

Do Global Credit Rating Agencies Think Globally?

The Information Content of Firm Ratings around the World

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Abstract

What is the information content of firm ratings? We disentangle the relative contribution to firms' ratings of sovereign risks and individual firms' performance indicators, reportedly employed by rating agencies. We reach three conclusions. First, sovereign risks' contribution is disproportionately greater in developing countries vis-à-vis developed countries. Second, even controlling for the "country ceiling effect"—private ratings being constrained by their sovereign's rating—firm ratings' information content is much smaller in developing countries. Third, cross-country indicators of information quality help explain but do not solve the puzzle entirely. Thus, global rating agencies do not (yet) think globally.

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I. Introduction

Credit rating agencies are an integral part of modern capital markets. Their assessments on sovereign and corporate entities have been increasingly used as benchmarks by regulators and investors.¹ The rating industry counts only three major world players—Moody's, S&P, Fitch-IBCA, all originated in the USA—that have become global following the dramatic growth of international financial markets.² But do these global rating agencies really think globally? In other words, do they convey to markets high-quality information on borrowers in both developed and emerging economies?

This question has become pertinent after the harsh criticism of rating agencies following the East Asian financial crises. Besides, their expected world-wide influence will certainly be further expanded by the new Basel criteria linking bank capital asset requirements to corporate and sovereign ratings (Basel Committee on Banking Supervision, 2001). Indeed, in the course of the recent financial crises, rating agencies have been criticised for their pro-cyclical rating behaviour, which may have exacerbated the massive capital outflows from crisis countries. Given the considerable influence rating agencies exert on financial markets, their rating behaviour and methodologies have also come under close scrutiny.³ Studies on rating agencies' sovereign rating assignment have been extensive.⁴ However, our understanding has so far been limited as to how credit rating agencies rate firms differently around the world. Specifically, cursory evidence and some research findings underline that rating criteria used for firms in developing countries differ with respect to those reserved to firms in developed countries.

Indeed, this has become a critical issue as a tight linkage between sovereign and firm ratings seem to hold for developing countries but not for developed ones (Ferri, Liu, and Majnoni, 2001). Specifically, whenever developing countries suffer a sovereign downgrading, firms' ratings in those countries will also be adversely affected: The correlation is large, close to 0.7 for industrial firms in developing countries, whereas it is negligible for firms in developed countries. Such rating behaviour is likely to put firms in developing countries in a rather disadvantaged position whenever their sovereign experiences a downgrading and/or during an economic downturn.⁵ Such distinct rating

¹ For example, this happens for institutional investors who are generally bound by securities regulations prescribing that they only invest in assets that are rated above the investment grade.

² See White (2001) for a critical assessment of the degree of competition and contestability in the credit rating industry.

³ IMF (1999), for example, provides a comprehensive discussion of the problems faced in assigning ratings in developing countries and the analytical methodology used by credit rating agencies during recent crises.

⁴ Among others, see Ferri, Liu, and Stiglitz (1999) and Monfort and Mulder (2000) for recent assessments and Cantor and Packer (1994, 1996) for early analyses of rating agencies' behavior on sovereign ratings.

⁵ Although Ederington, Yawitz and Roberts (1987) show that market yields on bonds do reflect publicly available financial statistics on issuers, besides the ratings of the issue, this evidence is hardly relevant to our context. Indeed, their data refer to the US and do not reflect the information asymmetry of LDCs.

pattern naturally raises questions. Specifically, how do rating agencies distinguish credit risks vs. their corresponding sovereign risks for firms in developing countries?

This paper addresses such a question. Specifically, the paper examines the contribution of firm-level information in each individual firm's rating assignment, in addition to its corresponding sovereign rating. The revealed importance of firm-specific information as measured in weights is compared with that of the firm's sovereign ratings. Furthermore, the causes of the difference between developed and developing countries are carefully scrutinised. The paper also investigates the relationship between the level of information disclosure and the importance of firm level information in the assignment of firm ratings. In all, we assess and compare the ability of rating agencies to reduce information asymmetry under different market environments.

To carry out our examination, we ventured to build a large data-base accurately matching around the world sovereign ratings, individual firms' ratings and those individual firms' risk indicators that rating agencies reportedly use in rating assignments. The data-base covers three years: 1997, 1998 and 1999, a relatively homogeneous period as to regimes of international mobility of capital. We also complement our data-base with the widely used law and finance indicators proposed by La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) as well as with the information quality indicator recently proposed by Chan-Lee (2001). On this, we have some a priori. First, comparably less public information on individual firms may be available in countries endowed with underdeveloped financial markets that are therefore more opaque. Second, any time rating agencies disclose additional information on individual firms' risks, such action should have more value the more opaque is the market. Third, rating agencies' ability may, however, be inversely related to the degree of countries' financial market opaqueness.

We reach three main findings. First, we show that sovereign risks' contribution to firms' ratings is much larger in developing vis-à-vis developed countries. Second, even controlling for the "country ceiling effect"—private ratings are bound not to exceed their sovereign rating—firms' idiosyncratic information is largely irrelevant in developing countries. Thus, the information content of developing countries' firm ratings is much smaller than in developed countries. Third, we find that cross-country indicators of information quality, rule of law etc. help explain this unsatisfactory situation but do not solve the puzzle entirely.

We proceed by first discussing rating methodologies of major international rating agencies (Section II). Their track record in providing information to investors in their assessing sovereign and firm risks in developed and developing countries is then considered. The core of the issues raised in this paper and methodology of econometric estimation are discussed in Section III. Section IV presents the data used for the empirical estimation. The information content of firm-level ratings—i.e., idiosyncratic risk vs. country risk—is empirically examined in Section V. Section VI concludes and discusses policy implications.

II. Rating Methodology of Global Credit Rating Agencies

II.1 The General Principles

Possibly under mounting pressure from market participants, international institutions, and academia, global credit ratings agencies (GCRAs) have recently started to publish their ratings criteria. These publications help one to gauge GCRAs' rating philosophy and methodologies on various issue types and issuer ratings. A firm's desire to obtain a credit rating is often motivated by its need to issue liabilities in capital markets. Information asymmetry vis-à-vis investors is perhaps the major obstacle to the firm's endeavour. The firm has to seek a rating from an independent credit rating agency to reduce its information asymmetry. Thus, banks and institutional investors usually rely on external ratings as a yardstick for the borrower's credit and default risks. To be sure, a firm incorporated outside the US, the EU, and Japan and attempting to raise funds there *de facto* needs to preliminarily obtain a rating from a GRCA.⁶

The process to obtain a credit rating on a particular issue usually starts with a request from the firm who has expressed an interest in securing a rating before a bond issuance.⁷ After signing a letter of rating agreement, a series of meetings between the issuer and the rating agency ensues. Analysts and corporate financial officers then exchange relevant queries, views and information. The time needed to assign the rating usually is about 6 to 12 weeks (S&P, 1998), that can be reduced in case of urgent market need or if the firm is forthcoming with information disclosure and/or its financial statements are highly accurate. Fees charged on the issuer vary with the nature of issues or issuers and time to assign the rating. GRCAs will ensure confidentiality if sensitive information of the firm is provided. In this sense, since rating agencies have access to information out of reach for other market participants, ratings should better reflect the firm's ability to honour its debt obligations. Nevertheless, commonly, rating assignments are mainly based on publicly available information.⁸

Table 1 summarises rating criteria published by S&P and Moody's. Criteria encompass both qualitative and quantitative indicators. In general, a firm's growth potential, its capital requirements, the degree of competition in its market and industry, its productive diversification and ownership structure are included as business risks. For example, management quality is judged an important element in determining a firm's ability to honour its debt obligations; but it is also difficult to quantify. It will be up to the analysts to evaluate by probing managers about their risk profiles, strategies and management philosophy. Subjective judgements often play an important role in this part of the rating process. However, a firm's financial performance track record can be a reliable proxy of management quality. Analysts also evaluate other qualitative information.

⁶ This is true even though rating fees charged by GCRAs are in general higher than at domestic or local credit rating agencies.

⁷ To be sure, recently issuers have been requesting credit ratings also for other purposes, even in the absence of current bond issuance. The sophistication and innovation of financial products postulates increased use of such issuer ratings. In addition, in some cases, rating agencies elaborate "unsolicited" ratings, to be disclosed to the public only in case the interested party has no objection.

⁸ Reliability and accuracy of publicly available information depends on the level of information disclosure. As discussed below, this is a problem for firms in LDCs.

Obviously, a firm's ability to honour its debt can be best assessed from its income statements, balance sheets, and financial performance ratios. This quantitative information includes a set of indicators likely determining the issuer's ability to generate future income. Perhaps the most important ratio is whether the firm can generate cash to meet its debt repayment (Moody's, 2000). Usually, the cash flow adequacy ratio is measured by the firm's coverage on its interest rate obligations. The second most important financial indicator is whether a firm has overly extended itself, as measured by its debt leverage, often reflecting the firm's capital structure and assets protection. The third most important class of indicators refers to profitability and efficiency. The firm's returns on equity, on assets, or on permanent capital are often used to this purpose. These indicators can also help to track the firm's management quality. Finally, other financial risks—e.g. the firm's resilience to business cycles and its financial flexibility in a stress scenario—are also considered. These stress tests, however, are not based on true forecasts of the firm's future performance but on its past performance as revealed by its 3 to 5 year financial statements.

Although financial statements and ratios cannot fully represent the firm's ability to service debt, GCRA's systematically compare their ratings with firms' financial ratios. Table 2 relates rating categories to firms' financial indicators pertinent to cash flow, capital structure, profitability, and financial flexibility for a group of 967 US-based firms. Several distinct features stand out prominently. First, the higher the firm's rating, the higher its interest coverage ratios (EBIT and EBITA interest coverage), as well as its funds flow/total debt and free operating cash flows/total debt. Thus, the firm's cash flow and liquidity are very important determinants of its rating. Second, high-rated firms generally show superior return on capital and operating efficiency. Third, and not surprisingly, rating levels negatively relate to firms' leverage ratios, measured by long-term debt and/or gross total debt. Indeed, as rating grades move below BBB, the "border line" between investment grade and speculative grade, financial ratios—especially interest coverage, profitability, and leverage ratios—markedly deteriorate.

The firm's geographical location is a very important determinant of its rating. This is critical for firms located in non-OECD areas since country (i.e. sovereign) risks are closely related to firm-level risks. To some extent such a relationship is justified by a well-observed yet not well documented phenomenon, namely macroeconomic cycles are more vicious in Less Developed Countries (LDCs) than in Developed Countries (DCs). Firms will directly suffer such macroeconomic shocks, irrespective of their management and operations. This is especially true when countries are going through a current account cum financial crisis (the "twin crises" of Kaminsky and Reinhart, 1999), or are experiencing political and civil strife. This is perhaps why a country-ceiling is normally capped on local firms. Such consideration is legitimate particularly in sectors, such banking, where the impact of an adverse shock—e.g. a balance of payment shock—is inescapable.

Similarly to those for firms, sovereign rating criteria include both qualitative and quantitative aspects.⁹ Sovereign ratings not only weigh countries' tangible ability to

⁹ See S&P, Moody's and Cantor and Packer (1994) for a survey of sovereign rating criteria.

service debt, but implicitly evaluate their institutional quality, e.g. rule of law, political stability, and commitment to carry out rule-based capital market transactions.

II.2 The Unsatisfactory Situation with LDC Firms' Ratings

The country ceiling based rating behaviour has unpleasant side effects for firms in LDCs. Any sovereign downgrade tends to trigger also a firm downgrade (Ferri-Liu-Majnoni, 2001). The impact is asymmetric as average firm downgrades generally follow a sovereign downgrading whereas a sovereign upgrading does not necessarily lead to an average firm upgrading

Such unsatisfactory rating behaviour also has serious consequences: First, too tight a link between firm and sovereign ratings will make it difficult for investors to distinguish country risks vs. idiosyncratic credit risks of firms in emerging markets. As a consequence, investors tend to shun all sectors of the country, perhaps one of the reasons behind the herding behaviour of international capital flows to developing countries. Indeed, rating agencies have also realised that the tight bond between firm and sovereign ratings tends to impose constraints on the accurate pricing of risks.

Second, simply relying on sovereign risks to determine firm ratings, without carefully analysing credit risks of firms, can be sometimes misleading, as with the defaults of China's Guangdong International Trust and Invest Company (GITIC) and the Hainan Development Bank. Since information disclosure on these firms was poor, GCRA's assigned ratings on the assumption that the state was the implicit guarantor. The perceived state guarantee allowed the two companies to get ratings that were not consistent with their financial performance and management quality.

Third, poor firm-level information disclosure is frequently held the reason for using the sovereign rating as the benchmark for corresponding firm ratings. However, the role of rating agencies is to process financial information on individual issuers to reduce the information asymmetry between them and investors. If GCRA's do not examine closely the firm's performance, one wonders whether they are effectively exercising their due diligence before assigning a firm rating. This is crucial also because firms pay to get rated. Doubts are then cast on GCRA's efficacy in reducing information asymmetry in emerging markets.

Fourth, current regulatory changes will further empower credit ratings. Despite imperfections in rating behaviour and methodologies especially felt during crisis episodes, past experience shows that, under normal circumstances, GCRA's facilitate the efficient functioning of capital markets. The new Basel Accord on bank capital requirements (Basel Committee on Banking Supervision, 2001) promotes the role of GCRA's external ratings. The new Accord modulates capital/asset requirements according to whether banks' counterparts are rated and, when rated, according to the level of their ratings. Accordingly, developing countries may suffer two disadvantages. First, as ratings are generally low and less widespread in LDCs, capital requirements—and hence the cost of credit—may increase irrespective of corporate performance. Second, if private ratings in LDCs are excessively sensitive to sovereign ratings, the impact of sovereign downgrades will be amplified by the new Basel criteria.

III. Estimation Framework

We first review the literature before presenting our model specification. Using firm performance indicators to predict rating consistency/accuracy is not novel. Studies taking this approach have been extensive. It is found that a few financial statistics—e.g. interest coverage ratio, profitability, leverage, and asset size—can predict approximately two-thirds of ratings (Ederington, 1985). The fact that financial indicators alone cannot fully predict ratings is not surprising.¹⁰ Past studies show that credit ratings indeed disclose to the market useful information beyond that contained in firms' financial ratios, depending on the timeliness of credit reviews by GCRA's (Ederington, Yawitz, and Roberts, 1987).

Existing studies mostly focus on the accuracy of GCRA's ratings. Though differentiated by sector, samples in these studies typically include US firms only. Thus these studies are unable to address the impact of sovereign risks on individual firm ratings. This approach is unsatisfactory when referring to a diversified range of firms from different countries and regions.

III 3.a Estimation Model

We assume that, for profit reasons, a rating agency attempts to capture a firm's risk in its rating assignment as accurately as possible. This is because GCRA's rely on their accuracy to predict default and their reputation capital to generate continuous business. This motivation can be formalised by minimising the squared distance between a firm's true risk, R_{it}^t and its assigned firm rating, R_{it}^f . The rating agency's utility function can be modelled as follows:

$$U_{it} = -[R_{it}^f - R_{it}^t]^2 \quad (1)$$

Where R_{it}^t consists of two components: one related to the firm's idiosyncratic risks (or credit risk) and the other related to the overall macroeconomic risk, as captured by the sovereign risk, R_{it}^s . The subscript i represents firms and t represents the sample's time horizon. Hence, R_{it}^t can then be formulated as follows:

$$R_{it}^t = aR_{it}^c + bR_{it}^s \quad (2)$$

Where R_{it}^c is the firm's idiosyncratic risk and R_{it}^s is the aggregate risk of the country where the firm is located. For the sake of simplicity, we assume that the

¹⁰ For example, Ederington (1985) shows that an unordered logit model performs better than linear, ordered probits, and linear discriminant ones. Resti and Omachi (2001) using a logit model demonstrates that unexplained discordant pairs are large enough that one cannot totally rely on financial indicators alone to predict ratings since credit rating analysts do use their subjective judgment in assigning ratings. Similar studies, looking at Moody's banking sector strength ratings, like Laruccia and Revoltella (2000) and Poon, Firth, and Fung (1999) also validate the financial indicator approach in predicting rating consistency/accuracy: Though from a different angle, their evidence implies that credit ratings possess more information than financial indicators alone.

aggregate country risk can be fully captured by the sovereign rating. Based on the previous section, we know that both qualitative and quantitative indicators are used to determine firm ratings. Although qualitative indicators are hard to assess, they are also important. The quantitative indicators are basically derived from firms' balance sheet data, usually related to cash flows, profitability, leverage ratios, and asset size. R_{it}^c can be further decomposed as follows:

$$R_{it}^c = \mathbf{h}R_{it}^q + (1-\mathbf{h})R_{it}^l \quad (3)$$

Where R_{it}^q and R_{it}^l summarise quantitative and qualitative rating criteria, respectively. Thus, the rating agency's detailed utility function becomes:

$$U_{it} = -[R_{it}^f - \mathbf{a}(\mathbf{h}R_{it}^q + (1-\mathbf{h})R_{it}^l) - \mathbf{b}R_{it}^s]^2 \quad (4)$$

Maximising with respect to the rating agency's rating, R_{it}^f , we have following first order condition:

$$R_{it}^{f*} = \mathbf{l}R_{it}^q + \mathbf{m}R_{it}^l + \mathbf{b}R_{it}^s \quad (5), \text{ Where}$$

$$\mathbf{l} = \mathbf{a}\mathbf{h}$$

$$\mathbf{m} = \mathbf{a}(1-\mathbf{h})$$

In order for us to interpret the results in terms of contribution weights to the firm's rating assignment of each of the three components, i.e., R_{it}^q , R_{it}^l , and R_{it}^s , we then normalise the coefficients of these variables by imposing a constraint: $\mathbf{m} = 1 - \mathbf{l} - \mathbf{b}$. Finally, we can further rewrite the estimation equation as follows:

$$R_{it}^{f*} = \mathbf{l}R_{it}^q + \mathbf{b}R_{it}^s + (1-\mathbf{l}-\mathbf{b})R_{it}^l \quad (6)$$

Other than the firm's quantifiable rating criteria and sovereign risk ratings, R_{it}^l is not observable. Following a procedure similar to that used by Levitt (1996), we can rewrite equation (6) using an indicator variable notation:

$$R_{it}^{f*} = \mathbf{l}R_{it}^q + \mathbf{b}R_{it}^s + [(1-\mathbf{l}-\mathbf{b})R_{it}^l] * I_{it} \quad (7)$$

where I_{it} includes firm specific dummies.

III.b Estimation Approach

Our optimal aim is to estimate equation (6) in a way to identify the weight of the qualitative rating criteria (R_{it}^l) and ascertain whether such weight varies across developed and developing countries. However, this will put a restrictive requirement on the data. A large enough panel data-set is needed for such an analysis because of the loss of degrees of freedom directly related to incorporating I_{it} dummies. As discussed below, we only have three-year-averaged cross-sectional data for 543 firms from 46 countries. We assume that financial indicators implicitly encompass qualitative indicators about a firm.

Thus, predicted ratings using financial performance data of rated firms should contain both qualitative and quantitative assessment of rating agencies on rated firms.

Accordingly, we estimate a revised econometric specification:

$$R_{it}^{f*} = \mathbf{I}R_{it}^{ql} + \mathbf{b}R_{it}^s + \mathbf{I}_1^{LDC} R_{it}^{ql} + \mathbf{b}_1^{LDC} R_{it}^s + \mathbf{e} \quad (8)$$

where R_{it}^{ql} is the estimated firms' rating, supposed to contain both qualitative and quantitative assessment of ratings. $\mathbf{I}_1^{LDC} R_{it}^{ql}$ and $\mathbf{b}_1^{LDC} R_{it}^s$ identify the expected specific effects for LDCs. The specific regressors employed are detailed below.

IV. The Data

Matching firm ratings with corresponding performance indicators was painstaking, especially since we assembled a data-set of 547 firms scattered in 46 countries across the globe. We decided to use the data published by S&P's credit statistics because of its relatively large coverage of firms from emerging economies and its overall consistency. We exclude US firms from the sample because of their large number and homogeneity. Furthermore, we use only long-term issuer's ratings, to avoid inconsistency arising from different types of issues. We are able to compile a data-set consisting of ratings and of a set of average performance indicators for the three years 1997-99. Table 3 presents the distribution of countries as well as firms by country. Almost a quarter of firms are from LDCs. Summary statistics of ratings of the data-set are presented in Table 4. The comparison with US firms' performance presented in Table 1 is revealing. For firms rated between A and AAA in our sample, interest coverage ratios as measured by EBIT and EBITDA interest coverage are in general lower than for US firms. Returns to capital and operating income margin, a measure of firms' efficiency, are also lower than those of US firms, so are the leverage ratios. However, when measured in terms of absolute numbers with respect to sales, equity, and assets, our AAA-rated firms have a much larger median value than the US firms. This is also true for our AA-rated and A-rated firms. This comparison also suggests that US firms are more efficiently run than the firms in our sample if using the same set of categories. This may also be attributed to market discipline and competition. A similar pattern also emerges for our B, BB, and BBB rated firms.

Firms from emerging economies are generally rated BBB or below (Table 5). This is largely due to the "country ceiling effect": sovereigns in these countries are also rated BBB or below. Compared with other firms in the sample, firms from LDCs are more profitable. They are also quite efficiently run as indicated by their operating income/sales ratio. Generally, they have a large equity and asset size. Finally, contrary to commonly held views, leverage ratios are lower in emerging economies.

Compared to the US firms presented in Table 2, non-US firms in our sample have lower interest rate coverage and operating efficiency. Thus, US firms tend to have higher leverage, within rating categories, but with less equity and assets.

V. Empirical Results

V.a Idiosyncratic vs. sovereign risks

In the first step of our analysis we estimate firm ratings based exclusively on those quantitative performance indicators that rating agencies reportedly use. The decision as to which specific indicators to include in the estimating equation depends on both our priors and statistical significance. Table 6 presents the statistical relationship between actual ratings assigned by a rating agency and a set of financial indicators using a step-wise regression. As shown in column I of Table 6, EBITINT, the interest coverage ratio, ROC, the return on capital, OPERINC, the ratio of operating income to sales, DEBTRATIO, the debt leverage ratio, TOTASSETS, the total assets are all statistically significant and also have the expected signs. Specifically, a firm's liquidity (EBITINT), profitability (ROC, OPERINC), size (TOTASSETS) are positively related to ratings, whereas, as expected, the debt leverage ratio (DEBTRATIO) is negatively related to firm ratings. In addition, as indicated by column II of Table 6, GOVTOWNER, a dummy taking value 1 for firms owned by the government, SUBSDIARY, a dummy taking value 1 for subsidiaries of foreign companies, are also factors affecting a firm's rating.¹¹ In addition, some of the sector dummies are also important. In practice, the coefficients estimated from Column II of Table 6 are used to approximate the firm's estimated rating, which is then used as a proxy to represent the firm's "true" credit risk.

Next, we investigate the determinants of actual firm ratings, assessing the contribution of the estimated firm rating along with that of the sovereign rating of the country where the firm belongs. Table 7 presents the basic results on the contribution of firm and sovereign risks. To facilitate our discussion, we take logs on sovereign and firm ratings.¹² Columns in set I present the results using OLS; columns in set II also use OLS but adjust for heteroschedaticity;¹³ and columns in set III re-run the same equations using two stage least squares with instrumental variables. We now discuss our main findings in turn.

Column IIA examines the relationship between a firm's actual rating and its corresponding firm credit risk and sovereign risk. The dependent variable is the average firm rating. The explanatory variables are the estimated average firm ratings derived (from Table 6) and the average sovereign ratings. Specifically, AVGFRAT1 represents estimated average firm ratings; AVGSRAT represents actual sovereign ratings; NONOECDFRAT1 is the result of multiplying AVGFRAT1 by NONOECD, a dummy taking value 1 for countries that not belonging to the OECD. NONOECDSRAT is the result of multiplying AVGSRAT by the NONOECD dummy. The basic idea behind inserting these two variables is to ascertain whether AVGFRAT1 and AVGSRAT have a different impact for OECD vs. NONOECD firms.

¹¹ LISTED, a dummy taking value 1 for firms listed in the Stock Exchange, didn't turn out significant.

¹² This implies that the original function form is Cobb-Douglass, i.e. $R_{it}^f = (R_{it}^{ql})^l (R_{it}^s)^b$. As the link between firm and sovereign ratings is not theoretically based, we avoid imposing restrictions on λ and β .

¹³ Using the Breusch-Pagan test, we detect heteroschedaticity. We then use the White (1980) methods to adjust for heteroschedaticity.

Indeed, the results of the estimation by OLS are quite revealing. As expected and given the dominance of the firms from OECD countries, the message from these results is that sovereign risks are not important; while firm credit risks play a major role in determining a firm's actual credit rating. However, if we disentangle the effects by country groups, the impact of firm and sovereign risks in a firm's rating tends to be differentiated. AVGFRAT1 is more important for OECD countries, where its elasticity is 1.3, indicating that one percentage point change in the credit risk of a firm associates to a change of more than 1 percentage point in the actual rating of the firm. The opposite holds for NOE OECD countries, where the elasticity is 0.49. Such a contrast is most prominent for the effect of the sovereign risk on actual firm ratings, that is absent for OECD firms but is very large for NONOECD firms. For the latter firms, the elasticity of NONOECD SRAT is 0.58, implying that one percentage point change in the sovereign risk will contribute to about 0.6 percentage point change in the actual firm rating.

As discussed above, this strong effect of SOVRAT in LDCs could stem from the sovereign ceiling effect. In view of this, we estimated two additional specifications of the rating's determinants equation. First, we dichotomise NONOECD FRAT1 into NONOECD FRAT1A—firms whose AVGFRAT1 lies at or above their SOVRAT, candidates for a binding sovereign ceiling—and NONOECD FRAT1B, the other firms whose AVGFRAT1 lies below their SOVRAT. Regression results are presented in column IIB of Table 7.

The results show that in this specification the effect of NONOECD FRAT1A is smaller (only 0.37 compared with a general effect just above 1) and that of NONOECD SOVRATA is even stronger (0.77), while SOVRAT turns out to be significant here, albeit with a small coefficient (0.14).

The results for the other firm group—whose AVGFRAT1 lies below their SOVRAT—are presented in column IIC of Table 7. As expected, the impact of an individual firm's credit risk has a higher contribution (0.56) compared with that in column IIB. In addition, the contribution of the sovereign risk to actual ratings tends to be higher as well (0.90), implying that sovereign risks are even more important when the country ceiling is binding.

To check that our results are not driven by endogeneity, we re-estimate specifications IIB and IIC using two stage least squares with instrumental variables.¹⁴ Results are reported in columns IIIA, IIIB, and IIIC of Table 7, respectively. Although the results presented in IIIA are qualitatively similar to those in IIA, the size of the coefficient changes considerably. The impact of the sovereign effect for developing countries increases from the previous 0.58 to the current 0.69 and the impact of firm credit effect decreases from the previous 0.49 to the current 0.18. The most notable change occurs to IIIB and IIIC when instrumental variables are applied. On one hand, the

¹⁴ The instruments employed are GDP per capita, rule of law index, Frankel and Romer (1999) derived natural trade as a measure of openness, distance from the equator, and some sector dummies. Except for sector dummies, they are all in logs. We also examine the correlation of these instruments with the regressors as a way to test the robustness of the instruments. Our results indicate that these instruments are highly correlated with the regressors and the rationale for using such variables is in line with the recent literature on economic openness and institution quality and economic development such as Hall and Jones (1999) and Frankel and Romer (1999).

specific coefficient of AVGFRA1A becomes 1.186 but that of NONOECDRA1A reaches -1.991 , thus rendering negative (-0.81) the contribution of firm risks for non-OECD countries. On the other hand, the contribution of sovereign risk becomes overwhelming. The coefficient increases from the previous 0.76 to the current 2.03. Such a result implies that when the country ceiling effect is binding—i.e., the estimated firm rating exceeds the actual sovereign rating—the information content of actual firm ratings is mainly driven by the sovereign information. Any firm credit risk information has little bearing, if at all, to actual firm ratings. The results for firms whose country ceiling is actually non-binding—i.e., the estimated firm risk is actually lower than its sovereign risk—are more or less consistent with IIC. The elasticity of NONEOECDRA1B is 0.21, but is not statistically significant. Similarly, the elasticity for sovereign non-OECD countries is above 1, but is not statistically significant, either. Even though the results may be sensitive to the instrumental variables used, what they imply is that our qualitative results appear robust.

V.b Discussion

We discussed above the less-than-fully-satisfactory pattern of how rating agencies rate firms from developing countries. The fundamental question is why don't GCRA's give to firms' performance indicators in LDCs a weight comparable to the one they normally use in developed countries? To our knowledge, the theoretical literature hasn't yet provided satisfactory explanations to this specific problem. Nevertheless, based on related literature, two possible arguments emerge: one hinges on the industrial structure of GCRA's and the other stems from the existence of perverse strategic incentives for GCRA's.

The first argument runs as follows. As it is well known, the rating industry shows low or non-existent competition and contestability. Accordingly, we can assume that GCRA's—at least jointly but possibly even on an individual basis—enjoy a non-negligible market power. Thus, GCRA's may extract rent from rated entities: In spite of the little data available—a case of little transparency by agents advocating for maximum transparency—White (2001) documents that bond rating is quite profitable. Although, this raises a distributive problem it does not question yet the industry efficiency. However, their market power might lead GCRA's to indulge into under-investing, which would indeed cause inefficiency. If GCRA's, in fact, invest less than the socially optimal amount in collecting and processing information on rated entities, the quality of the ratings they issue is sub-optimal. The next question is: Why should GCRA's' under-investment problem be more acute for LDCs than for DCs? The argument here may go along the following lines. Even though exit is precluded by the lack of competition, GCRA's' customers and authorities could use voice to induce GCRA's to invest more in collecting and processing information on rated entities. But the bulk of their customers—both rated entities and investors—and the authorities they may listen to (e.g. the SEC) are based in developed, not in LDCs. According to this interpretation, it would be plausible that the information content of firm ratings in LDCs is lower because GCRA's invest less there in collecting and processing idiosyncratic information. More specifically, under-investment in LDCs might not necessarily be in absolute terms, i.e. less effort per rated entity. Rather, it could be in relative terms, i.e. the number of analysts per rated entity

could even be higher in LDCs, but not high enough to compensate for the lower information quality in these countries. Therefore, even if we were to recognise that the quality of information in LDCs is not as good as in DCs, there would still be a question as to why GCRAs do not invest enough in LDCs.¹⁵

The second argument descends from the possibility that there exist perverse incentives within a repeated strategic interaction framework between GCRAs and investors. Bernheim (1994) tries to explain why we observe that often the conveying of information among parties is governed by conformity, i.e. party A will not necessarily tell party B what party A knows or thinks, but rather what party A believes best in order to build the reputation she needs with party B. Loury (1994)—through a non-formalised paper—and Morris (2001)—using a formal model—apply this reputation approach to explain political correctness. Extrapolating from this literature, we propose the following explanation for GCRAs' unsatisfactory rating behaviour in LDCs. Suppose investors in developed countries are somewhat negatively prejudiced with respect to the performance prospects of firms in LDCs. If the rating agency were to issue a strong positive signal on an LDC firm by granting it a rating above its sovereign, it would indeed be a powerful indication for investors. However, if the rating agency cares maintaining a reputation of being conservative, it may have insufficient incentives to grant such a rating. The rating agency, in fact, cannot be 100 per cent sure that the LDC firm will actually outperform. Something could always happen and it is not optimal for the rating agency to take the risk of loosing its reputation. Accordingly, although often the rating agency knows that the rated LDC firm is very good, it will have the incentive to conform the issued rating to the negative prejudice held by investors in developed countries.

V.c Information quality and firm rating quality across countries

In essence, what we argued hitherto can be summarised as follows: Due to the spontaneous evolution of financial markets and to regulation, rating agencies are becoming more important on a global scale. In spite of the drop in the cost of acquiring information, owing to technological progress, the role of GCRAs is thus becoming even more fundamental for the working of world financial markets. Based on previous papers and on additional arguments, we have questioned the ability of GCRAs to provide investors with adequate guidance as to the specific risks of individual firms in LDCs. Our suspicion is that GCRAs do not (yet) adequately de-couple individual firm ratings and sovereign ratings in these countries.

Nevertheless, we know that information quality and reliability varies widely across countries. Then, does the smaller information content in firm ratings in LDCs simply reflect the fact that information quality is poorer in these countries? The key difference between emerging and mature capital markets concerns information disclosure and its enforcement, often descending from the enforcement of the rule of law. If rating agencies cannot trust the information published by firms in LDCs, they may tend to rely on benchmark information such as sovereign and macroeconomic information—which is compiled in a consistent framework and published by international organisations (e.g. the

¹⁵ For example, Ferri (2001) shows that, ceteris paribus, firm ratings in non-OECD countries (but not in OECD ones) tend to increase when more analysts are employed on rated firms.

IMF). Thus GCRA might hold sovereign information reliable than firm level data, this explaining why the sovereign contribution in firm ratings is substantial for firms from LDCs. Our hypothesis to test here is that the rating pattern can be explained by the quality of institutions and information of the home country where firms belong.

Table 8 presents the relationship between institutional quality and the “tightness” between firm and sovereign ratings, the latter being measured by the standard deviation between a firm’s actual rating and its corresponding sovereign rating (STDEVACT). As observed before, contrary to developed countries, for LDCs, the two ratings are closely bonded together. Thus, the standard deviation between the firm and sovereign ratings tends to be much smaller in developing countries than in developed ones. The second “tightness” measure between the firm and sovereign ratings we use is the ratio of the standard deviation between the two ratings and the level of the sovereign rating (STDEVSORAT). Indeed, both measures of the closeness between the firm and sovereign risks can be well explained by the rule of law index developed by the Transparency International (2000) and the information quality index recently developed by Chan-Lee (2001).

The results indicate that the higher is the rule of law index, the higher the dispersion between the firm and sovereign ratings. Such a relationship is statistically significant. However, for non-OECD country firms there is a negative and statistically significant relationship between the rule of law or information quality index and the dispersion between the firm rating and sovereign ratings. On one hand, this may imply that institutional quality matters as well when firm ratings are concerned. On the other hand, this result is telling us that the poorer information quality is not the whole story accounting for the smaller information content of firm ratings in emerging economies.

VI. Conclusions and Policy Implications

This paper has shed light on the puzzling observation that firm and sovereign ratings patterns widely differ in developed vs. developing countries. The starting point was observing that the close relationship between firm and sovereign ratings in developing countries is non-existent in developed countries. This naturally leads one to question the importance of information contents in the firm rating assignment. Our results indicated, not surprisingly, that in developed countries individual firm credit risks represent almost all the information contents of firm ratings. However, for firms in developing countries, the bulk of the rating content rests with their sovereign risks only, while individual firms’ credit risks play a negligent role. Examining then the rationale behind such a pattern, we found that the quality of institution and the quality of information disclosure can partly explain this rating behaviour, but do not totally solve the puzzle of firm ratings assignment by GCRA in emerging economies.

Our results have important policy implications: First, we demonstrated that firms in LDCs tend to be penalised because of their domicile, regardless of profitability and performance. Thus, low private ratings because of low sovereign ratings tend to bring about high costs of capital in LDCs. Second, for LDC firms to obtain favourable ratings, it is imperative to improve their information disclosure and quality. In fact, this entails the strengthening of the rule of law and information quality. As recent literature on

growth and institution demonstrates, enhancement of institutional quality can *cause* economic growth (Hall and Jones, 1999). Similarly, such improvement of institution also has a positive impact on the cost of capital, which will be epitomised in the rating information for firms from developing countries. At the same time, as things stand, from an international regulatory perspective, any measure linking to ratings would have a different bearing in developed than in developing countries. On the part of LDCs, it would be desirable to device incentives for GCRA's to improve on this situation. The International Financial Institutions might also be keen to participate in this process of upgrading the quality of private ratings across the world. Finally, mechanisms of firm credit enhancement guaranteed by a credit bureau or by multinational institutions such as the MIGA could prove extremely beneficial toward improving private ratings and reducing the cost of capital in LDCs.

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Table 1: Corporate Rating Criteria

Business Risk (Qualitative Rating Criteria)	Financial Risk (Quantitative Rating Criteria)
<p><i>Growth Prospects:</i></p> <ul style="list-style-type: none"> • Industry sector and trend • Technology change in the sector • Company's stand in the sector and peer comparison • Management quality <p><i>Capital Requirements:</i></p> <ul style="list-style-type: none"> • Fixed or working capital intensive • Need for capital additions • R&D spending requirements <p><i>Competitive Environment:</i></p> <ul style="list-style-type: none"> • Nature of product (commodity or differentiated) • Competitors (domestic and foreign) • Barriers to entry • Access to basic inputs of production • Regulatory environment <p><i>Diversification and Ownership Structure:</i></p> <ul style="list-style-type: none"> • Ability to manage diversification • Strength of linkage to parent company including financial, management, operational, R&D and technical support, position in the group, and relative size. 	<p><i>Cash Flow Adequacy:</i></p> <ul style="list-style-type: none"> • Interest rate coverage ratios: EBIT and EBITDA interest coverage ratio • Funds flow as a share of total debt • Free operating cash flow as a share of total debt <p><i>Capital Structure/Assets protection:</i></p> <ul style="list-style-type: none"> • Leverage (total and net debt as a share of equity and total capital) • Debt structure, including assessments of lease, off-balance sheet obligations <p><i>Profitability:</i></p> <ul style="list-style-type: none"> • Specific financial targets: Return on equity, return on assets, return on permanent capital. • Historical, current, and projected performance • Performance through the business cycles • Earnings volatility <p><i>Financial Flexibility:</i></p> <ul style="list-style-type: none"> • Considerations related to legal problems, insurance coverage, restrictive covenants in loan agreements, or obligations to affiliated entities.

Source: Standard & Poor's: Corporate Credit Ratings: A Guide

Table 2: Adjusted Key Industrial Financial Ratios, Long-term Debt

Three-year (1997-1999) medians	AAA	AA	A	BBB	BB	B	CCC
EBIT int. coverage ratio (x)	17.5	10.8	6.8	3.9	2.3	1.0	0.2
EBITDA int. coverage ratio (x)	21.8	14.6	9.6	6.1	3.8	2.0	1.4
Fund flows % total debt	105.8	55.8	46.1	30.5	19.2	9.4	5.8
Free Oper. Cash flow/total debt (%)	55.4	24.6	15.6	6.6	1.9	-4.5	-14.0
Return on Capital (%)	28.2	22.9	19.9	14.0	11.7	7.2	0.5
Operating income % sales	29.2	21.3	18.3	15.3	15.4	11.2	13.6
Long-term debt/total capital (%)	15.2	26.4	32.5	41.0	55.8	70.7	80.3
Total debt % Capital	26.9	35.6	40.1	47.4	61.3	74.3	89.4
Companies	10	34	150	234	276	240	23

Source: Research: Adjusted Key US Industrial Financial Ratios, S&P, 07-Sep-2000.

Table 3: Distribution of Firms by Country (3-Year Average Data)

Country	Number of Companies	Percentage
Argentina	24	4.3
Australia	48	8.5
Belgium	2	0.4
Brazil	13	2.3
Canada	97	17.2
Chile	11	2.0
Colombia	3	0.5
Croatia	1	0.2
Czech Republic	1	0.2
Denmark	1	0.2
Dominican Republic	1	0.2
Egypt	1	0.2
Finland	6	1.1
France	28	5.0
Germany	13	2.3
Greece	2	0.4
Hong Kong	1	0.2
Hungary	1	0.2
India	2	0.4
Indonesia	12	2.1
Ireland	4	0.7
Israel	3	0.5
Italy	1	0.2
Japan	120	21.3
Malaysia	2	0.4
Mexico	34	6.0
Netherlands/Netherland	13	2.3
New Zealand	8	1.4
Norway	2	0.4
Panama	1	0.2
Philippines	3	0.5
Poland	3	0.5
Portugal	2	0.4
Russia	2	0.4
Singapore	1	0.2
Slovakia	1	0.2
South Africa	1	0.2
South Korea	5	0.9
Spain	2	0.4
Sweden	10	1.8
Switzerland	10	1.8
Thailand	5	0.9
Turkey	1	0.2
UK	59	10.5
Venezuela	2	0.4
Total	563	100
<i>Memorandum:</i>		
Firms from Developing (135	24.8

**Table 4: Median Value of Credit Ratings and 3-Year Average Financial Indicators
(All Countries Including Both OECD and Non-OECD Countries)**

Rating	AAA	AA	A	BBB	BB	B	CCC & below
EBIT int. cov. (x)	11.65	10.6	5.8	3.6	2.2	1.2	0.9
EBITDA int. cov. (x)	17.1	18.2	9.35	6.3	3.6	2.4	1.4
Return on Capital (%)	17.5	12.5	11.85	8.5	9.0	2.95	2.3
Oper. Inc. % Sales	19.15	15.35	16.7	15.9	16.55	12.4	9.5
Total Debt % Cap.	22.2	27	34.9	43	51.95	70.4	78
Sales (mil. \$)	33,385.5	7,154.2	5,111.3	2,091.7	978.2	458.0	423.9
Equity (mil. \$)	24,930.2	4,604.1	2,959.9	1,283.2	520.8	223.7	178.7
Total Assets (mil. \$)	43,995.5	9,659.4	6,054.7	3,000.2	1,660.1	946.5	781.5
No. of Firms	4	40	101	181	108	87	26

Note: Numbers are median values of 3-year financial averages (1997-99).

Data Source: Standard & Poor's.

**Table 5: Median Value of Credit Ratings and 3-Year Averaged Financial Indicators
(Non-OECD Developing Countries Only)**

Rating	AAA	AA	A	BBB	BB	B	CCC & below
EBIT int. cov. (x)	n.a.	n.a.	n.a.	3.05	2.0	1.2	1.0
EBITDA int. cov. (x)	n.a.	n.a.	n.a.	6.0	2.9	2.0	1.4
Return on Capital (%)	n.a.	n.a.	n.a.	10.9	11.1	6.4	2.15
Oper. Inc. % Sales	n.a.	n.a.	n.a.	33.8	20.3	17.7	12.45
Total Debt % Cap.	n.a.	n.a.	n.a.	41	47.75	56.9	70.8
Sales (mil. \$)	n.a.	n.a.	n.a.	1,547.5	921.7	409.4	246.9
Equity (mil. \$)	n.a.	n.a.	n.a.	2,263.9	593.9	289.7	200.4
Total Assets (mil. \$)	n.a.	n.a.	n.a.	4,673.3	1,568.9	823.4	781.5
No. of Firms	0	0	0	35	37	34	20

Note: Numbers are median values of 3-year financial averages (1997-99).

Data Source: Standard & Poor's.

TABLE 6: Determinants of Actual Ratings (Dependent Variable is AVGF RAT)

Variables	I	II
CONSTANT	59.276 (36.19)*	56.894 (25.68)*
EBITINT	0.096 (2.71)*	0.089 (2.60)*
ROC	0.308 (4.65)*	0.270 (4.21)*
OPERINC	0.017 (2.04)**	0.011 (1.37)
DEBTRATIO	-0.190 (-8.50)*	-0.183 (-8.39)*
TOTASSETS	0.000 (9.55)*	0.000 (8.59)*
GOVTOWNER	-	4.323 (1.61)
SUBSDY	-	5.887 (3.41)*
AUTO	-	-5.829 (-1.31)
FOREST	-	-6.989 (-2.91)*
HOME	-	-13.742 (-4.33)*
MEDIA	-	-4.666 (-1.79)***
METALS	-	-7.278 (-3.61)*
Usable Observations	511	508
Adj. R ²	0.393	0.442

Note:

* indicates 99-100% significance level

** indicates 95-99% significance level

*** indicates 90-95% significance level

Legend:

AVGF RAT : Average Firm Rating

EBITINT : Interest Coverage Before Income Taxes

ROC : Rate of Return on Capital

OPERINC : Operating Income Margin

DEBTRATIO : Debt Ratio

TOTASSETS : Total Assets

GOVTOWNER : Government Ownership Dummy

SUBSIDY : Subsidiary Dummy

AUTO : Auto Industry Dummy

FOREST : Paper and Forest Industry Dummy

HOME : Home Building Industry Dummy

MEDIA : Media Industry Dummy

METALS : Metal and Mining Industry Dummy

TABLE 7: Contribution of Firm and Sovereign Risk in Firm Ratings (Dependent Variable is LOG[AVGFRAT])

Variables	IA	IB	IC	IIA	IIB	IIC	IIIA	IIIB	IIIC
CONSTANT	-0.461 (-1.27)	-0.667 (-2.76)*	-1.985 (-7.91)*	-0.461 (-0.89)	-0.667 (-1.37)	-1.985 (-6.40)*	0.329 (0.19)	-0.738 (-0.96)	-2.050 (-3.36)*
LOG[AVGFRAT1]	1.273 (20.95)*	1.008 (19.67)*	1.085 (19.38)*	1.273 (17.11)*	1.008 (8.06)*	1.085 (14.95)*	1.307 (6.02)*	1.186 (8.69)*	1.000 (8.54)*
LOG[AVGSRAT]	-0.137 (-1.45)	0.142 (2.52)**	0.362 (10.56)*	-0.137 (-1.06)	0.142 (1.73)***	0.362 (10.13)*	-0.339 (-0.63)	0.000 (9.77)	0.450 (6.97)*
LOG[NONOECDFRAT1]	-0.779 (-8.91)*	-	-	-0.779 (-5.60)*	-	-	-1.125 (-2.56)*	-	-
LOG[NONOECDSRAT]	0.720 (8.99)*	-	-	0.720 (5.44)*	-	-	1.028 (2.72)*	-	-
LOG[NONOECDFRAT1A]	-	-0.636 (-3.94)*	-	-	-0.636 (-4.72)*	-	-	-1.991 (-1.85)***	-
LOG[NONOECDSRAT1A]	-	0.625 (3.70)*	-	-	0.625 (4.60)*	-	-	2.034 (1.75)***	-
LOG[NONOECDFRAT1B]	-	-	-0.527 (-4.73)*	-	-	-0.527 (-2.00)**	-	-	-0.790 (-0.82)
LOG[NONOECDSRAT1B]	-	-	0.539 (5.02)*	-	-	0.539 (2.09)**	-	-	0.800 (-0.88)
Usable Observations	506	506	506	506	506	506	503	503	503
R Bar **2	0.605	0.563	0.570	0.605	0.563	0.570	0.584	0.502	0.547

Note: I: Ordinary Least Square

II: OLS Adjusted for Heteroscedasticity

III: 2SLS Using Instrumental Variables

* indicates 99-100% significance level

** indicates 95-99% significance level

*** indicates 90-95% significance level

Legend:

AVGFRAT : Average firm rating

AVGFRAT1 : Estimated firm rating using firm financial indicators.

AVGSRAT : Average sovereign rating

NONOECDFRAT1 : Estimated firm rating for developing countries

NONOECDSRAT : Sovereign rating for developing countries

NONOECDFRAT1A : Estimated firm ratings which are higher than their sovereign rating.

NONOECDSRAT1A : Sovereign ratings for those firms whose estimated ratings are higher than their sovereign rating.

NONOECDFRAT1B : Estimated firm ratings which are lower than their sovereign rating.

NONOECDSRAT1B : Sovereign ratings for those firms whose estimated ratings are lower than their sovereign rating.

TABLE 8: Explaining the Rating Pattern

Variables	IA (Dep. Var. is SIDEVACT)	IB (Dep. Var. is SIDEVACT)	IIA (Dep. Var. is SIDEVSOVRAT)	IIB (Dep. Var. is SIDEVSOVRAT)
CONSTANT	13.561 (6.00)*	9.054 (3.55)*	0.180 (7.52)*	0.145 (5.33)*
LAW	1.455 (5.07)*	-	0.010 (3.33)*	-
NONOECDLAW	-3.266 (-8.50)*	-	-0.027 (-6.74)*	-
INFORQ	-	2.216 (6.34)*	-	0.016 (4.21)*
NONOECDINF	-	-2.996 (-7.82)*	-	-0.025 (-6.12)*
Usable Observations	552	548	552	548
R Bar **2	0.302	0.330	0.193	0.208

Note:

* indicates 99-100% significance level

** indicates 95-99% significance level

*** indicates 90-95% significance level

Legend:

LAW : Rule of Law Index by *Transparency International*

NONOECDLAW : Rule of Law Index for Developing Countries

INFORQ : Financial Sector Information Quality by Chan-Lee and Ahn (2001)

NONOECDINF : Financial Sector Information Quality for Developing Countries