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The New Frontier in Risk Assessment: Estimation of Corporate Credit Rating Quality in Emerging Markets

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Abstract

The expansion of credit rating agencies into emerging markets is examined with respect to the overall quality of informational signals provided by ratings to capital markets. Corporate ratings from six developing economies with relatively sophisticated financial sectors are modeled using ordered probit estimation techniques. The paper finds that the informational content in emerging-market corporate credit ratings is poor *ipso facto* and compared to similar models of developed market ratings, and suggests that the sample countries are subject to what is termed an ‘emerging market premium’. The consequences of this hypothesis for applications in development finance and regulatory regimes are briefly considered. Procyclicality is not found to be a problem, but this is attributed to clustering rather than through-the-cycle design. It is concluded that corporate credit ratings currently do not actively enhance efficient financial intermediation in developing financial markets and are not a sufficient criterion for risk allocation in regulatory regimes.

Keywords: Corporate Credit Rating, Ordered Probit, Financial Intermediation

1. Introduction

As with many fields in contemporary economics, the discourse around banking regulation and global financial development has been appropriated by researchers who have an overwhelming preoccupation with issues arising from the 2008 United States financial collapse and the subsequent global stagnation. The extent of the complicity of Credit Rating Agencies (CRAs) in financial system fragility after the crisis was thrown into sharp relief (Crotty, 2009), prompting a wave of renewed research interest into the role and function of the credit rating

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industry in the financial system. Similarly, the sovereign debt crisis in Southern Europe has sparked intense political economy research into sovereign debt ratings (Silver, 2011). The rapid expansion of the corporate credit rating industry into emerging markets over the past decade has attracted less attention. This paper seeks to extend the critical analysis of CRA operations into a third field by testing the quality of the informational signals credit ratings provide to international capital markets about firms domiciled in developing nations.

After providing a short assessment of the economic function of CRAs and a review of empirical literature, an ordered probit model which regresses rating actions on a number of financial and macroeconomic variables to determine the quality of the informational content of the ratings is developed. The operational hypothesis that this analysis attempts to falsify is that ratings *do not* provide information that is not already readily available to investors.

In order to demonstrate the importance of the findings in the policy domain, the discussion turns to two explanations of the increasing importance of credit ratings in financial markets. The first is part of the efficient market hypothesis, and is that credit ratings agencies provide informational service to capital markets by sending a highly condensed signal of the default risk attached to debt issued by a given firm. The argument is that this enhances financial intermediation which in turn enhances growth (Mishkin, 2006; Bencivenga and Smith, 1991). The second is *institutionalisation*: that is, the increased use of credit ratings in financial regulations, such as the Basel II and III regulatory accords (Sarma, 2007). It is hoped that this early exploration of the economic value of corporate credit ratings in emerging markets can be used to guide the growth of the credit rating industry effectively.

2. Overview of the Global Credit Rating Industry

2.1 Micro-foundations

The existence of CRAs can be understood at a basic level from within the framework of informational microeconomics that began with Akerlof (1970) and has since been applied as a framework for the economics of banking and finance, most notably by Mishkin (1992). In this context CRAs are seen as information providers that smooth informational asymmetries between lenders and borrowers

that would otherwise arise due to the inability of lenders to predict default risk accurately. Cantor and Packer (1994) describe CRAs as institutions that employ proprietary statistical methods to assign a rating to a government, organization or debt instrument based on the probability of a default on their debt obligations. CRAs collect and analyse large amounts of both publicly available and privately released data and publish information in the form of a credit rating to the market, providing the market with information that is not widely available in the public domain and which has been analysed using specialized statistical techniques. This rating supposedly signals the risk inherent in particular credit transactions to the lender, thereby ameliorating the moral hazard and adverse selection problems. Becker and Milbourne (2011) add that a secondary purpose of CRAs is to limit duplication of effort between lenders by making information about default and recovery rates widely available.

There are currently three dominant players in the global credit ratings market: Moody's Investor Services, Standard and Poor's (S&P) and Fitch Ratings. All three publish ratings on scales equivalent to the one in Table 1 below, with AAA describing a very low probability of default and C the highest. S&P and Moody's have dominated the industry since their formation in the early 20th century, while Fitch, according to Becker and Milbourne (2011), has recently come to prominence through a process of aggressive acquisition. CRAs maintain in their disclaimers that their rating product is a subjective opinion based on their proprietary statistical techniques (see for instance Standard and Poor's, 2012).

| |
|-------------------|
| Investment -Grade |
| AAA |
| AA |
| A |
| BBB |
| 'Junk' |
| BB |
| B |
| CCC |
| CC |
| C |

Table 1: Standard and Poor's Credit Rating Scale.

Source: Adapted from Standard and Poor's (2012)

Cantor and Packer (1994) provide the seminal description of the historical emergence of CRAs. The Big Three CRAs all began in the Northeast USA, but have grown out of their home base to dominate the global market, with a new focus on expanding operations in Europe, the Middle East, Africa, East Asia and Latin America. The World Bank (2009) posits that the reason for the dominance of so few firms is the importance of reputational capital, which is gained through a build-up of historical default prediction success. New credit rating firms struggle to prove the credibility of their opinions to investors, especially in skills-deprived developing markets. A watershed in the history of the rating market, according to Cantor and Packer (1994), occurred in the 1970s, when the rating agencies switched from subscription revenues to ‘issuer-pays’ which continues to provide most of their revenues. Johannson (2010) claims that the reason for the switch was increased demand for creditability from issuers following a series of defaults on American bond markets. Strier (2008) adds that the cost of maintaining a staff of experts was becoming increasingly unfeasible on the subscription model and that the free-rider problem as described by Gurley (1954) was particularly problematic in the subscription rating publication model after the advent of the photocopier allowed for easy sharing of a CRAs list of ratings.

2.2. Qualitative Market Critiques

Several criticisms have been leveled at the current market-level practices of CRAs and their ability to perform their function as reliable information-providers. In particular, academics have focused on conflicts of interest in the issuer-pays model and the problematic market structure in the global credit ratings industry (Crotty, 2009), as well as trying to determine whether credit-ratings contribute to the inherent procyclicality of the financial system. In developed economies the market for credit ratings is riddled with perverse incentives and conflicts of interest. Johannson (2010) notes that rating agencies are forced to compete with each other for the right to issue solicited ratings. Since agencies work on the issuer-pays model, this creates the incentive to offer issuers the best possible ratings, conflicting with the objectivity of their opinion. In response to this criticism many have argued that CRAs simply cannot issue biased ratings due to the importance of maintaining their reputational capital (Hunt, 2009:6). However, Nazareth (2003)

has documented SEC evidence of CRAs changing their rating opinion on CDOs in response to profit incentives.

The credit rating market provides an interesting case study of the relationship between market structure and quality. Regulators such as Nazareth (2003) have accused rating agencies of using aggressive practices in an abusive way to maintain their dominance. Hunt (2009) claims that the 'Big 3' agencies command 95% of global market share. The World Bank (2009) does acknowledge that, although there are many smaller regional players in the international credit ratings market, they all fail to gain traction in market share against the large agencies. Reputational considerations are a significant barrier to entry for smaller firms, preventing any approximation of perfect competition. Despite the possible existence of excessive market power in the global rating industry, however, increasing competition is not a *prima facie* solution. Becker and Milbourn (2011) present robust econometric evidence of a relationship between the rise in market share of Fitch against Moody's and S&P and *declining* rating quality in the industry. Similarly, as noted by Cantor and Packer (1994) the move of the credit rating industry into Japan in the 1970s and 1980s resulted in large differences between solicited and unsolicited ratings. There seems to be a catch-22 in which lack of competition leads to an oligopolistic abuse of market power while small increases in competition trigger a race to the bottom in overall quality of ratings. As with other market structures there is no easy 'from theory' regulatory solution. The competitive structure of the credit ratings industry is a significant policy challenge for regulators attempting to integrate the expansionary ambitions of CRAs into emerging market financial stability mechanisms. Although it does not directly address market structure, the empirical section of this paper contains insights that might be used as a starting point for deeper analysis of the problem.

At the macroeconomic level, a long tradition of analysis (originating before Fisher, proceeding through, Keynes, Friedman and Minsky, 1975 to Bernanke, Gertler and Gilchrist, 1996 and others) has accepted financial procyclicality as a core property of the business cycle. Regulators are generally concerned with minimising the procyclicality inherent in finance. Credit ratings, through their dissemination of information to the market, should be in a position to smooth some of the cyclical behavior in financial markets. However, there is a growing body of literature which suggests that this is not always the case. Borio *et. al.* (2002) for

instance provides evidence of procyclical credit ratings in Korea and Thailand before and after the 1998 Asian crisis. Evidence of procyclicality in credit ratings is particularly worrying when considered in conjunction with the use of credit ratings in capital allocation in the Basel capital accords. Banks are permitted under Basel II to select a probability of default band into which their loans can be slotted, and weight their risk profile accordingly. If credit ratings are procyclical, then the bank's risk profile is misrepresented according to the time in the cycle the decision was made. Illing and Pauling (2005) construct a model of bank capital based on varying starting distributions of credit ratings in the portfolio of bank capital holdings, finding evidence of procyclicality through the cycle. Catarineu-Rabell *et al.* (2005) confirm this finding. This could lead to up to 15% increases in capital requirements in a recession, reducing bank's ability to lend and amplifying procyclicality. The concern among regulators that credit ratings are procyclical is sufficient to include an investigation into procyclicality in the emerging markets included in this study.

The macroeconomic importance of CRAs and thus of the question of cyclicity has grown with the inclusion of rating agencies as a cog in the system of global financial regulation. Detailed discussion of the so-called 'New Financial Architecture' is beyond the scope of this study (see for example, Best, 2003; Crotty, 2009; Gowan, 2009). What is relevant here is that while they have been part of regulatory frameworks since the 1930s, Basel II elevated the major CRAs to a central role (King and Sinclair, 2003; Sinclair, 2001). Because Basel II is now fully or partially implemented in over 30 countries (BIS, 2012), institutionalisation has arguably become the primary vector driving the increasing reliance of the global financial system on CRAs. In other words, firms seek ratings (and prefer to hold rated assets) because doing so affords preferential regulatory treatment, regardless of whether the ratings are accurate. Indeed King and Sinclair's (2003: 354) prediction that institutionalisation would "undermine reputational constraints [and create a] complacent, parasitic rating industry" seems to have been borne out in the Wall Street and European crises. This issue may be particularly important for developing countries and is discussed further in Section 4.

2.3. Review of Empirical Literature

The empirical literature dealing with the construction of predictive models for credit ratings is broadly divisible by the type of country sampled. For developed markets a large literature based on extensive historical data exists. Seminal papers by Blume, Lim and MacKinlay (1998) and Amato and Furfine (2003) make use of ordered probit models to test for temporal consistency and procyclicality of ratings in American markets respectively. In similar studies, Altman and Rijken (2005) and Feng, Gouieroux and Jasiak (2008) use the ordered probit to contrast the consistency of through-the-cycle methodology versus point-in-time ratings. Two more mathematically sophisticated models are put forward by Nickell, Perraudin and Varato (2000) which use a series of linked ordered probit models to examine trends in rating migration, and Figlewski, Frydman and Liang (2012), which deals with macroeconomic effects on credit ratings using reduced-form Cox intensity models. Taken together, these studies find that a number of within-firm financial variables are highly significant and reliable predictors. Additionally, the papers find strong evidence that point-in-time rating *changes* respond to macroeconomic cycles, but that overall credit ratings are unresponsive to the cycle. This can be described as rating ‘stickiness’ followed by overreaction. Amato and Furfine (2003) attribute this finding to stagnation in credit ratings due to lack of monitoring, followed by over-sensitivity to present conditions when agencies do actually decide to make a rating change. This effect is analogous to the conservatism-overreaction phenomenon in behavioral finance first identified by De Bond and Thaler (1984).

Papers analysing credit ratings in developing markets are different in focus and quality. There is an overwhelming concentration on the effect of a number of economic factors on sovereign credit ratings and vice-versa (for example Pennarz and Snoij, 2012). There is also a trend that focuses on the contribution of credit ratings to emerging-market crises. Kraeussl (2005) constructs an event study on 28 emerging markets and reaches the conclusion that sovereign rating changes have a significantly deleterious impact on financial stability when a sudden round of downgrades occurs. Focusing mostly on East Asia, Reinhart (2002) finds that sovereign credit ratings fail to predict currency crises in emerging markets. Elkhoury (2009) uses simple statistics to raise concerns that the expansion of

CRAs into new markets will not only weaken financial systems (via the dual problems of conflicts of interest and rating stickiness) but also introduce the potential for overly tight macroeconomic policy arising from fiscal preoccupation with improving sovereign ratings. Among the few papers which include corporate ratings are Peter and Grandes (2005) and Ferri and Liu (2002). The latter paper finds, using least squares that even when controlling for a number of market and macroeconomic factors, corporate ratings display undue reliance on sovereign ratings and thus CRAs “do not yet think globally”. Peter and Grandes (2005) study of South Africa finds evidence of a ‘sovereign ceiling’ (i.e. corporate bonds rarely being rated above sovereign bonds) that does not seem to be justified by bond yield spreads. Finally, in an innovative paper making use of ordered probit models, Purda (2008) finds that a country’s specific type of financial system is an important predictor of corporate ratings.

3. Empirical Analysis

3.1. Data and Sampling Method

Six emerging market economies with similar macroeconomic conditions were selected for investigation: Brazil, Chile, India, Nigeria, South Africa and Turkey. All of these economies are in the higher or lower-middle income classification and are designated “developing” economies by the World Bank (2012). All six countries have a well-developed region-leading financial system and, as the data presented below shows, have seen a significant rise in the number of corporate ratings over the period 2001 – 2012. These countries have been chosen so as to give an early indication of the direction that CRA involvement might be expected to take in the future as financial globalization proceeds. Standard & Poor’s (2012) publish separate ratings for debt issued in local currencies and debt issued in foreign currency. Given that foreign and local ratings were observed to move together, and to avoid the need to add an exchange-rate control variable, only local-currency ratings were used. Standard & Poor’s (2012) publish long-term and short-term ratings. Long-term ratings are designed to be a-cyclical by employing estimation techniques that determine average probability of default through the business cycle. Since part of this investigation is concerned with testing for procyclicality, long-term ratings are the natural choice. Accepting the consensus in

the empirical literature surveyed above that credit ratings are subject to stickiness followed by over-reaction, it was decided to use one-dimensional point-in-time sampling rather than construct a time-series for each firm rated by S&P. This has the additional advantages of directly addressing the number of new rating issues over the 10 years sampled and greatly simplifying the analysis by precluding the need for panel-data modeling.

Ratings were obtained from the Standard & Poor's Global Credit Portal database. Grouping ratings into their main categories (Ignoring the +/- modifiers which are used to differentiate firms within a category) and recording all new ratings, upgrades and downgrades, a total sample size of 169 individual rating actions was obtained after removing outliers. Of this sample 98 observations are from Brazil, the country with the largest CRA presence and longest history of rated entities. In order to account for possible qualitative differences between Brazil and the other countries, all tests are repeated with and without Brazil in the sample. A further distinction is made between banks and non-bank firms, since the risk profile and financial structure of each are treated as qualitatively different by the big three ratings agencies (Peter and Grandes, 2005; Standard & Poor's, 2012). It should be noted that this sub-sampling limits degrees of freedom in the model.

Three sets of explanatory variables are used. The first is the sovereign long-term rating in local currency. Developed-market studies often also use proxies for the level of market risk faced by the firm (for example, Blume *et al.*, 1998). Data availability made it impossible to include reliable market risk measures in this paper. Secondly, following Amato and Furfine (2003) (with some modifications), three financial ratios are included in the model to account for within-firm default risks. All historical financial data is taken from the S&P Global Credit Portal with conversion into constant \$US. All of these ratios are selected to control for the ability of the firm to cover debt obligations. Broadly, these ratios cover cash flow positions and leverage. Because of the different reporting of bank and non-bank financial statement in the Global Credit Portal, nominally different but conceptually identical ratios were used. The first ratio, *interest coverage* is taken as [EBIT/Interest Expense] in the case of non-bank firms and [Operating Revenue/Interest Expense] in the case of banks. This ratio accounts for the ability of corporates to meet the interest portion of their debt obligations. The second ratio, [Debt/Operating Income] for firms and [Liabilities/Operating Income] for

banks, gives an indication of the ability of the firm to generate cash flows from operations to meet current and future obligations. Finally, the leverage ratio [Debt/Assets] for non-bank firms and [Liabilities/Assets] for banking firms is included to account for the amount of debt taken on by the business as a proportion of assets. The first two ratios give an indication of the cash flow position of the entity relative to obligations and the second gives a picture of the ability of the firm's assets to cover total debts.

The third class of explanatory variable attempts to account for county-level business cycles. The business cycle is a notoriously difficult concept to estimate. Amato and Fufine (2003) attempt to measure the output gap for the United States to signify the point in the business cycle during which a rating change was made. However, this measure is avoided because of the difficulty of measuring potential output and because parsimony dictates that as simple a model as possible should be used. The data for the period 2001-2012 captures one American recession, one global recession and long global boom, indicating that there is enough volatility in output to get a reasonable estimate of different cyclical effects. In specification 1 real GDP growth, sourced from the IMF (2012) World Outlook Database, is used directly in the model. In Specification 2 the data series of Real GDP for each country is divided into three ordered segments. Observations falling below the first tertile are assigned a value of '-1' to indicate a relative downturn over the decade under observation. '0' is assigned to the middle segment and '1' to values above the second tertile. This method gives a relative rather than absolute idea of the position of each economy in the cycle at the time of the rating action. For instance, although Brazilian GDP growth of 1% is positive, it falls into the lowest third of growth observations over the period and is therefore considered a relative downturn and assigned a value of '-1'. In both specifications an observation of the cycle at date of rating action and a 1-year lag are included. In the first specification current and lagged values for average real global GDP growth are included to capture the possibility that CRAs do not respond to local cycle indicators but rather to global conditions. In specification 2, global and local relative downturns occurred roughly simultaneously, so the global measure was unnecessary.

Table 2 below presents descriptive statistics of the dataset. Note the difference between the average of the financial ratios between bank and non-bank firms, justifying the separation into different models. Note also that a) sovereign rating

tend to be stable for long periods (with the exception of India and Turkey) and b) that most of the corporate rating events in the sample are upgrades. These are significant points and are discussed further below.

| Dataset Size By Country | | | | | |
|-------------------------|----------------------|--|---------|--------|---------|
| | Brazil | | | | 98 |
| | Chile | | | | 22 |
| | India | | | | 22 |
| | Nigeria | | | | 6 |
| | South Africa | | | | 12 |
| | Turkey | | | | 10 |
| | Total | | | | 169 |
| Firm Type | | | | | |
| | Non-bank | | | | 125 |
| | Bank | | | | 40 |
| Rating Actions | | | | | |
| | New Rating | | | | 75 |
| | Upgrade | | | | 65 |
| | Downgrade | | | | 30 |
| Firm-level Controls | | | Average | Max | Min |
| Interest Coverage | All | | 5.241 | 55.07 | 0 |
| | Bank | | 0.4338 | 2.22 | 0 |
| | Non-bank | | 4.939 | 55.07 | 0 |
| Debt/Operating Income | All | | 27.49 | 539 | -190.46 |
| | Bank | | 92.21 | 539 | -190.46 |
| | Non-bank | | 4.01 | 106.26 | -123.54 |
| Debt/Assets | All | | 0.5169 | 0.96 | 0.03 |
| | Bank | | 0.8873 | 0.96 | 0.71 |
| | Non-bank | | 0.3824 | 0.86 | 0.03 |
| Sovereign Ratings | | | | | |
| Brazil | 2001 – 2012 | | | | BB |
| Chile | 2001 – 2012 | | | | BBB |
| India | 2001 – 01/30/2007 | | | | BB |
| | 01/30/2007 – 2012 | | | | BBB |
| Nigeria | 2001 – 08/21/2009 | | | | BB |
| | 08/21/2009 – 2012 | | | | B |
| South Africa | 2001 – 2012 | | | | A |
| Turkey | 2001 – 3/08/2004 | | | | B |
| | 3/08/2004–09/20/2011 | | | | BB |
| | 09/20/2011 -2012 | | | | BBB |

Table 2: Statistical Summary of Credit Rating Dataset

3.2 Results

The results of the regression analysis are presented in Tables 3 and 4 below. What stands out is a general lack of robustness to different specifications and estimations. This in itself is a significant finding, suggesting that the informational content of ratings is poor and inconsistent.

| Predictor | Firms | | Banks | |
|-----------------------|--------------------------------|------------|-------------|------------|
| | Inc. Brazil | w/o Brazil | Inc. Brazil | w/o Brazil |
| Intercept | | | | |
| Interest Coverage | 0.037 | 0.019 | 0.588 | 5.197 |
| Debt/Operating Income | 0.001 | 0.004 | 0.000 | 0.002 |
| Debt/Assets | -3.295*** | -5.08*** | 11.283 | 112.413 |
| Local GDP | -0.003 | 0.020 | 0.010 | 1.143 |
| Local GDP (Lagged) | 0.017 | 0.044 | 0.079 | -2.75*** |
| Global GDP | 0.018 | -0.034 | -0.017 | -2.343 |
| Global GDP (Lagged) | 0.020 | 0.056 | -0.168 | 4.220 |
| Sovereign | 0.440 | 0.907 | 1.334 | 16.589 |
| Residual DF | 110 | 37 | 32 | 11 |
| AIC | 295.951 | 121.264 | 123.404 | 25.071 |
| Significance | *** = 1% ** = 5% * = 10% | | | |

Table 3: Specification 1 –Prediction model with GDP Growth as indicator of the business cycle

| Predictor | Firms | | Banks | |
|-----------------------|--------------------------------|------------|-------------|------------|
| | Inc. Brazil | w/o Brazil | Inc. Brazil | w/o Brazil |
| Intercept | | | | |
| Interest Coverage | 0.035 | 0.019 | 1.058 | 0.521 |
| Debt/Operating Income | 0.000 | 0.003 | 0.000 | 0.006 |
| Debt/Assets | -3.318*** | -4.959*** | 11.020 | 75.018 |
| Cycle | 0.138 | 0.058 | 0.600 | 1.328 |
| Cycle (Lagged) | 0.129 | 0.294 | 0.301 | -1.936 |
| Sovereign | 0.460 | 0.789 | 1.159 | 8.731 |
| Residual DF | 112 | 39 | 34 | 13 |
| AIC | 318.509 | 116.456 | 115.83 | 25.40 |
| Significance | *** = 1% ** = 5% * = 10% | | | |

Table 3: Specification 2 – Prediction model with discrete relative indicator of business cycle.

For non-bank firms the only consistently significant predictor is the [Debt/Assets] ratio, suggesting that CRAs take leverage seriously as an indicator of the probability of default. In fact, based on this model, it seems to be the only factor that CRAs consistently take into account. However, this ratio is not significant for banks, possibly because of low degrees of freedom in the bank sample or a different approach of CRAs to banks. Interest coverage and debt-to-operating income ratios were not found to be significant with either specification or estimation technique. This is surprising given that these ratios provide an

immediate idea of the firm's ability to meet obligations. The first specification of the business cycle returned only one significant predictor, that of a lagged local cycle observation for non-Brazilian banks. The second specification for the cycle produced no significant coefficients of cycles when predicting ratings. In both specifications the AIC reveals that the sample that excludes Brazil is superior to the sample that includes Brazil.

One difficulty in predicting the model is the individual significance of the estimated partitions in the ordered probit, which in several cases were not found to be individually significant. Several corrective techniques such as discarding the proportional odds assumption in favour of weighting response likelihood by rating were attempted, but with negligible change to the AIC. A correlation matrix revealed that multicollinearity of explanatory variables was not a concern. Only GDP cycle observations in specification 1 produced correlation coefficients above 0.45, and then with their own lag.

The estimation reveals robust reliance on leverage ratios for non-banks. However, the dominant finding is that the model is very weak in predicting ratings. Only leverage ratios were a significant predictor, suggesting rating agencies may not be taking enough financial detail into account. The findings therefore do not present sufficient evidence to reject the operational hypothesis stated in the introduction. Ratings *do not* provide information that is not already readily available to investors.

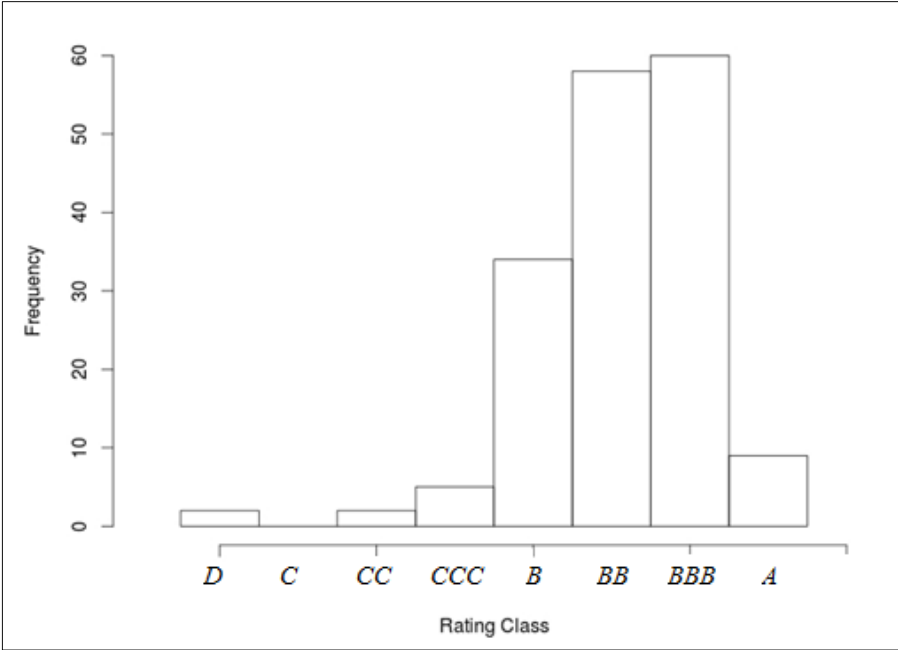
4. Discussion

4.1. The Emerging Market Premium

Despite the weak predictability in the model, ratings must be determined *somehow* by CRAs. It is proposed that the countries in the sample are subject to what could be called the 'emerging market rating premium', a process which could be described in heuristic form as follows: The dominant 'input' into the CRA models, whether explicit or implicit, is the 'emerging market' tag. Emerging market sovereign ratings tend to be significantly below 'developed market' sovereign ratings. Each sovereign rating then acts as an 'upper bound' (or 'sovereign ceiling') to corporates domiciled in these countries. The results suggest that the leverage ratio of the firm (but, intriguingly, not the bank) will have some

effect on rating below or at this upper bound. The evidence that corporate ratings are poorly explained by the independent variables and cluster in a narrow range (Figure 1) is consistent with King and Sinclair’s (2003) prediction (discussed above) that institutionalisation driven by Basel II would “undermine reputational constraints [and create a] complacent, parasitic rating industry”. The study did not find significant reliance of corporate ratings on sovereign ratings. A corollary of the ‘upper bound’ argument is that corporate ratings would respond asymmetrically of sovereign ratings. Sovereign downgrades would trigger company downgrades on the credo “firms are always riskier than governments” (Peter and Grandes, 2005: 9) but not necessarily vice versa. However, there are few sovereign upgrades or downgrades in the sample. An event study on a large sample of emerging market sovereign and corporate rating changes might shed further light on this question.

Figure 1: Distribution of credit ratings



These findings are consistent with the Peter and Grandes (2005) findings from South Africa. Firstly, SASOL (briefly in 2003) was the only corporate rating to ever ‘pierce’ the upper bound. Secondly, Peter and Grandes (2005: 33) demonstrate that “there is clear evidence that the sovereign ceiling in [bond yield] spreads does not apply” for non-bank firms (it does for banks, which are regarded as far more vulnerable to financial crisis associated with sovereign downgrades).

This suggests that the ‘upper bound’ imposed by ratings agencies may be partly an artifact of the institutionalization of ratings, and adds weight to the hypothesis that corporate ratings may be inefficient and reflect the ideological biases of the ratings agencies (see Silver, 2011).

4.2. The Emerging Market Premium

The analysis has provided what can be seen as a ‘first pass’ at modeling the expansion of the credit rating industry into new markets. Results should be treated with skepticism until corroborated. Suggestions for further research include repeating the analysis using data from Moody’s and Fitch, adding a larger set of financial ratios to the analysis, estimating the market model for the firms receiving ratings and adding more countries to the dataset. However, if confirmed, the theory has wide-ranging implications. Only two will be raised here.

Firstly, Mishkin (2006) presents the argument (criticized by *inter alia*, Rodrik and Subramanian, 2008) that efficient financial intermediation is the primary enabler of rapid economic growth, a path which, if followed, would lead to the ‘next great globalisation’ as financial intermediation spurs the investment required for emerging markets to enter the global economy proper. Credit ratings should in theory aid the intermediation process between international capital pools and emerging market investment needs. Accurate ratings would help to correctly price interest rates, assisting with cost-of-capital models. A current example at time of publication is South Africa’s energy parastatal Eskom, which is aiming for a AA rating by 2018 in order to bring down the cost of raising capacity for the overburdened South African grid (Sapa, 2012). This is unlikely given the results above. Clearly the emerging market premium in fact hinders the efficient flow of capital by bundling emerging market ratings tightly around BB and BBB. This makes it difficult for international investors to use ratings to make investment decisions, and confirms the erroneous perception of homogeneity between emerging markets.

The second application relates to the increasingly ambiguous position that CRAs enjoy as ‘outsourced’ but institutionalised quasi-regulators in Basel II and Basel III (BIS, 2009). This confers authority onto these institutions, which allows them a degree of control *over* the market from *within* the market. Ignoring for now

the political economy questions that arise from such a system, it is obvious from a practical perspective that the success of such a system is highly dependent on the accuracy of the CRAs' opinions. The findings in this paper reveal that in the case of the sampled countries it would be risky to involve CRAs heavily in regulatory systems. For this reason it is advised that central banks be tasked with implementing Basel II and III give preference to the internal risk-assessment guidelines provided for in the Basel accords rather than allowing investors and banks to rely heavily on credit ratings.

5. Conclusion

It can be taken as a fact that the credit rating industry, spurred by the rise of technocratic regulatory systems, will continue its expansion into global markets. Because CRAs offer a service highly contingent on a number of local factors, quality of credit ratings can be uneven. The product offered by CRAs is understood economically as providing an important coordinating mechanism for capital markets. It is therefore vital from both an academic and policy perspective to gain an understanding of the early trends in corporate credit rating quality as the industry moves into new financial systems.

The empirical findings are that corporate credit ratings in a sample of six emerging markets had fared poorly on informational content, with leverage ratios the only consistently significant variables. Credit ratings are not evenly distributed around the rating scale, a fact which makes ratings less informative, and would narrow the actions available to investors when following credit rating risk apportioning guides. Some data limitations on this model lead to the suggestion that further research be conducted to confirm the results. The inclusion of a market model to estimate the market risk of each firm and the inclusion of ratings from other agencies may make results more robust and ratings easier to predict.

Based on the results attained in this model, it is hypothesized that emerging markets are collectively subject to an 'emerging market rating premium' which limits the distribution and informational quality of ratings. This suggests that CRAs do not necessarily enhance financial market efficiency in emerging markets in their present mode of operation. An optimal regulatory regime for countries like South Africa will likely have a place for corporate ratings from the big three

CRAs. However, regulators should not treat them, and the NFA regulatory structure they represent, as ready-made ‘from the top down’ fixes (Best, 2003).

Appendix 1: Ordered Probit Model

For each rating category R_i there is a vector of predictors X_i that is specific to firm i . Using Fox’s (2010) derivation, there is an unobserved variable Z_i that maps X_i onto R_i by means of a linear transformation:

$$Z_i = \beta X_i + \varepsilon_i$$

Where β is the vector of slope coefficients and ε is the white noise unobserved error. Z_i is related to R_i via the link function:

$$R_i = \begin{cases} 1; & -\infty < Z_i < \mu_1 \\ r; & \mu_{r-1} < Z_i < \mu_r \\ 10; & \mu_{r-1} < Z_i < \infty \end{cases}$$

where μ_r is the estimated partition point between rating grade r and $r+1$. Taking the cumulative probability distribution of $P(R_i < r) = P(Z_i < \mu_r)$ forms the ordered probit, where the unknown coefficients β that maximize $P(Z_i < \mu_r)$ on r are estimated using a maximum likelihood.

Appendix 2: Notes on Data and Estimation

Models were estimated using the MASS package on the R open source statistical computing language, run using the 64-bit linux distribution of the R-Studio IDE.

Unless otherwise stated, data was sourced from the Standard and Poor’s Global Credit Portal. The authors gratefully acknowledge Prof. Gavin Keeton at Rhodes University and Marissa Scott at Standard and Poor’s South Africa for their assistance with access to the database.

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