# Sovereign debt: financial market over-reliance on credit rating agencies

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Markets can become excessively over-reliant on credit ratings. And market over-reliance risk (MOR), if we may call it that, can adversely affect sovereign debt issuance. By MOR, we mean the risk that ratings can affect bond yields quite independently from the supply of new information (*information discovery effect*). Excluding the behavioural explanations, the MOR depends on two factors: the fact that ratings are embodied in regulation (*ratings-based regulation effect*), and the communication policies adopted by credit rating agencies (CRAs) (*communication effect*). To reduce MOR, it would be necessary to eliminate ratings-based regulation on the one hand, and to introduce an element of liability into CRA communication policies on the other.

## 1. Introduction

Over the last five years, the volatility of financial markets has significantly increased. This upsurge in volatility, if it becomes structural, could be regarded as a negative phenomenon in that higher volatility is both a signal and a catalyst of uncertainty. And higher uncertainty tends to interfere with resource allocation.

From a macroeconomic point of view, the increase in volatility is particularly significant when it affects sovereign debt, for at least four reasons. First, government bonds represent a considerable share of today's financial assets: the sovereign debt of advanced economies has increased from about 75% to more than 110% of GDP.[2] Second, such bonds are generally held by small investors, ie citizens/voters, so that increased volatility translates into higher uncertainty in general expectations, with a higher risk of effects on the real economy. Third, volatility in sovereign debt also tends to affect the volatility of securities issued by resident corporations and banks.[3] Fourth, volatility in government bonds can trigger economic policy responses, which further amplify its effects.

Recently, CRAs have greatly extended their government bond-related activities: as of July 2010, Standard & Poor's was rating some 125 sovereign states; Moody's was rating 110 and Fitch 107 (IMF 2010). In general, the activity of CRAs can be a factor that contributes to the volatility of government bonds. The empirical analysis confirms this correlation: ratings-related news such as the publication of a rating or a revision of an outlook is linked to variations in government bond yields and/or spreads for the associated CDS.

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[2] Bank for International Settlements, 2012.

[3] Caporale et al, 2012; Williams et al, 2013.

First of all, negative ratings news tends to have a negative effect, while positive news seems to have less immediate consequences.[4] Also, the effect of negative ratings news significantly increased after 15 September 2008, the date of the Lehman Brothers' bankruptcy.[5] Second, for each country the effects of ratings news on yields and margins tend to reinforce each other[6] – a negative effect that has been noted by the European Union.[7] Third, a contagion effect among states is at work: ratings news tends to affect not only the issue that is the direct subject of the communication, but also the sovereign debt of other countries as well.[8] Fourth, the contagion effect also seems to hold across CRAs, with evidence of interdependence in rating evaluations,[9] and reduced but still existent heterogeneity.[10] Lastly, there is a persistence effect between one communication and another: the correlation between price and/or margin variations and ratings news is stronger if the CRA has already released a statement on the country in question in the preceding month.[11]

Thus ratings news seems to affect the prices and thus yields of government debt securities. But how can the relationship between ratings news and volatility be explained? Under what conditions does it have a positive or negative effect on financial markets? What are the implications for regulation?

The aim of this note is to try to provide answers to these three questions, by illustrating and discussing the three different explanations that economic analysis can offer about the relation between ratings and volatility of government bonds. The argument is simple: if volatility were only and always linked to new information contained in ratings news, the effect on markets would be consistent with the positive information discovery role that theory attributes to the ratings. But it is possible that volatility may depend on two other sets of factors: the effect of regulations embodying such ratings, and the communication policies adopted by CRAs. In that case, there might be a so-called market over-reliance risk (MOR)[12] that is damaging to markets, and which it might be advantageous to counter. Here we discuss a MOR that does not depend on behavioural biases[13].

The analysis will be based mostly on the literature devoted to CRAs that has been published during and after the 2008–09 economic and financial crisis. The aim is to achieve a better understanding of the relation between ratings news and markets after the structural break represented by the crisis. The article is organised as follows: in the next three sections are assessed the three most probable explanations of the correlation between ratings news and volatility. These are the

4 Reisen et al 1999, Hull et al 2004, Norden et al 2004, Kraussl et al 2005, Afonso et al 2012.

5 Afonso et al 2012.

6 Reisen et al 1999, Afonso et al 2012.

7 Barroso 2010.

8 Gaude et al 2010, Ismailescu et al 2010, Afonso et al 2012, Arezki et al 2011.

9 Alsakka and Gwilym 2010, Livingston et al 2010.

10 Hill et al 2010.

11 Afonso et al 2012.

12 In an early draft of this article (Masciandaro 2011) the effect is labeled as excessive volatility risk.

13 On the relationship between behavioural biases and financial market volatility see among others Shleifer 2000 and Barberis and Thaler 2003.

two traditional ones – the information view and regulatory capture view and a new one – the communication view. The concluding section draws the implications of the analysis in terms of prescription for regulation design.

## 2. Ratings news and the information discovery effect

In general, the activity of CRAs, as expressed through ratings news, can be a driver of volatility for government bonds. But this *per se* is not necessarily a problem. Ratings are by their nature procyclical. The role of ratings is to provide, through the publication of an opinion, information to markets on the likelihood that a bond-issuing agent – company, bank, and government institution – may renege on its commitments.[14]

A rating can be a significant channel for new information to the marketplace because it reduces information asymmetry (*information discovery*),[15] so that markets move in the direction of the opinion expressed. This can also produce changes in the issuer's funding cost (*cliff effect*).[16] In the case of positive ratings news, markets reward the issuing government, while the opposite occurs if the judgment is negative. In addition, information discovery can affect the future behaviour of the sovereign issuer, whose financial and economic policy choices can be either confirmed or modified according to whether the rating is positive or negative (*monitoring effect)*.[17]

In other words, if a rating offers new information to the markets, it contributes to lower macro credit risk, even if this comes at the cost of increasing macro volatility risk. Any ratings news, if it provides new information, has a positive externality, since it reduces credit risk, and a negative externality, since it increases volatility risk. But the net effect is positive by definition; the credit rating becomes a public good.[18] The more relevant that an item of ratings news is in terms of information discovery, the stronger an effect it will have on markets. In this case, the MOR tends to be zero.

But what determines the significance of ratings news? Since ratings news is an output, its significance must depend on the inputs that go into its production.

The credit rating industry, if we may call it that, has grown in accord with the laws of supply and demand. Starting in 1841 with the first CRA – the Mercantile Agency founded by Lewis Tappan[19] – this process has culminated in some 150 CRAs that are active all over the world.[20] Of these, about 140 are single-country and/or single-sector-oriented, while around five to 10 agencies based in Japan, the United

[14] Deb et al 2011,De Haan et al 2011, Schroeter 2011.

[15] Pagano et al 2010, Deb et al 2011, Freixas and Laux 2011.

[16] Deb et. al 2011.

[17] Boot et al 2006, Bannier and Hirsch 2010, De Haan et al 2011.

[18] Duan and Van Laere 2012.

[19] Deb. et al 2011

[20] De Haan et al 2011, Schroeter 2011.

States and Canada provide ratings news on more than one country or industry.[21] In the United States, there are 10 officially registered CRAs.[22] But the global market is dominated by the Big Three – Standard & Poor's, Moody's and Fitch – with market shares estimated at 40% each for Standard & Poor's and Moody's, and 15% for Fitch.[23] The number of issuers rated by Standard & Poor's has climbed from 1,386 in 1981 to 5,860 in 2009,[24] with the revenues of the CRAs increasing in line with this growth.[25]

The ratings news output is driven by the demand from capital markets investors for information on issuers of equities and bonds. It is this demand for information that ratings news is intended to meet (information discovery). Ratings represent an assessment of the probability that the issuer will regularly and completely fulfil its obligations.[26] The assessment is subjective and forward-looking; these two characteristics differentiate ratings from accounting reports, which by contrast are based on historical data and objective criteria.[27] CRAs are *information intermediaries:*[28] given information inputs from various sources and the technological and human capital at their disposal, they produce an information output with value added.

If a rating fulfils the function of information discovery, thereby reducing information asymmetry on the capital markets, it produces what we may call the *market certification effect* on the quality of both the security and its issuer.[29] The market certification effect sums up the net positive externality of ratings news: the action of private firms – CRAs – has a widespread effect on the efficiency of all markets. It thus produces a public good, since information can be consumed by all without risk of rationing,[30] and the effect on bond prices, volatility included, is a natural consequence. If the market certification effect holds, the MOR is null.

But on what depends this discovery of information, and hence the certification effect? The prime mover is the incentive for CRAs to build themselves a reputation (*reputation-building*).[31] The intuition is simple: faced with an issue and/or an issuer, a CRA seeks to give the best possible judgment, putting together public and private information on the one hand, and specialised human capital applying the best methodologies, on the other. As a CRA's reputation grows, its ratings news is bound to have a larger impact on the financial markets.

21 Schroeter 2011.

22 Deb et al 2011.

23 Schroeter 2011; the sum of the three reaches 98% in Partnoy 2009a.

24 Deb et al 2011.

25 See, for example, Lowestein 2008.

26 De Haan et al 2011, Schroeter 2011.

27 Deb et al 2011, De Haan et al 2011, Freixas and Laux 2011.

28 Partnoy 2009a, Schroeter 2011.

29 Deb et al 2011, De Haan et al 2011, Bosch and Steffen 2011.

30 Schroeter 2011.

31 Becker and Milbourn 2011, Mariano 2012.

There are at least three reasons why ratings news offers added value in informational terms. First, CRAs have access to non-public information sources (data inputs).[32] Second, they use higher-quality human capital and technology to handle such data. Third, CRAs have the correct incentives (goal function) to supply a quality product, independently from the state of the business cycle or the nature of the issuer.

However, recent economic analysis has called into question all three arguments that might justify the information discovery produced by ratings news, especially in the case of sovereign issues. Doubts originate from a general observation: ratings have proved ineffective on various occasions, starting with the Asian crises of 1997 and 1998,[33] in the case of California's Orange County default, as well as the Enron, WorldCom and Global Crossing cases, [34] and the structured finance defaults[35] that helped to trigger the 2007-09 financial crisis.[36]

The ineffectiveness of ratings news could be attributed to at least three different causes. First, the release of ratings on government debt, particularly if unsolicited, does not benefit from privileged information sources.[37] Secondly, it is open to question whether CRAs do, in fact, manage to attract the best human capital, given their salary and incentive structures,[38] especially when these are compared with those of other financial firms and institutions.[39] It is also debatable whether the human capital and the methodologies employed are adequate to the task.[40]

Finally, there can be biases in the behaviour of CRAs that lead to systematic distortions in ratings, quite independent of the issue and/or issuer involved. Let us list here only some of the relevant hypotheses in the economic literature. A first hypothesis is that the economic cycle has an effect on the degree of homogeneity of the rating expressed (*bandwagon effect*): CRAs tend to behave similarly during expansionary phases, while they tend to differentiate their opinions during recessionary phases of the cycle.[41] Such a finding would go against the assertion that ratings are constructed with cycle-smoothing techniques.[42]

A second hypothesis is that CRAs modify the rigour of their assessments in a countercyclical way, with a view to accommodating issuers who pay for their ratings (*accommodation effect*): in recessionary phases, opinions are more lenient, to help

32 Deb et al 2011, Van Roy 2012.

33 Ferri e Stiglitz 1999.

34 Partnoy 2009a, Deb et al 2011.

35 CGFS 2005.

36 PWGFM 2008, FSF 2008, Issing Committee 2009, Turner Review 2009, De Larosiere Group 2009.

37 Kormos 2008.

38 Bar-Isaac and Shapiro 2011.

39 Hill 2004.

40 Partnoy 2009a.

41 Croce et al 2011.

42 Cantor e Mann, 2007.

issuers find a market for their issues in more difficult market conditions.[43] More generally, the conflict of interest that is intrinsic to the relationship between CRAs and issuers can create biased incentives.[44] Indeed, the risk of conflicts of interest has increased in the last two decades. Before the 1970s, the rating industry was based on the investor-pays principle, while today the issuer-pays model has taken over.[45] Where the investor-pays principle applies, the quality of credit ratings is likely to deteriorate.[46] Thus the risk of biased ratings could be attributed either to the economic cycle,[47] or to the business model adopted by CRAs in which longer relationships with firms tend to produce higher ratings but not lower default rates.[48]

Summing up, the information discovery value of the ratings news is far from established. In spite of this, we have seen that ratings news continues to have important effects on market volatility. Thus, the relevance of ratings news may depend on other factors. In this case, the ensuing volatility would be excessive volatility, since the cost of the increase in volatility risk would not be offset by the benefit of any reduction in credit risk. The MOR is thus likely to exist. But from what factors does the MOR derive?

## 3. Ratings news and ratings-based regulation effect

The MOR of ratings news can be explained on the basis that ratings are used as an integral part of various types of banking and financial regulation (*ratings-based regulation*).

Ratings – starting with the first initiative by the SEC in this field in 1936[49] – have been progressively embodied in numerous regulations. In fact, ratings have been applied in at least four areas of regulation: eligibility requirements for regulated stock markets (again, the SEC was first in 1975[50]); classification of assets in portfolios of institutional and public investors; disclosure and valuation of assets in securitisation processes; and especially prudential oversight, the most pervasive example being the Basel Accords, starting with the 2004 iteration,[51] and continuing today with the Basel III 2010 Accord.[52] Ratings-based regulation has developed precisely because of the role of information discovery assigned to ratings.[53]

43 Wang 2011.

44 Deb et. al. 2011, Bolton et al 2012, Griffin and Tang 2009.

45 Freixas and Laux 2011.

46 Ponce 2012.

47 Ashcraft et al 2009, Bar-Isaac and Shapiro 2012.

48 Mahlmann 2011.

49 Schroeter 2011.

50 Deb et al 2011.

51 IMF 2010, Deb et al 2011, Schroeter 2011.

52 Basel Committee on Banking Supervision, 2010.

53 Schroeter 2011.

The embodiment of ratings in regulation has a direct effect on a security's or an issuer's marketability and hence influences an issuer's cost of debt capital.[54] As such, a rating thus becomes a sort of quasi-public license that affects the success of an issue (*license effect*).

There is a widespread consensus that the importance of ratings, and thus the significance of ratings news, has much increased since ratings-based regulation went into effect.[55] But if the increase in volatility risk, amplified by the license effect, were still based on information discovery, the net effect of ratings news could still be considered as a positive externality.

As time went by and doubts grew about the value of information discovery attributable to ratings, the hypothesis that the significance of a rating can itself depend on the role played by regulation has gained ground, irrespective of the informational content.[56] The license effect linked to ratings would then be among the causes of the recent financial crisis.[57] For example, let us consider the investors who were constrained by regulation to invest in triple-A securities, which could be drawn from a wide variety of asset classes – ABS tranches, corporate bonds, public securities – with very different return profiles. If regulation artificially pushes up demand for triple-A securities, distortions are more likely to occur.[58] Further, the act of rating a security incurs the risk of becoming endogenous; that is, the use of ratings-based regulation may increase the incentive to inflate these ratings.[59]

In other words, the quasi-public license effect ends up being independent from the market certification effect. In the presence of a license effect that explains the significance of ratings news, the volatility of the issue's value would be affected to a degree that is not justified by the rating's information content. Theoretically, the more probable the license effect is, the higher the MOR will be. In this case, given inaccurate public information, distortions are likely to occur in financial markets.[60] In other words, ratings news would only have the effect of causing an increase in volatility risk; it would not deliver the information benefits that reduce credit risk. Thus, the net externality would be negative (a public disbenefit).

## 4. Ratings news and the communication effect

The economic literature has yet to explore a third channel that may explain the link between ratings news and volatility: the communication policies of CRAs. It is surprising that such channel has been overlooked until now, in spite of the importance of communication that is intrinsic to the release of opinions by CRAs. In other fields of economics, significant progress has been made in the analysis of the

54 Kisgen and Strahan 2010.

55 Schroeter 2011, Deb et al 2011.

56 Partnoy 1999, 2009.

57 Partnoy 2009b.

58 Freixas and Laux (2011).

59 Opp et al 2012.

60 Pagratis 2005, Allen et al 2006.

role of communication in determining the effectiveness of the transmission of information: for example, in monetary policy, or more recently, with reference to the macrosupervisory role assigned to central banks.[61] The same type of research needs to be conducted on CRAs. In fact, keeping the level of information discovery constant, it is intuitively clear, for various reasons, that the significance of ratings news is linked to the communication policy (*communication effect)*.

First, the importance of communication is apparent, starting with the decision to express the rating evaluation as a particular grade; this represents a synthetic and immediate way of communicating, which is comprehensible to all investors, no matter what their level of financial literacy may be.[62]

Second, if the economic role of CRAs is that of information intermediaries, the effectiveness of their communication with the market must depend heavily on their choice of method and timing in transmitting ratings-related information. Thirdly, the choice of communication policy is even more important in the case where sovereign debt issues are evaluated, for the reasons we have outlined in the introduction.

Fourth, the increasingly important question of CRAs' accountability must be considered.[63] Discussion of this issue has so far been limited to the question of whether a CRA is liable for the opinions it expresses. But, since ratings affect markets through communication as well as their information content, the design of any mechanism for CRA accountability must necessarily reflect both these aspects of a CRA's activities.

The crucial point is that a communication policy is an integral part of information discovery. The more that ratings news contains information discovery, the greater becomes the psychological element in the volatility caused by the communication effect. Conversely, the more uncertain the content of information discovery becomes, the higher the risk of MOR will be.

The communication policy adopted by CRAs can be analysed from at least three different perspectives. First, the objective of communication must be established, which can be a rating change, a rating watch or an outlook.[64] In principle, we can hypothesise that the effect on markets will depend upon the type of communication: an evaluation expressed by a rating or a revision of an evaluation as expressed in an outlook announcement.

Second, the mode of communication must be considered. This can take the form of a press release, a press conference, or some other format. Third, the timing of communication must be investigated from two points of view: in absolute terms, by distinguishing periodical, institutional communication, which is predictable, from ratings news that is not predictable; and in relative terms, with respect to the functioning of financial markets (eg whether ratings news is communicated when markets are closed or open).

[61] For a survey see Born et al 2011.

[62] Schroeter 2011.

[63] Deb et al 2011, Schroeter 2011, Partnoy 2009, Freixas and Laux 2011.

[64] Alsakka and Gwilym 2012.

## 5. Conclusions

The activity of CRAs has effects on the volatility of sovereign bond yields and margins. If the effect on financial prices depended only on the information discovery function contained in ratings news, the negative effect would be more than offset by the positive effect in terms of more accurate information on which to evaluate credit risk. However, since the information discovery function of ratings news cannot be taken for granted, there is a risk of excessive volatility, linked to the fact that ratings have become embedded in regulation, or because of the communication policy adopted by CRAs. The MOR is likely to exist. From these considerations, two types of conclusion can be derived, which are linked respectively to positive and normative analysis.

When considering the association between ratings news and volatility, it is important to conduct empirical studies aimed at distinguishing the relative influence of the market certification effect (of the quasi-public license) and of communication effects. As far as the regulatory implications are concerned, the resulting excessive volatility is a negative macroeconomic phenomenon.

If it was decided that the risk of excessive volatility needed to be eliminated, we would have to act on at least two fronts. On the one hand, ratings-based regulation would have to be abandoned. Over the last few years, a growing weight of opinion has swung behind the view that the role of ratings in regulation should be reduced, at least over the medium term.[65] This trend should be encouraged and accelerated. Delays would tend to support the thesis that, especially in the United States, regulators and politicians have been slow to intervene on the ratings question owing to strong lobbying by the CRAs themselves.[66] On the other hand, when considering proposals for new regulation[67] aimed at increasing the accountability and liabilities of CRAs, the issue of communication policy should be dealt with explicitly and head on.

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[65] BCBS 2009 e 2010, FSB 2010, SEC 2011; for a survey, see Deb et al 2011. See also Eijffinger 2012.

[66] Partnoy 2009a.

[67] On the undergoing EU regulation on CRAs see Lannoo 2011, Staikouras 2012.

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