the level of impairments is conceptually similar to the flexibility of using models to determine FVA. Being concerned about this flexibility, proponents of FVA propose a stronger reliance on market prices and stricter impairment rules. The perspective depends on the level of trust in markets and market prices, but also on the objectives of different users.

As noted in Laux and Leuz (2010), anecdotal evidence suggests that market participants feared that the investment banks were downplaying their losses and exposure. For example, investment banks and rating agencies continuously revised their valuations and ratings downward (for example, Benmelech and Dlugosz, 2009). One reason for the gradual subsequent downward revisions was certainly that negative news arrived gradually. However, there was also the concern that financial institutions' strategically tried to report inflated assets values for as long as possible. Specifically, the hedge fund manager David Einhorn, who sold Lehman's shares short, criticized Lehman for overstating the value of its \$39 billion commercial mortgage-backed securities portfolio as they wrote-down only 3 percent when an index of commercial mortgage-backed bonds fell 10 percent in the first quarter of 2008 (Onaran, 2008). Another example is Merrill Lynch, which in the first quarter of 2007 reported a potential exposure of \$15.2 billion to certain subprime investments just to revise this number to \$46 billion three months later (Story, 2010). Merrill Lynch thought that it protected itself against the difference through hedges and therefore did not report it; many of these hedges later failed. It seems that Merrill Lynch overestimated the effectiveness of the hedges. If it had reported the gross positions and the hedges separately, the market could have made its own judgment. Of course, given the uncertainty in the market, it is possible that the market underestimated the effectiveness of the hedges, but the revision of the "exposure" might have been an even bigger problem if investors felt deceived.

Although the empirical evidence, which is discussed in greater detail in Laux and Leuz (2010), is not conclusive, it is consistent with the concern that investors feared that banks used accounting discretion to overstate the value of their assets. For example, Huizinga and Laeven (2009) find that, in 2008, investors discounted the reported values of banks' real-estate loans by over 15 percent and of mortgage-backed securities by about 13 percent.

Fifth, the notes of the financial statements are important for providing information to the capital market. Some of the content is regulated and involves mandatory disclosures. But managers can also use the notes in the financial statements to provide additional voluntary information about the types of assets banks hold, their perspective on asset values and market conditions, assumptions underlying the models they use to derive fair values, exposures to specific risks etc. This information could be used to reduce the level of asymmetric information in the market and make it possible for market participants to draw their own conclusions.

It is surprising that this possibility was not used more extensively by banks. An example are the stress tests, which helped to calm the market as the evidence by Greenlaw et al. (2011) and Peristian et al. (2010) suggests. Why did (individual) banks not do stress tests voluntarily and provide information about the result to the market? One possible reason is that, in a crisis, the cost of disclosing information by revealing proprietary trading strategies and compiling information may exceed the benefits to banks. First, during a crisis banks may have more difficulties in credibly disclosing information. In particular, the market may believe that voluntary information is rigged. Moreover, incentives for bad banks to provide the same information as good banks increase in a crisis, leading to a pooling equilibrium (Spargoli, 2010). Second, the market might be so depressed that the positive reaction would be slim if a single bank increases its transparency. For example, because of systemic linkages between banks, the benefit of providing information for an individual bank depends on the transparency of other banks. Third, another important effect is that much of the benefits would accrue to taxpayers given the bailouts of banks.

Consequently, truthful information communication appears to be more difficult during a crisis, because firms and issuers have incentives to hide bad information and because once the market coordinates on this adverse selection Akerlof type of market, it is even more difficult to produce a piece of information that clearly reveals that an institution is solvent. To improve the market equilibrium level of information in a crisis, a regulatory energetic action may be required, both in terms of information provision, commitment to bail out certain types of institutions, and guarantees for counterparties. This is why the stress tests succeeded where private information did not. Indeed, stress test were based on clear cut identical scenarios for all financial institutions, implicitly certified by regulatory agencies so that they were credible and allowed market participants to compare the extent of the damage the crisis did to the different institutions.

3.2. Credit Rating Agencies

The role of credit rating agencies (CRAs) in providing information to the market has been increasing, in particular in the process of securitization and rating of structured products. With the development of the market for these products, the CRAs' role has become more preeminent, with record high levels of activity and profits. Thus, Moody's profits, for example, tripled between 2002 and 2006 (Lowenstein, 2008).

The key function of CRAs has been recognized by financial regulation, making the rating of an issue a prerequisite for it to be eligible as an investment vehicle. Also, the standardized approach in pillar 1 of Basel II requires a rating from eligible rating institutions.

The collapse of many AAA-rated structured products in 2007-2008 has brought CRAs into limelight. It was well known that CRAs models were imperfect, and that the ratings were sometimes revised too late, once the credit event had taken place, as it happened for the East Asian crisis of 1997. Yet, in the recent crisis, the number of securities that underperformed was unprecedented. So, in hindsight, the information provided by CRAs appeared to be misleading, and this was quite in contrast with the much more accurate performance of corporate bond ratings. So, a number of competing explanations have been put forward to understand the specific issues CRAs were facing, which we examine hereafter.

Before doing so, two precisions are in order. First, it is of course difficult to identify whether the collapse in ratings in 2007 was due to CRAs bad models, bad practices or to the crisis itself. Still, even if the crisis may have been the trigger of the breakdown of subprime based ABS, the existence of a number of conflicts of interest that are detrimental to the well functioning of the rating industry was bound to generate ratings inflation, thus amplifying the subsequent downfall. As we argue below, the conflicts of interest were particularly critical for structured products.

A second caveat concerns the extent to which the market was misled by ratings. After all, the spreads on some AAA rated ABS were above those of AAA corporates. Clearly, the higher spreads meant that some agents did not view AAA rated ABS securities as being equivalent to AAA rated corporate bonds. Instead they were aware of the higher default or liquidity risk. Of course, with hindsight, the spreads may still have been too low compared to the fundamental risk underlying the issues, possibly because investors were also using the same incorrect models and

model assumptions the CRAs did. But it is more likely that investors' incentives also played a role. Investors who were constrained to invest in AAA securities or have committed to this specific mandate "for summarizing their risk appetite" (CGFS, 2008, p.8) but wanted to earn a higher return might have been pleased to take the opportunity. In addition, unsophisticated investors who blindly trusted the rating as an unbiased measure of risk were likely misled. We do not consider this point further, as it is beyond the scope of this chapter. Still, it should be clear that AAA structured products were not considered as a completely different class of investment vehicle when compared to traditional AAA corporates or sovereigns, which, ex post, appears as a clear mistake on behalf of investors. For example, using Monte Carlo Simulation, Krahn and Wilde (2010) find a significant and systematic difference between the risk properties of ABS tranches and the risk properties of corporate bonds with the same rating. It has been argued that CRAs should not have used the same rating notation that they used for corporates, but there was a huge demand in the market for AAA securities that issuers tried to cater to.

3.2.1. The institutional environment

A striking feature of the credit rating industry is that, since the seventies, it is not the user (the investor), who has a demand for precise and unbiased information, who pays for the service, but the issuer, who has an interest in obtaining favourable ratings. Before the 70s the rating industry was based on the investor pay principle, providing rating agencies with the right incentives, but information resale problems set a limit to the possible expansion for this market. As the technology reduced the cost of redistributing information, the industry had to switch to an issuer pay scheme.

A second key characteristic of the industry is that issuers are able to "shop" for the best rating, choosing not to disclose ratings that are less favourable to their issue.

A third, and surprising, feature of CRAs institutional structure is the lack of accountability. Indeed, CRAs were immune to prosecution under the protection of free speech, a feature that makes them completely different from other gate keepers, such as auditing firms. This has now been suppressed by the provisions made in the Dodd-Frank act.

3.2.2. Explaining the collapse of structured products ratings

In addition to the risk underestimation factor (see CGFS, 2008), there are several competing explanations for the downfall of ratings in 2007, but two of them, related to the structure of the

market and to agents' incentives are at the centre of the current regulatory debate: conflicts of interest and shopping.

Conflicts of interest

As the industry is based on an issuer's pay model, the incentives for a CRA to accurately report the rating it has obtained may be in conflict with its corporate objective to serve the issuer that is its client. In the long run the issuer is better served by an impeccable reputation for the CRA that makes the market value the rating. Still, as modelled in Bolton et al. (2009), in the short run the CRA may be facing a conflict of interest and may be tempted to inflate its ratings to benefit its client. As there is no legal liability attributable to a CRA report, the trade-off the CRA faces is between increasing current profitability by inflating ratings and jeopardizing its future reputation. So, when it comes to giving a rating for a structured product where, because of opacity, ex post verification of the accuracy of the rating is more difficult, ratings inflation seems a natural strategy for CRAs.

The empirical evidence of Griffin and Tang (2009) supports this point as they show that CRAs used noisy credit-risk models, to which they made frequent adjustments before determining the final rating, and these adjustments tended to shift the rating upwards relative to the model-predicted rating.

One of the implications of the reputation based incentives is that competition, by decreasing future profits, may exacerbate the conflict of interests and make CRAs more subservient to the issuers. This is shown by Bolton et al. (2009) and confirmed empirically by Becker and Milbourn (2010), who show that the greater competitive threat posed by Fitch in the corporate bond market coincides with a deterioration in ratings quality. So, a recommendation of increasing competition may backfire if the prerequisite of avoiding conflict of interest is not met. From this perspective the European commission recommendation to promote competition in this market is ill-advised, as it does not hinge on the prerequisite of solving the conflict of interest and shopping issues.

Another empirical prediction of the reputation based incentives is that CRAs will presumably inflate their ratings in good times when the probability of getting caught is lower and the demand for ratings is high. This result is consistent with the findings of Ashcraft et al. (2009), who show that ratings of mortgage-backed securities were less accurate, whether measured by actual performance or by ulterior downgrades, at the peak of the real-estate boom. It is intuitively clear

that at the peak of the real estate boom higher volume of business generates incentives to inflate ratings. But the result is also consistent with all three CRAs making systematic mistakes by, e.g., underestimating correlations and overestimating expected house price increases in the boom. We will return to this issue below.

As spreads are determined in equilibrium by demand and supply, the issue of why sophisticated market participants did not take advantage of the distorted incentives should be addressed. With Goldman Sachs charged with fraud for misleading investors into buying shares of the ABACUS 2007-AC1 CDO, we now know that some hedge funds did bet against presumably overpriced ABS. In this particular case, the SEC's allegation is that the hedge fund Paulson & Co was involved in structuring the portfolio in which it took a short position. Nevertheless, the amount of the bets and their impact on the spreads is limited because of risk aversion, costs and restrictions to short selling. In addition, some agents might take the opposite view and consider the assets to be perfectly safe and the market overreaction to be transitory. This was the view of Lehman which led it to increase its investment in the so-called "toxic assets". So, on average, it is not unreasonable to claim that the market at large used the same wrong models that rating agencies used.

Shopping

The complexity of structured products implies that different CRAs will give different ratings to the same issue. In addition, if the subordinated first loss tranche is broadened, some CRAs may be willing to reconsider the initial rating and report an improved rating for the issue. Consequently it is in the interest of the issuer to solicit formally or informally some pre-rating information and then chooses the best ratings available, while the less favourable ones will be concealed from the market.

Notice that shopping reinforces the CRAs' conflict of interest because the CRA might lose its client if it offers an accurate but potentially unfavourable rating.

Investor's confidence

When investors are perfectly rational, they discount for the ratings inflation that CRAs perform, so that investors read through the inflated ratings which bias is then discounted. So, part of the problem is due to investors' overconfidence in taking the ratings at face value, as even if there are constraints to short-selling and incentives issues that limit the power of information

disclosure, in a world of perfectly rational investors, the market spreads should be informative on the quality of the issue, as in the Grossman and Stiglitz (1976) framework.

It is true that the role of CRAs is to improve market efficiency by avoiding duplication of investors' efforts in identifying good opportunities. Yet, if this leads to overconfidence in the CRAs rating, the resulting allocation is inefficient. Evidence on investors' overconfidence is provided by Ashcraft et al. (2009a), who show that MBS deals with opaque characteristics, such as a high fraction of low-documentation mortgages, underperform their rating, consistent with the predictions of recent theoretical literature.

Two other possible causes

The simplest possible explanation for the downgrade is the fact that models for structured products were incorrect. It is clear that CRAs models based on the statistical properties of pre-crisis real estate prices could neither accurately predict the end of the real estate boom and its impact on structured products nor the impact of liquidity dry-ups in the secondary market for ABS and CDOs. But it seems that the ratings systematically underestimated the potential risks. If the problem was a reliance on insufficient data (rather than distorted incentives), CRAs should have either abstained from computing a rating or disclose the limited accuracy of the rating for that type of issues. Even if it is clear that CRAs models are imperfect, the fact that models for structured debt issues lacked the precision of models for corporates does not invalidate the existence of a conflict of interest and a shopping issue. Indeed, the underlying incentive problems may have reduced incentives to avoid systematic mistakes in rating models.

The second reason invoked to account for the failure of ratings to inform investors of the potential risks inherent to structured products is the lack of transparency on the rating process, a point already emphasized in the CGFS report. The issue of lack of transparency is complex as it may be interpreted in different ways. First, the argument is clearly legitimate when it concerns disclosure by CRAs to regulatory agencies. This point has repeatedly been made by the SEC justifying its difficulties in regulating Nationally Recognized Statistical Rating Organizations (NRSROs). Second, transparency could provide information, such as the level of income documentation in residential mortgages, that is critical to investors in order to assess how accurate and rigorous the rating is and to update their view of the CRA reputation. Yet, on the other hand, better knowledge of the CRAs models will allow investors to fine tune their issues, knowing the

deficiencies and imperfections of the models and beating them on those points. Of course, it may be argued that issuers that aim at an AAA on a given issue will fine tune their issue anyway (possibly with the help of rating agencies), but then the cost of doing so may be higher. Even without playing against the deficiencies of the models, more transparency would allow the issuer to structure an issue in such a way that it just gets the AAA rating, a phenomenon called “rating at the edge”. Rating at the edge is often criticized, but it is less clear what the problem is. For example, assume that, in the process of securitizing a given portfolio of assets, the tranches are chosen such that each tranche is rated at the edge. If investors anticipate rating at the edge, they can adjust their default probability for each tranche. Indeed, one could argue that rating at the edge makes the ratings for the different tranches more precise and is only a problem if investors are naive and misled. Another reason why rating at the edge could be problematic is if it induces inefficient risk taking by the issuer. Third, more transparency combined with limited information on behalf of investors may lead to a situation where some investors have better information than others, which makes trading in the secondary market more costly for the uninformed investors, as suggested by Pagano and Volpin (2009).

4. Policy recommendations

As discussed in Section 2, it is generally agreed that market transparency leads to more efficient allocations and that transparency should be increased. Of course, market feedback, with overreaction, asymmetric information and market discipline that is not based on reliable information attenuates this general view, especially during a crisis. Yet, the impact of the stress test exercises in the US and in Europe suggests that increased transparency is better in terms of capital allocation than the lack of trading that occurs when no information is available. Indeed, as stressed by Greenlaw et al. (2011), U.S. financial institutions did not raise any capital before the stress tests, but \$50 billion in the months after the stress test results were announced. Assuming that the need for new capital did not take management by surprise, the fact that management waited until after the stress test information was revealed suggests that management felt that this information would help to raise capital by reducing uncertainty and asymmetric information in the market.

Against this general background it is important for regulators to recognize that compulsory disclosure may be ineffective if market participants do not understand it, do not trust it, or do not use it. More information does not automatically yield more transparency. Indeed, when market participants are characterized by limited or different levels of skills in processing the information available, providing additional information may be useless, and additional transparency may actually come from increasing market participants' ability in processing existing information. As discussed in Section 2, market participants may have no incentives to use information. Thus, it is important for regulators to consider market participants' incentives to use it. Compulsory disclosure may also be ineffective if it is impossible or too costly to verify its accuracy, as sometimes courts are unable to enforce penalties when the imputed party wrongdoing is not verifiable. In this case, information disclosure regulation should, instead, focus on agents having, *ex ante*, the right incentives to disclose information and to signal their quality. This is obviously true at the level of corporations, but the recent crisis has shown that it is also true of the so-called "gate keepers" and in particular of credit rating agencies.

These provisions constrain our recommendations in a "realistic" way and constitute the background against which we will assess the existing proposals.

4.1. Improving market feedback

As mentioned in Section 2.2, overconfidence, overreaction, behavioural biases and, broadly speaking, financial market informational imperfections might partially characterize the way financial markets react to new information. This is why, as a prerequisite for the improvement of information transmission, the first recommendation is to reconsider investors' incentives and the agency problems they may face (for instance, in collective undertakings, such as mutual funds and pension funds, as these agents may have a huge impact on the market). At least two areas are critical where it has been clear during the crisis that investors have not been able to cope with the information that was produced. Although for completely different reasons, the market perception of credit ratings and the market perception of counterparty risks for financial intermediaries appear to have been based on erroneous preconceptions.

Ratings

The existence of an objective measure of risk, such as the ratings of an issue, enhances efficiency as it avoids effort duplication. Still, by the same token it also reduces investors' incentives to obtain additional information⁷. This perception has led to diffidence of regulators regarding the use of ratings by institutional investors. As mentioned in the first recommendation of the CGFS report, investment fund trustees and managers should review their internal procedures concerning how rating information on structured finance products should be used. Also, as the De LaRosière report states, "the fact that regulators required certain regulated investors to only invest in AAA-rated products also increased demand for such financial assets". This negative externality of ratings on institutional investors' due diligence in the management of their portfolio has led some experts to the radical recommendation of removing AAA (or investment-grade) ratings requirements for institutional investors. The Dodd-Frank act considers a less extreme version of this requirement and imposes the removal of references to credit ratings in federal agencies regulation, although their substitution by alternative standards of creditworthiness is at best intricate and at worst wishful thinking. Also, the Dodd-Frank Act requires each NRSRO to establish procedures that clearly define the meaning of any rating symbol and to disclose the associated probability of default by the issuer. If adequately monitored, such a procedure would provide investors with probabilities of a downgrade and even the associated confidence intervals, thus establishing the accuracy of the rating, and would allow to distinguish ratings based on a fifty years record, as for corporates, from those based on a six years record, as for structured products, and even make the rating depend upon available documentation.

The recommendation here is to increase transparency by designing the disclosure of information that really matches the effective requirements of the industry. As mentioned, this may involve some trade-off between information precision and the difficulty for the market to interpret it and act upon it. The difficulty is related to the argument by Pagano and Volpin (2009): an

⁷ It has been argued that reports of auditors also led to excessive confidence. Yet, there is no evidence of wrongdoing on behalf of auditors in the crisis (GREEN PAPER Audit Policy: Lessons from the Crisis?) in the detection of fraud and the responsibility of management, although the presence of an audit might have engendered an expectation gap because of investors' ignorance of the role and responsibilities of auditors. Here the problem is clearly the misinterpretation of what an audit report is, not the quality of the audit.

excess of information disclosure imposed by regulation may lead to less transparency if the relevant information is obscured by the immaterial one.

This is why our recommendation here is that rating agencies should report information in a consistent way, indicating the length of historical data, the models' underlying macroeconomic assumptions and the sensitivity of the rating to changes in macroeconomic conditions, in line with the CGFS report. Moreover, rating information on structured products and corporate bonds should be comparable where the ratings have a similar meaning, but also highlight limitations and differences in the default characteristics of structured products and bonds.

Financial institutions counterparty risk

The contrast between the idyllic vision of perfect markets and the agency problems that limit transparency are even more severe when they concern financial institutions counterparty risks. Indeed, investors know that too-big-to-fail or, more generally, systemically important financial institutions (SIFIs) will end up being bailed out. This may lead to a lower level of effort in processing information regarding these institutions, as the information is possibly irrelevant. Alternatively, when the expected bail-out does not take place, as it happened with the bankruptcy of Lehman Brothers, the market collapse may be exacerbated by the investors' lack of previously accumulated precise information on these institutions.

As a consequence, in order to improve the market reaction to information, the recommendation is to introduce a clearly defined speedy resolution mechanism, so that financial institutions counterparty risks are adequately taken into account by investors. This should be introduced while protecting depositors from panics, which implies a recommendation to implement procedures for the deposit insurance not only to guarantee the complete reimbursement of deposit funds, but also to guarantee its reimbursement in a short period of time, thus avoiding the panic of Northern Rock, which was triggered by co-insurance and the lack of any guarantee regarding the time when depositors would have access to their funds.⁸

⁸ Notice that the Icelandic crisis shows that residual risks still exist.

4.2. Improving financial statements

Setting accounting standards always involves trade-offs. Historical cost accounting and discretion in FVA might help to avoid procyclicality and facilitate compliance with capital regulation while increasing the risk of asymmetric information and market collapse. In contrast, a strict implementation of FVA increases transparency and makes it more difficult to hide problems, thereby allowing a timely reaction.

4.2.1. New proposals

In its proposals for changes of U.S. GAAP after the crisis, the Financial Accounting Standards Board (FASB, 2010) clearly focuses on transparency. The objective is to provide financial statement users with more timely and representative information about banks' exposure. The proposal distinguishes between "derivatives and financial instruments held for trading" on the one hand and "financial instruments that are held for collection of payments of contractual cash flows" on the other. The second group would, in particular, include loans. Derivatives and financial instruments held for trading would be recognized at fair value with all changes in fair value reported in net income. For financial instruments held for collection of cash flows both amortized costs and fair value would be recognized on the balance sheet; interest accruals, credit impairments, and realized gains/losses would be reported in net income, and all other fair value changes would be recognized in other comprehensive income. Moreover, credit impairments would become stricter as impairments should be recognized when a credit loss is expected and not, as previously, when it is probable. In addition, reclassifications would no longer be permitted.

Thus, there are two important changes with respect to the discussion in the present paper. First, the available for sale category would no longer exist. For assets that, under the new rules, would instead be classified as being held for trading, unrealized changes in fair value would no longer be reported in other comprehensive income but as net income. Second, fair values of loans and leases are now also recognized in the balance sheet and not merely reported in the notes, and unrealized changes in the fair values are reported in other comprehensive income and thus affect book equity. Opponents of an extension of fair value accounting may warn that the risk of contagion and procyclicality increases and that the inclusion of a 2.5% capital buffer under Basel

III is not sufficient or too costly for banks. However, opponents may stress that the reduction in opacity may limit the risk of a market collapse, a point to be also considered.

5.2.2. Improving transparency in the financial statements

In general, market prices are more reliable than managerial estimates. However, in a crisis markets can be very illiquid and price distortions would directly affect a bank's balance sheet, net income, and bank equity through marking to market. But is this a reason not to use these market prices? Models and historical cost also have their shortcomings.

A complete understanding of the way information improves capital market allocation requires additional research on bubbles, panics, and runs. In particular, more research is needed on whether investors are more likely to overreact to bad news or to opacity (i.e., the fear that bad news is not revealed). With today's understanding of what the nature of market feedbacks is, it seems to be the case that a lack of information leading to a paralysis of trading may be more harmful than disclosure. In addition, even if the market overreacts at times, disclosure of fair-value information acts as an early warning system. That is, even if banks' shareholders would have been calmer in the absence of fair-value disclosure, fair value accounting may nevertheless be preferred to historical cost accounting (Laux and Leuz, 2010).

It seems to be important that investors have the information to draw their own conclusions. The interesting question is whether this information has to be provided in the notes or the balance sheet and whether they affect net income or other comprehensive income.

Could it be sufficient to report the fair-values of all assets in the notes to give justice to transparency? Opponents argue that investors ignore the notes, that information in the notes is less reliable because accountants audit the notes less diligently, that important information is hidden among less important information (as in the Enron case), that information alone does not give investors sufficient leverage to take actions (e.g., if contractual rights are based on accounting numbers), and that the balance sheet is published prior to the notes. However, these arguments are not really convincing. If the hypothesis is correct that the information is important, investors should look at the notes; accountants could be made accountable for the information in the notes; and regulators could require that the notes are structured so that information is easy to extract, e.g., in a virtual balance sheet with full fair value accounting, this information could then also be used in contracts and published at the same time as the balance sheet. As emphasized all

along in this paper, it is our view that the decoding of information by the receiver and the incentives of this receiving part to use this information when making decisions determine the level of transparency of the market, jointly with the disclosure requirements imposed on firms and issuers.

Alternatively, banks can recognize all financial assets at both historical cost and fair value in the balance sheet and report realized fair value changes and impairments in net income and unrealized fair value changes in other comprehensive income. This approach is followed in the FASB (2010) proposal for financial instruments that are held for collecting contractual cash flows. But, in principle, banks could use this approach for all financial instruments and report the information for different asset classes separately, so that users of financial statements are flexible to decide for themselves how to use the information for regulatory and contracting purposes. However, this approach is not pursued by FASB for financial instruments that are held for trading. In particular, it is proposed to drop the available for sale category where fair value changes only affected net income when they were realized or other-than-temporarily impaired and reported in comprehensive income otherwise.

One reason for why many users might not feel comfortable with splitting fair value changes for each asset class in separate entries in total comprehensive income are complexity of information and the cost of communication. For example, users talk about and compare net income, or, synonymously net earnings or (net) profits. However, it is not obvious what a reasonable definition of net income is. By changing the accounting rules (e.g., treatment of unrealized fair value changes of financial assets and own credit risk), the content and economic meaning of net income is also affected. But this should not per se preclude standard setters and regulators from changing the rules. It is very likely that the market will adjust.

There is no single information that would be optimal for all purposes. Therefore, it is important to give users reliable, timely, and clear disaggregated information. Both, FASB and IFRS acknowledge this point by reporting both fair values and amortized cost for loans and leases. Laux and Leuz (2010) compare the expected loan losses of major U.S. bank holding companies as implied in the fair values reported in the notes with expected loan losses for these banks as derived by analyst reports. The comparison shows that banks are systematically more optimistic about loan losses than external analysts. It is unclear whether this systematic bias can

be resolved merely by recognizing the fair values of the loans in the balance sheet rather than reporting them in the notes. After all, models and assumptions have to be used to value these loans that are not traded in the market. For the market to trust the fair values in a crisis, the market must have the information to verify them as it happened in the stress tests that were performed during the crisis (e.g., knowledge of the types of loans and underlying assumptions). An alternative approach to tackle the concern that the disclosed information may not be credible in a crisis is a sensitivity analysis (as proposed by FASB and IFRS) or the reporting of homogeneous stress tests based on reasonably unfavourable scenarios. This information would allow the market to assess how critical the model assumptions are for the health of a financial institution.

Disaggregated information is also important for contracting and regulatory purposes. For example, regulators might want to implement prudential filters and distinguish fair value changes due to credit risk and liquidity premiums. Even if the distinction is subject to managerial discretion, for regulatory purposes, this discretion might pose a lower problem than a mechanical use of fair values.

4.3. Improving the role of credit rating agencies

As a consequence of their structure and incentives as analyzed in section 3, recommendations regarding credit rating agencies' information provision should be based on three points: First, eliminate or at least reduce conflicts of interest; second, eliminate shopping; third, monitor the quality of credit rating agencies' information production.

We will examine hereafter how these three points should be addressed and to what extent the recent regulatory proposals may lead to an improved system of ratings.

4.3.1. Avoiding conflicts of interest

The regulation directed at eradicating conflicts of interest could be structured either as ex ante rules or as ex post penalties. Some of the current proposals emphasize the later, while from a point of view of incentives, ex ante restrictions are easier to monitor and to enforce and therefore seem to dominate.

Ex ante restrictions

Two obvious recommendations to be put in place to limit conflicts of interest are:

1. Setting a limit on the provision of advisory services that is now prohibited both by the Dodd-Frank act and the European commission.
2. The creation of fire walls so as to prevent sales and marketing considerations from influencing the production of ratings, a rule stated in the Dodd-Frank act and to be enforced by the SEC. Failure of implementing such firewalls may result in the NRSRO registration suspended or revoked.

Still, it is not clear that these limitations will solve the bulk of the existing conflicts of interest. As the problem is that CRAs want to serve their clients, there is a natural tendency to inflate ratings. So the main recommendations have to address the issue.

1. CRAs should not obtain higher profits if they issue a better rating. The Cuomo agreement between the New York State Attorney General Andrew Cuomo and the three major CRAs states precisely that CRAs cannot charge different prices for “good” and “bad” ratings. Of course, because of repeated business and the creation of relationships between a CRA and its customer, the issuer, this may be difficult, but at least it goes in the right direction as it softens the main conflict of interests.
2. In addition, a supervisory board that has a long horizon and is determined to preserve the CRA’s reputation will complement the scheme. The board will have to oversee policies and procedures for the management of conflicts of interest. This consideration has led recent regulation to require a fraction of CRAs’ board members to be independent, where the required fraction is at least a third in the European regulation and at least 50 percent in the Dodd-Frank act. In addition, the Dodd-Frank act also requires NRSROs to designate a compliance officer with no responsibility either for sales or for models to be fully assigned to verify the mechanisms by which the NRSRO copes with the current regulation.

Finally, as mentioned in Bolton et al. (2009), increasing competition among CRAs could be hazardous from a conflict of interest point of view, as this will increase the bargaining power of the issuers while decreasing the value of reputation to the CRAs, thus providing incentives to inflate ratings. This does not mean that limits to competition and barriers to entry should be imposed. Rather it is the current relationship between the issuer and the CRA that has to be reconsidered.

Ex post surveillance

Ex post surveillance will complement the ex ante regulatory rules. So, the European regulation requires CRAs “to comply with rigorous rules to make sure (i) that ratings are not affected by conflicts of interest”, which is a weak form of self-regulation. In addition, and presumably more effective, the European regulation includes an effective surveillance regime whereby European regulators will supervise credit rating agencies. But of course, if their compliance of regulation is to be assessed on the basis of their publication of an annual transparency report, the report will clear the CRA of any wrongdoing.

4.3.2. Eliminate shopping

As shopping is, jointly with conflicts of interest, one of the major causes of ratings inflation, this is one of the key recommendations. The recommendation here is that once a rating is asked for it should be publicly displayed. Unfortunately this may be difficult to enforce, as it requires a process of cooperation and information transmission between the issuer and the CRA. Still, publicly announcing that a rating has been solicited for an issue obviously goes in the right direction.

In the recent regulation, the most radical and challenging proposal here is the Franken amendment to the Dodd-Frank act, that has been relegated to the status of a two year study. The proposal gives to a NRSRO overseen by the SEC the power to provide initial ratings for structured products on a rotating basis. In this way the issuer is unable to select the initial rating, even if it is allowed to solicit additional ratings. The system, if conveniently designed, could also provide the CRAs with the right incentives, because the probability of a given CRA to be chosen for an initial rating may depend upon its past accuracy record for similar products. The Franken amendment has thus the advantage of a) solving the shopping problem as the announcement of the initial rating is public and b) solving the conflicts of interest as rotation breaks the collusion between a CRA and an issuer and provides incentives for accuracy if a CRA with a better record has a higher probability of being selected for the initial rating.

4.3.3. Monitoring the quality of ratings

Although certification of CRAs through the NRSRO has been criticized as a barrier to entry, once CRAs are accountable for their ratings, their registration has the benefits of a strict regulation, with the ability of the designated regulatory agency, under the supervision of the

newly created European Securities & Market Authority (ESMA), to verify the CRAs' procedures. This has led the European regulation to introduce a registration procedure for credit rating agencies, which will be the European equivalent of the NRSRO. In addition, because of the diversity of legal and regulatory regimes in Europe, on 2 December 2009, the Council of the Economics and Finance Ministers of the European Union member states (ECOFIN) proposed the centralised supervision of CRAs, so as to avoid duplication of monitoring, risk of inconsistent or divergent application of CRAs regulation across countries, red tapes and home biases in CRAs regulation. The new proposals establish the possibility of applying penalties to CRAs, including suspension of registration to enforce compliance. Also, the Dodd-Frank act makes it easier to engage in fraud action for money damages if the CRA has not fulfilled its due diligence by knowingly or recklessly failing to conduct a reasonable investigation of the characteristics of the issue. Consequently, by putting in place a system of ex post penalties, current regulatory proposals go in the right direction and provide ex ante incentives to produce accurate ratings.

Still, it is not clear from the reading of the regulatory proposals how accuracy is to be measured ex post. Here a simple straightforward recommendation to be put forward is to stick to statistical properties of ratings, a recommendation related to the Dodd-Frank suggestion to establish procedures that clearly define the meaning of any rating symbol. If this is the case, it is easy to make compulsory the disclosure of confidence intervals provided by the CRA, their basic assumptions, and the rules the CRA explicitly establish for rating upgrades and downgrades. This approach would allow to measure whether rating changes are within some confidence interval. Although it would not be possible to monitor the accuracy of rating of a specific issue, it does allow to monitor the quality of the ratings process when applied to multiple issues. As a consequence, CRAs might be reluctant to rate instruments without sufficient information and have incentives to improve their models, two recommendations that are explicitly made in the European regulation.

4.4. Stress test recommendations

It is important to define a stress test scenario that is realistic, informative to the market, and which allows to provide precise conditional information. In our view, the European stress test of 2010, in spite of benefiting from the previous US experience, was ill designed as it limited the

access of the market to the financial industry performance under the stress test scenario (see also the discussion in Greenlaw et al., 2011). It was a mistake that only a fraction of the banking industry amounting to 50% of the respective national banking sectors was forced to take the test. Clearly, there is no need to impose the cost of the test to every single small institution, but, in fact, it is of paramount importance to disclose the result of the stress test for all relevant institutions, in particular SIFIs, but also those institutions that cover more than, say, 10% of the market, which also involves institutions that the European test did not include. This was all the more important in Europe because financial institutions needed access to cross border funding. So, our stress test recommendation is that it should be characterized by

1. Disclosure to the market
2. Being compulsory for all institutions requiring access to the money market
3. Being exhaustive regarding the different types of assets, whether on banks' trading books or on the assets held to maturity
4. Allowing financial analysts and portfolio managers to perform “what if” simulations with the information disclosed.

In part, market forces have already promoted these rules. Nevertheless, the issue that arises is that some countries may have an interest in hiding information. In particular, countries facing a situation of budgetary restraint so that the bailing out of systemically important institutions is not guaranteed, as was the case in Iceland, will obviously oppose a rigorous transparent stress test. Still, the alternative of not running the stress tests only leads to increased market diffidence, liquidity shortages and the perspective of a worsening of the crisis.

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