Stress before Consumption: A Proposal to Reform Agency Ratings

Sarah Peiyee Woo

Abstract: The recent financial turmoil has engendered serious criticisms of major Credit Rating Agencies (CRAs), crystallising in a new Regulation on CRAs in the EU. In contrast to reforms focusing on micro-prudential issues and structured finance products, this article proposes reforms to reduce the aggregate role of ratings in systemic risk and procyclicality, in particular, the institutional philosophy of using ‘through-the-cycle’ ratings for banks, which are most vulnerable to cascading ratings downgrades. Exploring the performance of CRA ratings and that of the quantitative components of ratings for bank issuers, the article provides theoretical and empirical insights leading to the conclusion that part of the solution should come from an increased focus on stress-testing in the rating process. The implications for regulatory solutions include a fine balancing of the principles of non-interference by governments in the actual content of CRA ratings against the greater interest in preventing systemic risk.

I Introduction

The issue of how to regulate Credit Rating Agencies (CRAs) has been an important part of ongoing legal reforms to protect the stability of financial systems and investors, recently culminating in the EC Regulation on CRAs (hereinafter, the ‘Regulation’) which came into force in December 2009. While the EU Commission’s regulation of CRAs was largely welcomed as a timely response, the regulatory approach mainly dealt with managing conflicts of interest, increasing disclosure requirements and putting into place a registration framework. Focusing on the structure and governance of CRAs, the Regulation neither confronts head-on the overarching problem of CRA ratings – their reliability and accuracy, nor sufficiently addresses fundamental issues underlying ratings which contribute to procyclicality and systemic risk during economic downturns.

The purpose of this article is to identify and address a problematic but overlooked aspect in the regulation of CRAs relating to the unsatisfactory performance of CRAs in relation to the ratings of banks. The central argument of this article is that CRAs should be required to undertake stress-testing in the process of rating banks, in order to produce outputs which make clear to investors the probability and extent of potential downgrades during economic contractions. While the Regulation contemplates additional obligations on CRAs in disclosing simulations of stress scenarios when they issue ratings of structured finance instruments – the focus of the current crisis - this position does not appear to apply to other rated instruments. This is arguably short-sighted as other types of ratings can pose high levels of systemic risk, stemming from ratings downgrades during the downturn.

In implementing such a proposal, one must consider that the appropriate level of regulatory intervention hinges on the precise type of market failure that initiates the need for regulation. Fundamental to the arguments propounded in this article is the notion that systemic risk is associated with negative externalities and market failure and that bank failures can impair the operation of the financial system and the larger economy.

Before going in-depth into these issues, the general background on the issue at hand will be provided below by presenting, in brief, some highlights of the EU Regulation on CRAs. This is relevant in setting the context for the ensuing discussion by pinpointing some of the important implications of the Regulation. Section III will outline the theoretical foundation and empirical evidence regarding the flawed performance of CRA ratings of banks. Section IV will explore some regulatory approaches for dealing with this problem and highlight the considerations to be taken into account in determining the level of regulatory intervention. Section V concludes.

1 Regulation 2009/1060/EC of 16 September 2009 on credit rating agencies (Reg 1060/09). The EC Regulation entered into force on 7 December 2009.
2 See Annex I, Section D, II(3), Reg 1060/09.
II Regulation of Credit Rating Agencies in the European Union

The EC Regulation on CRAs represented a fundamental change in the EU’s regulatory landscape. It was aimed at creating a common approach to regulating CRAs throughout the EU – a step which broke with the tradition of industry self-regulation. With the Regulation, the Commission has finally laid down a common framework in relation to the integrity and quality of credit ratings which hitherto could not be sufficiently achieved by the individual Member States.  

Crisis of the past often led to calls for regulation of CRAs, but up to the most recent crisis which began in 2007, CRAs were not specifically-regulated in Europe. Following the bankruptcies of Enron and Parmalat, the European Commission’s assessment of the regulatory framework for CRAs was that legislative intervention was unnecessary. In the 2006 Communication, the Commission’s stance was that one of the central principles of ‘Better Regulation’ was that legislative solutions should be applied only where they are strictly necessary for the achievement of public policy objectives and the case for new legislation in this area remained unproven. Given that there were three financial-services Directives relevant to CRAs, the Commission opined that these Directives, combined with industry self-regulation based on the IOSCO Code of Conduct Fundamentals for Credit Rating Agencies (IOSCO Code), would satisfy any concerns.  

However, it became clear during the financial turmoil starting in 2007 that CRAs failed to reflect early enough in their ratings drops in market conditions. This failure of the CRAs, according to the new Regulation, can be adequately addressed by measures related to conflicts of interest, the quality of the credit ratings, the transparency of the rating process, their internal governance and, finally, an effective oversight/supervision of the activities of the CRAs.  

Notwithstanding the strengthened supervisory regime envisioned in the Regulation, it is argued in this article that current regulatory efforts do not go far enough in addressing fundamental problems with credit ratings, as opposed to the structure and governance of the institutions issuing them. The new reforms do not sufficiently address fundamental philosophies behind ratings which increase procyclicality and contribute to the build-up of systemic risk during economic downturns, especially in relation to bank ratings. Although governments have shied away from interfering with the content and methodology of ratings, the universally-acknowledged need for stress-testing of assumptions and adequate disclosure of stressed scenarios will require some level of legislative or supervisory guidance. With this central argument in view, this article is framed by the following observations.

First, the enactment of the Regulation was mainly motivated by the need to address problems with CRAs in the area of structured finance. As stated in the FAQ to the Regulation, CRAs contributed to the financial crisis by failing to sufficiently consider the risks inherent in these financial instruments. In its 2008 Report to the Commission, the European Securities Markets Expert Group (ESME) stated that the performance of the CRAs in rating corporates was considered satisfactory and it was in the area of structured finance that the performance was unsatisfactory.  

This, however, overlooks the systemic risk associated with the ratings of bank issuers. The excessively long maintenance of investment-grade ratings for many banks and their subsequent abrupt near-simultaneous downgrades during the crisis arguably contributed to liquidity pressure on banks, thereby sending negative shocks to the sector, and even the entire financial system. Indeed, the ESME mentioned in passing that ‘history has shown that many of the problems in other credit risk businesses (eg, banks) arise because the “basics” do not get the required priority, particularly at a time of rapid growth and market excess’.  

Second, a key aspect relating to the problematic performance of CRAs, whilst referenced in the course of this regulatory effort, was not resolved by the Regulation. This relates to the ‘through-the-cycle’ (TTC) rating

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3 Art 1(75), Reg 1060/09.
5 The EU Directives relevant to CRAs are: (i) the Market Abuse Directive (Directive 2003/6/EC) covering insider dealing and market manipulation; (ii) the Capital Requirements Directive (Directive 2006/48/EC) setting out the main criteria CRAs must meet in order to be recognized as External Credit Assessment Institutions; and (iii) the Markets in Financial Instruments Directive (Directive 2004/39/EC) regulating CRAs undertaking investment services and activities in addition to regular rating activity.
7 See ibid.
philosophy of CRAs – a major reason why ratings did not respond adequately to the onset of the recession.\textsuperscript{11} The ESME recognized that the CRA philosophy of ‘rating through the cycle’ may have encouraged a bias where non-cyclical deterioration was sometimes viewed as cyclical change, resulting in a delayed recognition of fundamental deterioration.\textsuperscript{12} Despite this finding, there were no recommendations with regard to this aspect, even though this rating philosophy exacerbated the reluctance to downgrade prior to the onset of the recession.

This seems inconsistent with the Regulation which stipulates that CRAs should not rate instruments that they do not have sufficient quality information upon which to base their ratings.\textsuperscript{13} Arguably, in adhering to the TTC rating philosophy, CRAs may have underweighted material ‘point-in-time’ (PIT) information to the extent that they may not have ‘sufficient quality information’ to properly rate a bank.

Third, while the Regulation requires disclosure of the methodologies used in determining the rating, models and key rating assumptions they use in the rating process, complications arise on the issue of ‘health-warnings’. As the Committee of European Banking Supervisors stated, further disclosure and transparency in the rating analysis is needed in the form of ‘health-warnings’ which would include information about the main risk factors that might influence the rating and a sensitivity analysis of these factors.\textsuperscript{14} Accordingly, an article in the Regulation requires disclosure of ‘appropriate risk warning, including a sensitivity analysis of the relevant key rating assumptions, such as mathematical or correlation assumptions, accompanied by worst-case scenario credit ratings as well as best-case scenario credit ratings’.\textsuperscript{15}

In relation to structured finance instruments, however, CRAs have ‘additional obligations’ to disclose methodologies with guidance explaining ‘assumptions, parameters, limits and uncertainties surrounding the models and rating methodologies…including simulations of stress scenarios undertaken’.\textsuperscript{16} Read together, these provisions appear to impose different standards of ‘health-warnings’ for structured finance instruments and other rated instruments in general. A natural interpretation is that CRAs should disclose the worst-case scenario and best-case scenario for ratings in general, but there is no need to disclose simulations, various scenarios considered and other details. Put simply, the regulatory obligations of CRAs appear to be more lenient for ratings outside the area of structured finance. There is also little clarity as to what a worst-case scenario might be and, generally, whether the Regulation actually imposes an obligation on CRAs to undertake stress-testing in the ratings process.

Furthermore, an overall criticism of this regulatory approach is that it focuses only on the ‘inputs’, rather than the ‘outputs’, ie, the default predictions at the core of an effective rating service.\textsuperscript{17} A root cause of the financial crisis is that CRAs have failed in their function as institutional ‘gatekeepers’ by providing predictions of creditworthiness which performed poorly in the downturn.\textsuperscript{18} An oft-cited reason that CRAs failed to foresee the events of 2007-2009 was that a rapid and material downturn in housing prices was, prior to this period, inconceivable. With stress-testing, the disclosure of the possible effects of a scenario on a rating (be it considered a ‘stress scenario’) would help investors evaluate the possibility of downgrades and, through the prudent actions of at least some of them, reduce the systemic effects should these downgrades actually occur.

Given the severity of the situation, a strong argument can be made that the Regulation should not only incorporate the Information Flow model (ie, the extent and quality of disclosure) but also elements of the Direct Oversight model (oversight of ratings and the appropriate standards of due diligence in performing rating analysis). An obstacle to direct oversight is the need by the Commission to avoid the appearance of interference with the methodologies underlying ratings and maintain the independence of ratings from national influence – a principle referenced in the Regulation.\textsuperscript{19} As ESME opined, regulation may be ‘counterproductive as it might be seen by users in the market place to imply a level of official endorsement of ratings which is neither justified nor feasible’.\textsuperscript{20} However, as elaborated upon in Section IV, this article presents arguments that market-based solutions may be

\textsuperscript{11} Moody’s, Calibrating Bank Ratings in the Context of the Global Financial Crisis on Calibrating Ratings in Financial Crisis, at 5, website available at http://www.iflr.com/pdfs/web-seminars/regulatory-capital/moody’s_2-09.pdf.
\textsuperscript{12} See, European Securities Markets Experts Group, \textit{op cit n 9 supra}, at 14.
\textsuperscript{13} Art 8(2), Reg 1060/09.
\textsuperscript{15} Annex I, Section D, II(c), Reg 1060/09.
\textsuperscript{16} Annex I, Section D, II(3), Reg 1060/09.
\textsuperscript{19} See Art 23, Reg 1060/09, stating that ‘[i]n carrying out their duties under this Regulation, neither the competent authorities nor any other public authorities of a Member State shall interfere with the content of credit ratings or methodologies’.
\textsuperscript{20} See, European Securities Markets Experts Group, \textit{op cit n 9 supra}, at 22.
infeasible where systemic risk is involved and governments have a regulatory responsibility to prevent systemic risk, notwithstanding the non-interference principle.

In analyzing the appropriate level of regulatory intervention, the answer lies in how we can balance the shortcomings of both markets and regulation and depends largely on the specific set of reasons that initiates the need for regulation. More than one reason exists for CRAs to fail in their function, and understanding these separate reasons is important in assessing the current regulatory response.

III Analysing the Performance of Bank Ratings

This section will analyse, in further detail, how the performance of CRA ratings of banks turned out to be unsatisfactory in reflecting the credit risk of banks, and why this remains a critical issue. This article is not meant to be a comprehensive empirical study of the performance of CRA ratings, but as a piece which presents some theoretical and empirical insights to illustrate the problems of CRA ratings of banks which the Regulation has not addressed.

There are two critical insights discussed in this article. The first is that CRA ratings for banks purport to be relatively stable through an economic cycle, unless the fundamental business of the bank changes. However, there is evidence that banks are, in fact, extremely sensitive to downturns. Investors and counterparties which rely heavily on these ratings will almost inevitably suffer losses, owing to the consequences of ratings downgrades in a downturn, which may spill over into a general loss of confidence in the banking system. Secondly, CRA ratings of banks may be driven less by their quantitative components than their qualitative components, despite their purported equal weight in relation to mature markets. This runs counter to the core of the enhanced disclosure provisions in the Regulation, of which the most important disclosures relate to quantitative components – models and mathematical assumptions used in the rating process.

Following from these insights, I argue that the stress-testing of assumptions and reverse stress-testing of what it would take to ‘break the bank’ should assume critical importance in improving the quality of ratings. This crisis has revealed previously unknown or underestimated risks to banks. For example, liquidity risk, which was previously of less concern, has assumed extreme importance in this crisis. Faced with the reality that the next phase of the cycle is to a large extent unknown, a new kind of quality control is called for.

To support this central argument, this article will present an empirical analysis of the performance of CRA ratings on US banks from December 2007 through 2009, as well as the quantitative components of these ratings. In order to tease apart the various components that go into a CRA rating, it was necessary in this study to control for variables that are not of interest to an individual regulator (which this article is aiming at as an audience), such as foreign currency risk, country risk and accounting standards. For that reason, this study focuses on US banks, as the US presents a large single currency and regulatory region, and government support for failing banks has been, through the cycle, uniformly lukewarm (with a few exceptions). This study thus assumes that CRA methodology is applied and implemented fairly consistently across credit ratings within each type and region.

A Problems of ‘Through-the-Cycle’ Ratings for Banks

The general approach that a CRA might use in rating firms (the so-called ‘rating philosophy’) can be characterised as being on a spectrum between ‘Point-in-Time’ (PIT) and ‘Through-the-Cycle’ (TTC), in terms of the horizon. At present, all three of the major CRAs typically state that their ratings are designed as TTC assessments, such that these ratings focus on the long-term and do not fluctuate with near-term performance.

Theoretically, a TTC rating reacts mainly to fundamental changes, defined to include relative issuer performance that changes in a sustained manner, eg, ‘a move towards deeper, longer cycles for a given industry, or a change in the operating environment based upon a fundamental increase or decrease in systemic risk’. As explained by S&P’s, ‘[t]here is no point in assigning high ratings to a company enjoying peak prosperity if that performance level

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22 Art 8(1), Reg 1060/09.
is expected to be only temporary. Similarly, there is no need to lower ratings to reflect poor performance as long as one can reliably anticipate that better times are just around the corner.  

This has been recognized as an ideal which is difficult to implement. One egregious example is that of the issuer rating for Lehman Brothers, which was left at investment grade by all three major CRAs right up to the day it declared bankruptcy on September 15, 2008, despite its troubles being widely known for months. In fact, two key limitations relating to this rating philosophy can be distilled from the rating methodology papers of CRAs. First, rating through the cycle requires an ability to predict the amplitude and length of the cyclical pattern and this is difficult to do. Second, an issuer’s business and credit quality can be permanently impaired during a downturn such that, in the extreme, it will not survive a cyclical fluctuation to participate in the economic upswing. In such cases, the horizon for reliable forecasting is said to be ‘significantly shortened’. This limitation is thus consistent with empirical findings in the literature that rating actions can be procyclical.

Indeed, there is no consensus as to how the CRAs put into practice their stated TTC rating philosophy. The Financial Services Authority in the UK has opined that, despite sometimes being characterised as ‘through the cycle’, the systems of the public rating agencies are ‘hybrids’. This is not surprising since academic research itself is beset by complications in identifying and disentangling transitory and permanent components in security prices; and the evolution of the literature shows that the choice of appropriate statistical techniques is not obvious.

A more serious problem is that the use of the TTC approach may be particularly inappropriate for the rating of bank issuers. It is extremely difficult to ‘filter out’ changes in the cycle, ie, systematic risk, from changes observed in a firm’s creditworthiness in relation to a population of firms with betas which increase drastically in downturns. Beta is a measure of systematic risk arising from exposure to the common factor associated with the business and financial cycles. A high beta indicates that the nature of an obligor’s business is relatively sensitive to aggregate economic conditions.

There is a theoretical foundation for the proposition that banks have high betas which tend to increase during the downturn. In their role as financial intermediaries, banks are heavily exposed to changes in overall economic conditions. Banks, which are inherently highly leveraged institutions, borrow with high liquidity and lend with low liquidity. This means that they issue illiquid claims (loans) funded by short-term liquid deposits. This exposes them not only to default risk but also interest risk since the average duration of their assets exceeds that of their liabilities. These risks are highly influenced by business cycle conditions, as studies on the performance of bank stocks have proved.

Studies of the sensitivity of bank stock returns to systematic shocks have concluded that the distribution of bank stock returns shifts significantly over the business cycle. Brewer and Lee found that the non-stationarity of factors driving bank performance makes it ‘difficult to evaluate the financial performance of banks and to identify the response of these firms to changes.’ These observations cast doubt on the ability of CRAs to rate banks through-the-cycle. They do not necessarily contradict separate evidence, such as ESME’s conclusion that the ratings of non-financial firms performed...
reasonably well. There is evidence that financial firms are simply much more sensitive to downturns. Nickell, Perraudin and Varotto have found that there is a significant difference between the stability of ratings between banks and industrials. Highly-rated banks were found to be consistently more susceptible to downgrades than similarly-rated industrial firms. One possible explanation for this is banks’ generally leveraged exposure to real estate. Overall, this implies that the rating philosophy of CRAs may not extend well to financial firms.

To verify these earlier studies, data on the current equity betas of US financial firms versus those of different industry sectors was gathered, and found to be consistent with this theoretical foundation and the literature. Stock betas measure the sensitivity of the stock relative to movements in the entire market, which can be taken as a proxy for how well the economy is doing. A beta greater than 1 implies that the stock reacts with greater sensitivity than the market as a whole to a change in the economy. Figure 1 presents betas calculated through regression of weekly returns in 2007-9 against the corresponding weekly return of the S&P 500. As predicted, financial firms collectively have a beta of 1.95, ie, nearly double the sensitivity of the market in general.

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Figure 1: Industry Betas

Focusing more narrowly on U.S. Banks, the 1-year betas for 2001-9 were calculated for the top 20 banks by market capitalization. Figure 2 shows that the betas are highly unstable across the cycle. Compared to the 2006 levels, the average betas increased by 164% in 2009.

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39 See, Nickell, Perraudin and Varotto, [*op cit* n 31 supra.]
41 For a further discussion, see D. Holoda and Y. Kitsulb, 'Capital Requirements and Systematic Risk in Banking', Georgia State University Working Paper (2008), where it was found that the betas for undercapitalized banks with high trading assets were more than 50% higher.
Regions Financial 2.42 2.02 1.41 0.61 0.74 0.70 0.92 0.91 0.61
Keycorp 2.26 2.59 1.15 0.67 0.75 0.97 0.92 0.61
People's United 0.43 0.80 0.90 0.75 0.36 1.76 0.63 0.58 0.28
Comerica Inc 1.99 1.82 1.38 0.74 1.09 0.80 0.94 0.92 0.61
Marshall & Ilsley 2.94 1.79 1.18 0.84 0.92 0.73 0.94 0.89 0.61
Commerce Banc 1.24 0.77 0.59 0.50 0.75 0.56 0.60 0.58 0.45

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Figure 2: US Bank Betas  
Source: Bloomberg

To add further specificity to the above analysis, we found dramatically rising betas in relation to banks which were rated investment grade in 2006 and whose subsequent failure was not predicted in a timely way by CRA ratings. To illustrate, Washington Mutual, which was seized by regulators in September 2008, had a beta of 0.84 in 2006 and that jumped to 2.74 in 2008. On the other hand, Colonial Bank, which was closed on August 14, 2009, had a beta of 0.60 in 2006 and 3.61 in 2009 (this peaked at 4.58 in the two months prior to its closure). As such, this insight casts further doubt on the concept of accurate TTC ratings for banks.

B Unsatisfactory Performance of Ratings for Banks

Next, before analysing the performance of CRA bank ratings, some background on rating methodologies will be provided by highlighting the distinguishing features of how banks are rated. Instead of the single standalone issuer rating that one might expect of an industrial firm, there are two sets of ratings provided by CRAs for banks. The first set measures a bank’s intrinsic, or standalone, financial strength, eg, Moody’s ‘Bank Financial Strength Rating’ (BFSR). These are not credit risk ratings, but measures of the likelihood that a bank will require assistance in order to avoid a default. For convenience, and because the Moody’s methodology is used to illustrate an empirical point, we will refer generally to this first set of ratings as the BFSRs. The second set of ratings, including bank deposit and debt ratings, starts with the BSFR and adds external considerations, such as the likelihood that the bank will receive external support to honor financial obligations.

In assessing the BFSRs, CRAs rely on both qualitative and quantitative indicators, which are typically equal-weighted in mature markets. The qualitative component assesses the overall ‘macro-supervisory-legal environment’ in which banks operate, as well as such factors as ‘franchise value’ and ‘risk positioning’, while the quantitative component uses a fixed set of financial ratios derived from balance sheets and income statements. In light of the layered nature of bank ratings, this presents an opportunity for a finessed approach for empirical analysis, especially considering that disclosure requirements in the Regulation seem to focus more on the quantitative aspects. This allows us to not only analyse whether ratings are failing to separate high-risk from low-risk banks, but also whether the qualitative or quantitative component is more likely to be the cause.

The empirical methodology is thus composed of the following steps:

- **Step 1**: Measure the performance of ‘through-the-cycle’ ratings provided by Moody’s, Standard & Poor’s and Fitch as of December 2006 in predicting bank failures for the time period between December 2007 and December 2009.

- **Step 2**: Construct simulated scores based on the quantitative components of bank ratings using published methodology and measure the performance of these simulated scores.

The data sample was constructed using information on 86 unique banks and financial institutions, comprising of 20 bank failures, chosen on the basis of two main criteria. These were banks classified as depository institutions.

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under the Standard Industrial Classification, and they were rated by Moody’s, Standard & Poor’s or Fitch as of December 2006. Ratings data was sourced from Bloomberg, while financial statement data was collected from the FDIC databases. Bank failures were identified using the FDIC’s failed banks list as well as other forms of archival research. Note that the sample was both random and exhaustively searched for on Bloomberg, which is the industry-standard data source.

The Moody’s BFSR methodology was distilled from published methodology papers. The categories of financial variables are Profitability, Liquidity, Capital Adequacy, Efficiency, Asset Quality, and Concentration Risk. To approximate the methodology, a simulated score was constructed using the ratios and weights from the papers (see Annex). The bias was towards the simplest functional form, based on the Altman z-score (a widely-accepted scoring model for predicting bankruptcy). The process required, first, standardising the financial ratios (ie, subtracting the sample mean from an individual raw ratio value and then dividing the difference by the sample standard deviation), and then creating a linear combination of the ratios, weighted by coefficients. In line with the 3-year averages used for the BFSR, 3-year average ratios from December 2004 to December 2006 were utilised.

In assessing the performance of ratings, the litmus test is whether these ratings were able to rank-order banks correctly such that failed banks were given the worst ratings. Bank failure is defined, in line with the definition by the Federal Depository Insurance Corporation (FDIC), to include the closure of a bank by a federal or state banking regulatory agency, as well as bankruptcy filed under Chapter 7 or Chapter 11 of the Bankruptcy Code. Consistent with the literature on US bank failures, regulatory financial assistance, assisted mergers and payoffs were included.

In addition, the following situations were flagged as bank failures:

- Where a bank has received at least 1 cease-and-desist order from a banking regulator for operating with an inadequate level of capital for its risk profile (such regulatory action typically triggers a default on credit agreements between a bank and its counterparties); and

- Where a distressed exchange occurs such that the bank offers debtholders new securities amounting to a diminished financial obligation or where the exchange had the apparent purpose of helping the borrower to avoid imminent default (this falls within the definition of default used by CRAs which captures credit events resulting in impairments to contractual claims).

The Cumulative Accuracy Profile (CAP) and the corresponding Accuracy Ratio (AR) were used to assess the statistical performance of the ratings and scores. A measure of discriminatory power widely used in the literature for default prediction models, a ranking of the banks was established in line with the assessment of their risk, starting with the debtors with the lowest rating grade. The fraction of all companies with the worst ranking/score (horizontal axis) is mapped onto the fraction of defaulting companies within that group (vertical axis) to produce the CAP plot. To illustrate, if the sample contained 20% failures, then a perfect model would exclude all these failures at 20% of the sample excluded. Correspondingly, a random model would only exclude all failures by excluding the entire portfolio. To provide a single metric to measure the quality of the ratings, the AR is calculated as the ratio of the area under the CAP plot to the area under the ‘ideal model’, where the random model has been subtracted from both. Accordingly, this measure takes a value between 0% (random model) and 100% (ideal model).

These empirical tests yielded two key observations. First, the CRA ratings as of December 2006 did not perform well in predicting bank failures in the subsequent financial crisis. The AR of Moody’s ratings was 33.5%, implying that these ratings only performed a third better than a random model. The ARs for Standard & Poor’s and Fitch were comparable, being 30.0% and 34.9%, respectively. On closer examination of the CAP plots (see Annex), it is found that agency ratings were more effective in identifying bank failures at the lower end of rating grades and less effective at the higher end.

Consistent with the study by Nickell, Perraudin and Varotto, this shows that the ratings for highly-rated banks were unstable over the downturn. The sensitivity of banks to market downswings supports our argument that the

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44 Under this classification, firms in Major Group 60 for Depository Institutions (excluding foreign banks and credit unions) are selected.

45 Strictly speaking, Concentration Risk is not part of the financial fundamentals in the Moody’s BFSR methodology but we have included these and adjusted the weights according to the overall weight attributed to this as a qualitative component. However, these are quantifiable metrics and they are utilized in another quantitative model by Moody’s to measure credit risk of US Banks (a companion model used for benchmarking purposes) – see, further, Moody’s, RiskCalc for US Banks, Published Methodology Document (2006), website available at http://riskcalc.moodysrms.com/us/research/docs/Americas/RiskCalc_v3.1_USBanks.pdf.

TTC rating philosophy is inappropriate and can lead to inevitable ‘cascading’ downgrades when evidence of imminent failure becomes overwhelming. Furthermore, it is noted that a large proportion of banks which defaulted enjoyed investment-grade ratings at the beginning of 2007 (ie, where the rating is at least Baa3 or BBB-). With Moody’s, this constituted 70% of the sample; for S&P, 75%; and for Fitch, 77%.

Second, the performance of the simulated score based on the BFSR showed worse results than the ratings, with an AR of 13.9%. It is not surprising that the score based on financial indicators fared worse because it is based on financial information obtained during the three most buoyant years in the last boom preceding the downturn. This further reinforces the notion that it is extremely difficult to provide a TTC rating for banks.

To illustrate, a clear case in which the TTC rating philosophy fails is in relation to the Asset Quality of a bank. This measure, involving an assessment of the non-performing loans, is a major driver of future earnings and capital generation or erosion. In the Moody’s BFSR methodology, Asset Quality is measured in terms of the proportion of problem loans, first, against gross loans; and against shareholder equity and loan loss reserves.\(^{47}\) The 3-year averages used to calculate these metrics are inevitably backward-looking and unlikely to provide valuable information as to how a bank will fare in stressed scenarios.

Another example lies in the consideration of concentration risk in the Moody’s BFSR methodology. To assess industry concentrations, Moody’s looks at a bank’s aggregate exposures to any one particular sector or industry relative to Tier 1 capital.\(^ {48}\) While the granularity of credit portfolios is leading indicators of better credit quality through the cycle, it is questionable as to how Moody’s quantifies the impact of concentration risk. First, correlations between sectors and product lines, causing concentration risk, were not explicitly considered, not to mention the extent at which correlations tend to spike in times of economic stress. Second, Moody’s expressly excluded from its consideration products such as home mortgages or credit cards as sources of concentration risk.\(^ {49}\) Yet these were the primary causes of the failures of banks such as Washington Mutual and IndyMac – which the score based on BFSR failed to identify as risky.

It is possible that during the boom the CRAs refused to see mortgages and real-estate-backed loans as a source of concentration risk, as these, in good parts of the cycle, actually magnified profitability and franchise value during the boom.\(^ {50}\) As such, it is not clear that the TTC rating philosophy can be reconciled with the fact that the source of profitability and success in good times can also be the source of capital-depleting losses during a downturn. This observation, however, supports two of the core arguments in this article. First, it underlines the necessity of stress-testing rating components such as concentration risk and asset quality. Second, the disparity between the performance of the ratings and the simulated scores based on the BFSR reveals that CRAs were probably relying more on subjective components. The Regulation cannot be truly useful in terms of trying to force disclosure and transparency of methodologies, models and assumptions, if the true failure lay in not exploring scenarios which seemed implausible at the time of the rating.

IV Non-Interference and Prudential Supervision

In light of a more nuanced understanding of why CRA ratings of banks have been unsatisfactory, the current regulatory response, with its emphasis on disclosure and transparency of models and rating assumptions, may be inadequate. In determining the level of regulatory intervention in securities market intermediaries, regulators face a range of options with varying tradeoffs between the costs of regulation and the failings of the market.\(^ {51}\) These options range from merit regulation at one extreme to the least intrusive option of self-regulation.\(^ {52}\)

In this case, merit regulation probably involves regulators providing stressed ratings or mandating certain parameters and stress scenarios underlying the ratings. Such regulatory intervention, which supplants the market, while having the greatest impact on the investment community, has traditionally been considered to carry the greatest risk of regulatory error. Nonetheless, it can be argued that governments have a compelling interest to subject the ratings of systemically important financial institutions to special oversight. After all, bank supervisory agencies

\(^{47}\) See, Moody’s, \textit{op cit} n 42 \textit{supra}.
\(^{48}\) See \textit{ibid}.
\(^{49}\) See \textit{ibid}, at 12. Moody’s stated that ‘a bank’s exposure to the housing industry would certainly include its exposure to home builders and to construction, but would not include its exposure to owner-occupied residential mortgages’.
\(^{50}\) Empirical analyses show that a portfolio with concentrations of real estate exposures is likely to perform better than a diversified portfolio during periods of growth and expansion. See, further, S. P. Woo, ‘Concentration Risk and Capital Requirements: Invisible Hands Driving Affect Bank Behavior in Bankruptcy Cases’, Stanford Working Paper (2009).
\(^{51}\) See, Choi, \textit{op cit} n 21 \textit{supra}.
\(^{52}\) See \textit{ibid}. 
already monitor the financial conditions of banks and a key product of bank examinations by U.S. agencies consists of supervisory ratings of banks’ overall financial conditions, the so-called CAMELS ratings.\footnote{Federal Reserve Board, ‘Using CAMELS Ratings to Monitor Bank Conditions’, Federal Reserve Board Economic Letter (1999), website available at http://www.frbsf.org/econsrch/wklyltr/wklyltr99/el99-19.html. This takes care of the argument that it is unreasonable to believe the regulator can effectively be the arbiter on accuracy in the ratings industry.}

At the other extreme, regulators can opt for a solution based on private ordering principles. Without imposing a requirement for CRAs to undertake stress-testing (merely to disclose the ratings in worst and best case scenarios), stress-testing could be undertaken as part of industry best practices and the IOSCO Code of Conduct Fundamentals for Credit Rating Agencies. Private ordering provides the lowest possibility for regulatory mistake or abuse;\footnote{S. L. Schwarz, ‘Private Ordering of Public Markets: The Rating Agency Paradox’, (2002) 1 University of Illinois Law Review 1, 15.} on the other hand, investors are left without any alternative means of protection other than contractual damages.\footnote{Choi, op cit n 21 supra.} This was the position taken by the EU Commission in 2004 when the EU Commission decided on a non-legislative solution based on self-regulation through the adoption of individual codes of conduct based on the IOSCO Code, despite an initial preference for regulation.\footnote{European Commission, op cit n 4 supra.} Nonetheless, the events which unfolded throughout the financial crisis which began in late 2007 have largely led to the conclusion that industry self-regulation \textit{per se} did not work.

There are options lying between these extremes. One alternative is to mandate that banks and other regulated institutions have to undertake their own stress-testing of the inputs into bank ratings before using these in their risk assessments. Such a mandate would not be extraordinary, since stress-testing is now considered an important tool part of banks’ internal risk management processes, as promoted through recent proposed revisions to the Basel II capital adequacy framework and recent regulatory initiatives in response to the current crisis.\footnote{Basel Committee on Bank Supervision, ‘Principles for Sound Stress Testing Practices and Supervision’, Basel Consultative Document (2009); Federal Reserve Board, ‘The Supervisory Capital Assessment Program: Overview of Results’, (2009), website available at http://www.federalreserve.gov/newsevents/bcreg20090507a1.pdf.} However, this arguably constitutes a ‘half-measure’ as it fails to cover a substantial part of market participants which currently rely on credit ratings in their investment and risk assessment process.

Another approach would be to create a single independent oversight board with the power to regulate rating agency practices, including rating methodologies, and to impose appropriate sanctions.\footnote{F. Partnoy, ‘Rethinking Regulation of Credit Rating Agencies: An Institutional Investor Perspective’, Council of Institutional Investors White Paper (2009).} It would be analogous to the Public Company Accounting Oversight Board (PCAOB) introduced by the United States with the Sarbanes-Oxley Act of 2002 to oversee auditors in order to protect the interests of investors.\footnote{Section 103, US Sarbanes-Oxley Act of 2002, Pub L No 107-204.} Although a private entity, the PCAOB is supervised by the SEC and has regulatory functions, including the establishment of quality control standards and rules to be used by auditors in the preparation and issuance of audit reports.\footnote{Art 23, Reg 1060/09. Note that a similar position exists in the US in the Credit Rating Agency Reform Act of 2006 which provides that ‘neither the SEC nor any State (or political subdivision thereof) may regulate the substance of credit ratings or the procedure and methodologies by which any nationally recognized statistical rating organization determines credit ratings’.} Aside from existing criticisms of the PCAOB, which has been plagued with controversy from its inception, a major problem with this approach is that it may constitute interference by governments and other public authorities with the substance of credit ratings. The importance of the non-interference principle has been expressly made clear in the Regulation:\footnote{European Securities Markets Experts Group, op cit n 20 supra, at 22. It was stated that ‘regulation may be counterproductive as it might be seen by users in the market place to imply a level of official endorsement of ratings which is neither justified nor feasible’.}

Credit rating agencies should use rating methodologies that are rigorous, systematic, and continuous and subject to validation including by appropriate historical experience and back-testing. Such a requirement should not, however, provide grounds for interference with the content of credit ratings and methodologies by the competent authorities and the Member States.

There are several key arguments typically proffered in support of the principle of non-interference: the possibility of governmental intrusion could, for one, exacerbate excessive reliance on ratings if market participants believe these carry a governmental ‘seal of approval’;\footnote{Schwarz, op cit n 54 supra.} secondly, diminish the independence and reliability of ratings by increasing the potential for political manipulation;\footnote{See, European Commission, op cit n 4 supra.} thirdly, by being too specific, ‘lack adaptability to existing
diversity and to future developments, and fourthly, that interference may cause European CRA ratings to be disharmonious with those in the rest of the world and ‘seriously jeopardise the significance of the ratings’.64

In relation to the issue of possibly exacerbating excessive reliance on ratings, it is hard to imagine a higher degree of reliance on ratings than that which currently exists. Governments face a herculean task in eliminating rating-based rules in the current regulatory framework, which create incentives for investors to rely uncritically on ratings as a substitute for independent evaluation.65 Furthermore, it is difficult to reduce reliance on ratings by market participants generally, since references to ratings and ratings triggers pervade investment guidelines, swap documentation, loan agreements, collateral triggers, and other important counterparty documents. Barring increased competition by new entrants with credible alternatives and substitutes (a trend which is, at the same time, not encouraged by the cost of complying with other requirements in the Regulation),66 it is nearly impossible to reduce private reliance on ratings, particularly for institutions lacking abundant resources for independent assessment.

Next, government interference as source of bias in ratings may already exist as a problem, and the kind of self-restraint shown in the Regulation may be moot. It is counterproductive to pretend that it does not exist, and more effective to limit it in a transparent manner. In a high-profile case in the U.S., Moody’s stated that, under pressure from officials in Connecticut, it would change the way it rated municipal bonds.67 The Attorney General of Connecticut pursued action against the three large CRAs for using a dual system to rate bonds (one standard for government-issued bonds and a more lenient standard for the corporate world) and ‘knowingly and systematically’ giving the municipal bonds lower grades, raising borrowing costs of borrowing for local governments.68 By legislating the existence of a supervisory board, and creating a legitimate forum for resolving disputes over the nature of ratings outside of the courts, it may in fact become easier for CRAs to combat political pressure.

Nonetheless, it is impractical to institute a supervisory board in relation to bank ratings alone. The necessity of fixing the problem of bank ratings is part of the larger case for having a supervisory board for overseeing the quality of CRA ratings in general, for which more empirical work needs to be done to assess the problems underlying other inaccurate CRA ratings. Suffice to say, the argument for such a board is strengthened by the systemic risk inherent in ratings in industries such as banking.

As such, the alternative mechanism is to create an office for credit ratings under the auspices of the proposed European Systemic Risk Board (ESRB), a body currently proposed to monitor and assess risks to the stability of the financial system as a whole. This approach would be analogous to the one advocated by the Chairman of the Senate Banking Committee in the U.S. as part of a financial reforms bill – to establish an office within the SEC to regulate CRAs.69 Since part of the ESRB’s proposed responsibilities include the provision of early warning of systemic risks that may be building up and recommendations for action to deal with such risks, oversight of CRAs’ methodologies in performing rating analysis on banks should fall comfortably within its expertise. This solution, embedded in a single community agency, has the benefit of dealing with significant cross-border negative externalities which can contribute to undermine the financial stability in the EU.

In fact, because there are such grave consequences stemming from systemic risk with regard to the banking industry, I propose that a first step should be to impose more specific disclosures around stress-tested ratings. Bluntly put, ‘a single, horrible truth exists…[b]ecause most big banks are too interconnected to fail, and could be brought down by a counterparty, the system is only as strong as its weakest member.’70

65 See ibid. These sentiments of the CESR, together with those above regarding lack of adaptability to future developments were also echoed by, among others, the Swedish and British authorities (see, Swedish Ministry of Finance, ‘Response to the Commission’s consultation on Credit Rating Agencies’; and HM Treasury, the Financial Services Authority and the Bank of England, ‘Joint response to the Commission consultation on a draft Directive/Regulation on the Authorisation, Operation and Supervision of Credit Rating Agencies and Policy Options to Address the Problem of Excessive Reliance on Credit Ratings’, Contributions to Proposed Regulation (2008), website available at http://circa.europa.eu/Public/ir/markt/markt_consultations/library/?=financial_services/credit_agencies/authorities&vr=detailed&sb=Title.
66 Basel Committee on Bank Supervision, Strengthening the Resilience of the Banking Sector, Consultative Document (2009), at 55, website available at http://www.bis.org/publ/bcbs164.htm. The Committee opined that, despite the negative incentives arising from the use of external ratings to determine regulatory capital requirements, external ratings provide a ‘relatively standardised, harmonised, easy-to-understand, independent (third-party) measure’ of credit quality.
67 See Schwarze, op cit n 17 supra.
70 See the US Bill titled ‘Restoring American Financial Stability Act of 2009’ of 10 November 2009 under Title IX (Securities Regulation).
However, in requiring generally ‘worst-case’ ratings or ‘sensitivity analysis’, each CRA is left to its own devices as to how to construct worst-case scenarios and variations around the current situation. In fact, sensitivity analysis can be taken to mean slight deviations in the inputs from their present value, rather than the kind of plausible but extreme scenarios that stress-testing forces one to think about. At the other extreme, a ‘worst-case’ scenario rating is unlikely to change people’s behaviour, as, almost by definition, it is the most unlikely thing to happen.

In comparison, the Basel Committee on Bank Supervision (BCBS), in its December 2009 consultative document for a new proposed International Framework for Liquidity Risk Measurement, Standards and Monitoring, is specific about the minimum acute liquidity stress scenario that all banks must measure their net cash position against. In doing so, the BCBS stressed how specific parameters which are internationally harmonised using specific and concrete values would meet the need for ‘internationally consistent regulatory standards for…risk supervision as a cornerstone of a global framework to strengthen…risk management and supervision’. These harmonised parameters create a common standard of disclosure which allows stakeholders and regulators to create a baseline, without which it is hard to make comparisons between banks, and for that matter, their ratings.

Moreover, in the U.S., when the various bank regulators co-ordinated to conduct the Supervisory Capital Assessment Program of stress-testing nineteen key banks, from February 25, 2009 through late April of 2009, these regulators also employed a common set of scenarios, with specific values for changes in real-estate prices. Analogously, another possible option is for a co-ordinating body, such as the Committee of European Securities Regulators, which is already tasked with issuing guidance on the registration process for CRAs, etc, to set such common scenarios in consultation with the BCBS and national regulators. Among other things, this would ensure harmony between the stress-testing that banks are already being required to do for themselves, and the stress-tests that CRAs do in the bank ratings.

It would also be useful to introduce a ‘reverse-stress test’ requirement which would require CRAs to consider and disclose scenarios most likely to cause the banks’ business models to become unviable or induce a downgrade. This may not require co-ordination from any central body, but simply force CRAs to disclose the list of events which would cause downgrades and failures, and allow investors and regulators themselves assess the probability of such an event. However, because the effects of multiple simultaneous events are hard to enumerate fully, and yet it is most likely that multiple unfortunate events happen at the same time, this is not a complete solution. That being said, reverse stress-testing helps ensure that CRAs help the consumers of ratings to more fully understand the ‘tail risks’ of banks which, if they were to crystallize, would cause counterparties and investors to lose confidence in them, i.e., to avoid disaster myopia. Again, this approach should be put into place in relation to bank ratings, while the case for more intervention is built.

Finally, as laid out in the literature, the appropriate level of intervention depends on the extent of the market failure which initiated the need for regulation, as well as the market’s own potential incentives to correct that failure. Accordingly, where the market failure is deeply rooted and there are no market-based alternatives, more interventionist regulation may be justified. Yet, there may be simply no market-based alternatives where systemic risk is concerned. Even Schwartz, a strong proponent of efficiency-based regulation and private ordering solutions with respect to CRAs, has opined that systemic risk transcends economic efficiency per se. Without regulation, the externalities caused by systemic risk would not be prevented or internalized because no individual market participant would have sufficient incentive to limit its risk-taking in order to reduce the systemic danger to other participants and third parties.

This is consistent with the economic rationale for prudential supervision by various European bank regulators, including the UK Financial Services Authority which noted that ‘regulation for systemic reasons is warranted when the social costs of failure of financial institutions exceed private costs and such potential costs are not incorporated in the decision-making of firms’. The risk of having to adapt to future developments, and potential disharmony with international standards, has to be managed in the light of the more tangible dangers of systemic risk. Given

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72 See, Basel Committee on Banking Supervision, op cit n 23 supra.
75 See ibid.
76 See, Choi, op cit n 21 supra.
78 See ibid.
79 See, Financial Services Authority, op cit n supra.
80 See, Sy, op cit n 10 supra.
the gravity of this situation, there is a strong case here for regulation moving towards the Direct Oversight model, at least with regard to the CRA ratings of systemically important institutions.

V Conclusion

Reducing the potential for systemic risk from cascading ratings downgrades on banks after the onset of the recession is a powerful justification for increased regulation of CRAs. At the same time, many arguments against excessive interference in how CRAs conduct their business have been expressed and are not to be dismissed lightly. This article has, with support of key theoretical and empirical insights, discussed the various weaknesses in the through-the-cycle philosophy of bank ratings, and how time-lagged and averaged inputs significantly affect the performance of ratings. The incorporation of stress-testing in the rating process can help overcome these weaknesses, but regulatory oversight and co-ordination may be required to increase the focus in this area in relation to rated instruments in general, and harmonise the use of stress-tests for base-line comparison. A range of solutions, with varying levels of governmental interference, has been discussed in this article as potential next steps in the lawmaking initiatives of the Commission. Although there is unlikely to be any move towards a direction which may be viewed as direct intervention in CRAs’ methodologies, only significant changes in the fundamental rating methodologies can provide a real solution to the actual problem of unsatisfactory performance of ratings.
Annex

Financial Indicators used in Simulated Scores based on the Moody’s Bank Financial Strength Ratings Methodology

<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Weight in Overall BFSR Model</th>
<th>Adjusted Weight for Simulated Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability</td>
<td>Income before taxes and loan loss provisions as % of average risk-weighted assets</td>
<td>3.9%</td>
<td>11.8%</td>
</tr>
<tr>
<td></td>
<td>Net Income as % of average risk-weighted assets</td>
<td>3.9%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Liquidity</td>
<td>Market funds minus liquid assets % of total assets</td>
<td>2.8%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Capital</td>
<td>Tier 1 capital as % of risk-weighted assets</td>
<td>3.9%</td>
<td>11.8%</td>
</tr>
<tr>
<td></td>
<td>Tangible common equity as % of risk-weighted assets</td>
<td>3.9%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Efficiency</td>
<td>Total non-interest expense relative as % of total revenues</td>
<td>3.5%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Asset Quality</td>
<td>Problem loans as % of gross loans</td>
<td>3.9%</td>
<td>11.8%</td>
</tr>
<tr>
<td></td>
<td>Problem loans as % of (shareholders’ equity + loan loss reserves)</td>
<td>3.9%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Credit Risk Concentration</td>
<td>Exposure to commercial real estate and construction loans as % of Tier 1 capital</td>
<td>3.3%</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

Cumulative Accuracy Profile Plots Showing the Performance of CRA Ratings for Banks in 2007-9