Open access • Journal Article • DOI:10.1007/S10693-012-0149-8

Is There a Difference Between Solicited and Unsolicited Bank Ratings and, If So, Why? — Source link

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Published on: 01 Aug 2013 - Journal of Financial Services Research (Springer US)

Topics: Credit rating

Working paper research

n° 79 February 2006

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WORKING PAPERS - RESEARCH SERIES

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Patrick Van Roy (*)

I thank Mathias Dewatripont, Stefano Federico, Philipp Hartmann, Janet Mitchell, Peter Praet, Vincenzo Verardi and David Veredas for helpful comments and suggestions. The assistance of Bureau Van Dijk in providing some of the data used in this study is also gratefully acknowledged. All remaining errors are mine.

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Imprint: Responsibility according to the Belgian law: Jean Hilgers, Member of the Board of Directors, National Bank of Belgium.

ISSN: 1375-680X

Abstract

This paper analyses the effect of soliciting a rating on the rating outcome of banks. Using a sample of Asian banks rated by Fitch Ratings ("Fitch"), I find evidence that unsolicited ratings tend to be lower than solicited ones, after accounting for differences in observed bank characteristics. This downward bias does not seem to be explained by the fact that better-quality banks self-select into the solicited group. Rather, unsolicited ratings appear to be lower because they are based on public information. As a result, they tend to be more conservative than solicited ratings, which incorporate both public and non-public information.

JEL-code : G15, G18, G21

Keywords: Credit rating agencies, Unsolicited ratings, Self-selection, Public disclosure, Accounting transparency

TABLE OF CONTENTS

1. Introduction

Several facts have recently drawn public attention to the work and functioning of credit rating agencies. First and foremost was their failure to predict the Asian crisis and a wave of corporate scandals such as Enron, WorldCom, or Parmalat. Second was the potential procyclicality of their assessments and their increasing role in the regulatory mechanism of financial markets (Basel Committee, 2004). Third have been a number of issues related to the transparency and integrity of the rating process (Securities and Exchange Commission, 2003; European Commission, 2004). Among these issues, the practice of unsolicited ratings has prompted controversy among issuers, credit rating agencies, and regulators alike. Unsolicited ratings are formally defined as "ratings that credit rating agencies conduct without being formally engaged to do so by the issuer" (International Organization of Securities Commissions, 2003). As such, and contrary to solicited ratings, unsolicited ratings do not imply the payment of a rating fee and do not involve any formal meetings between the credit rating agency and the entity being rated.[1] These meetings typically provide an opportunity for credit rating agencies to get an overview of a company's activities and to obtain more information than what is disclosed in its published annual reports.[2]

The main concern surrounding unsolicited ratings is the fact that they "do not appear to be empirically as favorable as solicited ratings" (Securities and Exchange Commission, 2005). Even though this could be interpreted as evidence that unsolicited ratings are assigned to "blackmail" issuers into paying for a solicited rating, it could also simply indicate that better-quality issuers request a rating or that credit rating agencies issue more conservative ratings in the absence of non-public information.

This paper contributes to the literature on unsolicited ratings by investigating whether there is a difference between Fitch's solicited and unsolicited bank ratings and, if so, why. The analysis makes use of bank ratings assigned in Asia, i.e., the only region for which a significant portion of Fitch's bank ratings are unsolicited. After confirming a systematic difference between unsolicited and solicited ratings for similar banks, the paper tests two hypotheses. The first is the "self-selection hypothesis", which states that

[1] Golin (2001) insists that credit rating agencies conducting unsolicited ratings nevertheless attempt to invite the participation of the rated entity, either through submission of questionnaires, informal visits, or informal reviews of the draft report.

[2] Fight (2001) reports excerpts of a survey conducted by Cantwell & Company which indicate that more than 90% of companies release either selected or substantial non-public information to their rating agency during these meetings.

solicited ratings tend to be higher than unsolicited ones because they are the result of self-selection, i.e., better-quality issuers self-select into the solicited group by choosing to obtain rating services. This hypothesis is tested using a treatment effect model and an endogenous switching regression model, both of which extend the standard model of sample selection due to Heckman (1979).

A rejection of the self-selection hypothesis is consistent with at least two different interpretations: unsolicited ratings are lower to "punish" issuers who otherwise would not purchase ratings coverage; alternatively, unsolicited ratings are lower because they are based only on public information and, as a result, tend to be more conservative than solicited ratings. The latter gives rise to the second hypothesis tested by the paper: the "public disclosure hypothesis", which states that issuers who choose not to request a rating and who disclose a low amount of information receive a lower rating than do similar issuers who have solicited a rating. However, a high enough amount of information disclosure may eliminate the difference between solicited and unsolicited ratings.[3] In this paper, information disclosure is measured by an index capturing the level of accounting information released by issuers.

Interestingly, the importance of information disclosure for nonfinancial firms has recently become the focus of several empirical papers. Milton (2002) and Baek et al. (2002) find that East Asian firms which had indicators of higher disclosure quality (American depository receipt and/or auditors from one of the Big Six accounting firms) experienced better stock price performance during the financial crisis of 1997-98. Jorion et al. (2005) find for the U.S. that the stock price effect of rating changes has been larger since the implementation of Regulation Fair Disclosure, which prohibits public companies from disclosing non-public information to favoured investment professionals, except to credit rating agencies. Finally, Yu (2005) shows that U.S. firms with higher perceived accounting transparency tend to have lower credit spreads. In addition, Yu (2005) also finds that firms improve their credit rating by 0.5 notches on a 1 to 20 rating scale by elevating their disclosure quality above the median disclosure index.

Given the importance of information disclosure for nonfinancial firms, one should expect disclosure to play at least as important a role for banks. Indeed, several studies suggest that banks are inherently more opaque than nonfinancial firms. For instance,

[3] Thus, the public disclosure hypothesis assumes that credit rating agencies view public and non-public information as partial substitutes for each other. This is not unrealistic. For instance, Heflin et al. (2003) and Bailey et al. (2003) find that Regulation Fair Disclosure had little effect on the forecast accuracy of equity analysts. They interpret this result as evidence that analysts offset the loss of non-public information by relying on improved public information.

Morgan (2002) reports that Moody's Investors Service Inc. (Moody's) and Standard and Poor's (S&P) disagree more often over banks' and insurance companies' ratings than over other types of firms' ratings and that Moody's is systematically more conservative than S&P in its ratings, and relatively more so for banks. The latter finding can be explained by the fact that the opacity of banks' assets makes the conservative rating agency (Moody's) err even more on the side of caution.[4] Berger et al. (2000) and Deyoung et al. (2001) provide additional evidence of the importance of bank information disclosure by showing that supervisory and bond market ratings assigned to U.S. banks produce value-relevant information that affects the market.

In addition to the recent interest in firms' information disclosure, several papers have been devoted to the question of differences in solicited versus unsolicited ratings. The existing literature on this topic can be divided into two groups of papers.

The first group of papers (Poon, 2003a; Poon, 2003b; Poon and Firth, 2005) focuses on ratings assigned by S&P and Fitch to banks and insurance companies and finds that unsolicited ratings are lower than solicited ones.[5] While these studies attempt to control for sample selection, their incomplete and conflicting results make it difficult to infer whether sample selection in credit ratings does exist and, if so, whether it is responsible for the lower unsolicited ratings.

The second group of papers (Butler and Rodgers, 2003; Gan, 2004) relies on estimated rating fees to identify solicited and unsolicited ratings among ratings assigned by Moody's and S&P to U.S. companies. Butler and Rodgers (2003) find that solicited ratings are not higher than solicited ones and that the marginal effect of soliciting a rating is to decrease the impact that most financial variables have on credit ratings. Gan (2004) finds a statistically significant difference between solicited and unsolicited ratings but no statistically significant difference between the issuers' performance after a rating has been assigned. These results lead Gan (2004) to reject the idea that issuers with unsolicited ratings are discriminated against.

In light of the above-mentioned studies, the main contributions of this paper are the following. First, this paper investigates whether there is a difference in treatment

[4] Morgan and Stiroh (2001) reach a similar conclusion when they evaluate the impact of bank balance sheet composition on an institution's new subordinated debentures. However, a contribution by Flannery et al. (2004) contradicts these findings and suggests that banking assets may not be unusually opaque.

[5] Poon (2003a) uses S&P's ratings of 265 insurance companies in 15 mostly developing countries; Poon (2003b) considers S&P's ratings of 171 banks in 20 mostly developing countries; Poon and Firth (2005) use Fitch's ratings of 935 banks in 82 countries. The latter paper is based on a sample which includes non-Asian banks. However, Fitch does not assign unsolicited bank ratings outside Asia (see Section 3).

between solicited and unsolicited bank ratings using a sample where both types of ratings are identified as such. This represents an advantage over Butler and Rodgers (2003) and Gan (2004), who are unable to distinguish clearly between solicited and unsolicited ratings in their analysis. Second, this paper addresses the issue of self-selection through both the use of a treatment effect model and an endogenous switching regression model (self-selection hypothesis). The above-mentioned studies do not, or only imperfectly, control for sample selection. Third, this study tests whether the difference between solicited and unsolicited ratings disappears when banks with unsolicited ratings release a high enough amount of public information (public disclosure hypothesis). As far as I am aware, this hypothesis has not yet been tested in the literature.

Several results emerge from the analysis. First, I find no evidence that, in determining ratings, Fitch assigns different weights to observable bank characteristics in the solicited and unsolicited groups. However, I do find that unsolicited bank ratings are lower than solicited ones after controlling for observable bank characteristics. The estimated difference between the two types of ratings is also economically significant, as it averages 0.9 notches on a 1 to 9 rating scale.

On the one hand, these findings appear to give some credence to Fitch's claim that the methodology for its unsolicited bank ratings is "nearly the same" as for its solicited bank ratings (Fitch, 2001). On the other hand, they seemingly contradict Fitch's assertion that there is no difference in its credit judgement of firms with unsolicited ratings (Fitch, 2005a). In addition, they call into question the desirability of a recent decision by Fitch to give up disclosing whether its ratings are solicited or not.

A second result is that there is no strong evidence of a sample selection problem in bank ratings. Hence the self-selection hypothesis is rejected. Third, the results provide support for the public disclosure hypothesis. Banks which disclose a high amount of information receive better unsolicited ratings than do similar banks with unsolicited ratings but low levels of information disclosure. Banks which do not request a rating but which disclose a high amount of information receive ratings which are not statistically different from the solicited ratings of similar banks.

The latter finding is important in light of the fact that the theoretical impact of public disclosure on the relation between soliciting a rating and the actual rating outcome is ambiguous. On the one hand, the impact of public disclosure might be positive if issuers who do not request a rating and who disclose a high enough amount of public information receive the benefit of the doubt. On the other hand, the impact of public disclosure might be negative if it adds to negative perceptions or intuitions about

issuers who choose not to be rated. This study suggests that the first effect dominates the second.

The results of the test of the public disclosure hypothesis are also of interest in the particular case of Fitch's ratings. A former official of Fitch's BankWatch[6] has acknowledged that *"It is true that unsolicited ratings are often more conservative than solicited ratings. The reason is not that agencies are attempting to punish companies that decline to pay for a rating, but that where there is doubt, the agencies will tend to err on the side of caution. Correspondingly, the more information provided to the agencies, the more transparent the disclosure process, the more comfort agency analysts will feel in giving the company the benefit of the doubt (...) In the same manner, where in the case of an unsolicited rating, the issuer has not been very forthcoming with information, or places the burden of extracting that information on the agency analyst, it is not surprising that the agency analyst will tend to err on the side of conservatism, and properly so. As a matter of practice, less disclosure tends to be associated with higher risk. In the context of risk assessment, disclosure is not only the means by which the assessment is performed, it is also arguably a positive credit consideration in itself".* (Golin, 2001, pp. 534-535).

Many market participants also appear to believe that low public disclosure explains the downward bias in unsolicited ratings. For example, the investment bank Merrill Lynch noted that the low unsolicited ratings assigned to four major Egyptian banks by Moody's in 1997 were mainly due to "lack of cooperation regarding non-public information" along with "poor transparency of financial accounts" (Egypt State Information Service, 1997).

The remainder of the paper is organised as follows. Section 2 reviews the background on unsolicited ratings. Section 3 presents the data used in the analysis. The research methodology is described in Section 4 and the results are presented in Section 5. Section 6 concludes and offers some relevant policy implications.

2. Background on unsolicited ratings

Over recent years, there have been many instances in which credit rating agencies have been accused of assigning lower unsolicited ratings in order to "blackmail" issuers

[6] BankWach is the credit rating agency which initiated the practice of unsolicited bank ratings in Asia prior to its absorption by Fitch.

into paying for and participating in a rating process. A recent example cited as an alleged abuse of power is the series of successive downgrades of Hannover Re, one of the world's largest reinsurance companies, by Moody's.[7] Hannover Re was initially approached by Moody's in 1998 to subscribe to its rating services, but declined the offer since it was already paying fees to S&P and A.M. Best Company (A.M.) – a smaller credit rating agency – for this purpose. Despite being turned down, Moody's decided to go ahead and rate Hannover Re at no charge. Although Moody's initial unsolicited rating was Aa2, only one notch below that given by S&P, it was subsequently lowered to Aa3 (January 2001) and then to A2 (November 2001). In March 2003, Moody's further downgraded Hannover to Baa1 while S&P and A.M. continued to give the insurance company a rating four notches and two notches higher, respectively. Moody's final downgrade sparked a 10% drop in the insurer's stock and surprised many analysts given that there was no new information in the public domain justifying this. Hannover Re's comments were that Moody's decisions were "pure blackmail" and that company's officials had been told on many occasions that if they paid for a rating, it "could have a positive impact" on the grade. Hannover Re further pointed out that, since S&P was already making headway in Germany and throughout Europe in rating the insurance business, Moody's decision to assign an unsolicited rating may have represented a fast way to play catch-up (Wall Street Journal, 2004).

In spite of the huge controversy surrounding unsolicited ratings, credit rating agencies insist on defending this practice. Their main argument is that they do not issue higher solicited ratings to keep existing customers or lower unsolicited ratings to attract new customers, as this would imply that they are willing to jeopardise their reputation in order to benefit from a temporary increase in revenues (Golin, 2001). In addition, credit rating agencies point out the following benefits of unsolicited ratings. First, unsolicited ratings should be seen as a service to investors and market participants who frequently make requests for coverage of institutions that are unwilling to undergo the rating process or pay a rating fee (Basel Committee, 2003; Fitch, 2005a). Second, unsolicited ratings prevent firms from "rating shopping", a practice whereby firms only request an additional rating when they expect an improvement on their existing rating (Securities and Exchange Commission, 2004). Third, unsolicited ratings contribute to opening up competition among credit rating agencies as they allow smaller agencies to compete with Moody's, S&P and Fitch (Basel Committee, 2001).

[7] For a review of other alleged abuses of power, see Hill (2001).

In fact, even the Big Three credit rating agencies originally relied on unsolicited ratings to develop their activities. Prior to the 1970s, they used to charge bondholders a fee for obtaining rating information and thereby provided unsolicited rather than solicited ratings. The shift to a business model that charged issuers for the privilege of obtaining a rating occurred mainly because of the spread of low-cost photocopying and the desire of issuers to reassure investors of the quality of their issuances (White, 2001). However, in 1991, Moody's reintroduced the practice of unsolicited ratings and other rating agencies quickly followed in the mid-1990s.

Even though the vast majority of credit ratings are still assigned on a solicited basis, unsolicited ratings currently account for a sizeable portion of the total number of credit ratings. According to the Cantwell survey (Fight, 2001), unsolicited ratings represented between 6% (S&P) and 26.6% (Fitch) of the total number of credit ratings assigned in industrial countries in 2000. In another survey conducted by Baker and Mansi (2002), U.S. firms with unsolicited ratings averaged 10.6% of the total number of firms with a credit rating in 1999. In Europe, the phenomenon of unsolicited ratings is believed to be substantially smaller (Basel Committee, 2000). In fact, issuers located in developing countries appear to be the main targets of unsolicited ratings. Evidence from Bankscope for instance indicates that almost 80% of S&P's unsolicited bank ratings were assigned in Africa, South America, and Asia (excluding Japan) in February 2005.

Interestingly, credit rating agencies do not talk about solicited versus unsolicited ratings but use a softer terminology. In 1996, S&P started issuing unsolicited ratings under the name "public information ratings", mainly to companies in the insurance and banking sectors. These ratings, which appear with a "pi" subscript in its publications, are assigned by broad numerical categories without a + or – modifier, i.e., AAA, AA... Contrary to S&P, Moody's policy has long refused to disclose whether a rating was solicited or not. Due to market pressure, however, it finally announced in 1999 that it would identify, in its initial rating assignment announcements only the unsolicited ratings for which the issuer had declined its invitation to participate in the assignment process (Moody's, 1999). Since January 2000, the following statement appears in the first press release accompanying the assignment of an unsolicited rating by Moody's: *"This rating was initiated by Moody's. The issuer did not participate in the assignment process"*. Since October 2004, Moody's has begun identifying on its website and in selected research reports any issuer that has declined its invitation to participate in the rating process.

Fitch, the third largest player in the credit rating industry, issues unsolicited ratings under the name "initiated" (or "shadow") ratings. The majority of these ratings are assigned in Asia and have been introduced to bring into Fitch's coverage the large number of banks previously rated by BankWatch (see Section 3). Although Fitch's policy had long been to disclose, both in its initial and subsequent publications concerning a rating, whether this rating was paid or not, it announced in June 2005 that it would henceforth only identify unsolicited ratings as such in its initial rating assignment announcements and that it would not continue to disclose the solicitation status of ratings afterwards (Fitch, 2005a). Consequently, Fitch dropped the initiated (or shadow) subscript from all its unsolicited ratings in its publications.

Over the last three years, unsolicited ratings have come under the attention of several regulatory bodies as part of wider investigations into the role and function of credit rating agencies.

In 2003, the U.S. Securities and Exchange Commission (SEC) issued a report where it expressed its concerns about credit rating agencies engaging in specified practices with respect to unsolicited ratings (e.g., sending a bill for an unsolicited rating, sending a fee schedule and "encouraging" payment, indicating that a rating might be improved with the cooperation of the issuer). The SEC also mentioned that it would explore whether only credit rating agencies that issue clearly labelled unsolicited ratings should be granted the status of Nationally Recognized Statistical Rating Organizations (SEC, 2003).

In 2004, the International Organization of Securities Commissions (IOSCO) published a code of conduct for credit rating agencies that sets out a series of measures that agencies should incorporate into their own codes of conduct. In particular, the code asks credit rating agencies to "disclose whether the issuer participated in the rating process" and to identify each rating not initiated at the request of an issuer as such (IOSCO, 2004a). Interestingly, Fitch's reply was that it did "not believe that it is necessary or appropriate to require the disclosure of whether a rating is initiated or whether the issuer has cooperated in the rating process" and that such requirements "interfere in the editorial process of the rating agencies" (IOSCO, 2004b).

Finally, the Committee of European Securities Regulators (CESR) also recently recommended that credit rating agencies disclose whether they initiate their credit ratings and whether the issuer participates in the rating assessment process (CESR, 2005).

3. Data

The sample used in this study consists of solicited and unsolicited bank ratings assigned by Fitch in Asia. Fitch started to issue unsolicited bank ratings in this part of the world after its acquisition of BankWatch – a credit rating agency specialised in the banking sector – in October 2000. Prior to its absorption by Fitch, BankWatch used two types of rating scales in emerging markets, the so-called "intra-country issuer rating" and "credit evaluation rating" scales. The latter scale mainly applied to unsolicited ratings of smaller institutions or banks in Asia. However, BankWatch did not systematically disclose whether its ratings were paid for or not (Golin, 2001). Following the integration of BankWatch's ratings into its own rating system, Fitch announced that ratings that were part of the credit rating evaluation scale and that were largely based on public information would be appended with an "s" (shadow) in its publications. Fitch nevertheless insisted that the methodology behind these shadow (unsolicited) ratings and the more traditional full due diligence (solicited) ratings was almost the same and that their definition and scale were identical (Fitch, 2001).

Fitch's solicited and unsolicited bank ratings belong to a specific class of credit ratings known as "individual ratings".[8] These ratings, which are used primarily by interbank lenders, focus on the ability of issuers to satisfy their obligations in general, irrespective of the terms of any particular debt obligation. They thus differ from the more well-known debt ratings, which attempt to assess the risk that an issuer will not repay a specific security or class of securities, e.g., long-term debt. In addition, individual ratings do not take into account external support that an issuer might receive from its country of origin, which means in practice that they are not determined by the rating of the issuer's country.

The bank individual ratings and the corresponding financial information used in the analysis were obtained from Bankscope and Fitch Research. Specifically, in the remainder of the paper, I use cross-sectional regressions where the dependent variable is the bank individual rating on January 31, 2004. As Fitch asks for a minimum of three years' annual data and a maximum of five years' when assigning a bank rating, I use the five-year average (1999 to 2003) of bank variables if available and their three-year average (2001 to 2003) if not.

[8] Individual ratings are called "financial strength ratings" at Moody's and Capital Intelligence, a smaller credit rating agency specialised in emerging market financial institutions. S&P does not assign this type of ratings to banks. The complete definition of individual ratings can be found in Appendix A.

Table 1 illustrates the distribution of 169 sample bank ratings sorted by country. Only those countries that have both solicited and unsolicited bank ratings are included in the analysis. Among the sample countries, Taiwan, India, and Hong Kong are the countries with the highest number of bank ratings, with respectively 39 banks (23.1% of observations), 32 banks (18.9% of observations) and 18 banks (10.7% of observations). Unsolicited ratings constitute the majority of bank ratings in the sample countries with 95 banks (56.2% of observations). Solicited ratings account for the remainder of the sample with 74 banks (43.8% of observations). The number of solicited and unsolicited bank ratings is roughly equal in two countries (Hong Kong and Taiwan) while the other sample countries have a majority of solicited ratings (Indonesia, Macau, Malaysia, the Philippines, and South Korea) or unsolicited ratings (Bangladesh, China, India, and Vietnam). Obviously, a plausible explanation for this imbalance is that banks located in countries with weakly developed banking markets hardly borrow in the international interbank market and, as a consequence, do not require an individual rating. Another possible explanation is that banks located in countries with very different regulatory systems and/or accounting standards prefer to be rated by local credit rating agencies (Poon, 2003a).

Table 2 shows the sample distribution of solicited and unsolicited bank ratings by rating level. Note that, contrary to Fitch's debt ratings, which use the standard AAA to D rating scale, Fitch's individual ratings are based on an A to E classification with intermediate categories, i.e., A/B, B/C, C/D, and D/E. The rating category with the highest number of sample banks is the D category (40 banks or 23.7% of observations) while no sample bank falls in the A category. Less than a third of the sample banks (49 banks or 29% of observations) obtain C ratings or above, meaning that their overall creditworthiness is adequate to (very) strong. The remaining sample banks (120 banks or 71% of observations) are classified below C, meaning that their overall creditworthiness is somewhat weak to very weak. Solicited ratings mostly fall into the B/C to D categories whereas unsolicited ratings are concentrated in the C to E categories. The fact that unsolicited ratings are more concentrated across the rating scale tends to confirm the perception of many issuers that these ratings are less accurate than solicited ones (Baker and Mansi, 2002).

In Table 3, I present summary statistics for the entire sample of 169 bank individual ratings. The variables in the table were selected according to Fitch's bank rating methodology (Fitch, 2004a), which indicates that Fitch's bank ratings are determined by a number of quantitative and qualitative factors that can be classified into nine

categories: risk management, funding and liquidity, capitalisation, securitisation, earnings and performance, market environment, diversification of business and franchise, management and strategy, and corporate governance. Based on this classification, the variables which exhibit the strongest correlation with Fitch's bank individual ratings are reported in Table 3.

In addition, Fitch also emphasises its need for a detailed breakdown of banks' balance sheet and income statement when assigning a rating. This requirement is captured by a disclosure index, which can be found at the bottom of Table 3. The disclosure index is based on Baumann and Nier (2004) and records whether banks disclose information on 17 key balance-sheet categories in Bankscope. The 17 key categories include 7 asset categories, 4 liabilities categories, 4 memo lines categories and 2 income statement categories. The disclosure index thus measures the level of detail that banks provide on 17 key dimensions of accounting information in their published accounts. Note that since Bankscope is a product of Fitch, it seems reasonable to assume that the disclosure index accurately reflects all the accounting information publicly available to this credit rating agency.

Table 4 compares the mean and standard deviation of some bank characteristics in the solicited and unsolicited groups (the t-statistic for mean equality is given in the last column). Banks with unsolicited ratings have better asset quality (i.e., lower impaired loans/gross loans) but are less liquid and less capitalised than banks with solicited ratings. The difference between the performance of the solicited and unsolicited groups (as measured by the return on assets and the cost to income ratio) is not found to be statistically significant,[9] while no variable related to the securitisation category was found in Bankscope. Banks which request a rating are more likely to have a financial statement which is consolidated (62.2% in the solicited group vs. 44.2% in the unsolicited group) and which has been approved by the auditors without qualification (88.3% in the solicited group vs. 77.2% in the unsolicited group). There are more commercial banks in the unsolicited group (94.7%) than in the solicited one (77.0%). Interestingly, the sovereign credit rating and the diversification/franchise variables do not differ significantly across solicited status. However, banks which choose not to be rated are more likely to be located in communist countries, i.e., countries characterised by very different banking systems, than banks which choose to obtain rating services (2.7% in the solicited group vs. 22.1% in the unsolicited group). Corporate governance variables

[9] Throughout the paper, significance refers to a level of confidence of 95% and marginal significance to a level of confidence of 90%.

also show that banks requesting a rating have a statistically higher degree of involvement of individuals and families in their ownership (4.3% of equity owned by this type of shareholders in the solicited group vs. 0.4% in the unsolicited group), while banks which choose not to be rated have stronger ties to the State (28.3% of equity owned by this type of shareholders in the unsolicited group vs. 9.1% in the solicited group). In addition, banks rated on a solicited basis have significantly more subsidiaries (7.0) than banks rated on an unsolicited basis (3.2). This result does not seem to proxy for a size effect since the difference between the means of the "total deposits" variable in the solicited and unsolicited groups was not significant. Finally, the last row of Table 4 indicates that there is no statistically significant difference between the level of disclosure of banks with solicited ratings and the level of disclosure of banks with unsolicited ratings.

Overall, Table 2 suggests that unsolicited ratings tend to be more frequently assigned at the lower end of the rating scale than solicited ones, while Table 4 shows some differences in the characteristics of the solicited and unsolicited groups. In order to answer the question of whether there is a difference in treatment between solicited and unsolicited bank ratings and, if so, to explain why, I now turn to the econometric analysis.

4. Methodology

This section outlines the methodology used to test whether banks with solicited ratings and those with unsolicited ratings obtain the same rating ceteris paribus.

4.1. Ordinary least squares

I first use a simple ordinary least squares regression of the form:

$$Rating_i = X_i\beta + \delta Solicited_i + \varepsilon_i, \quad (1)$$

where $Rating_i$ corresponds to the individual rating of bank i coded on a 9 (A) to 1 (E) scale, X_i is a matrix of financial and nonfinancial characteristics that explain the individual rating of bank i and $Solicited_i$ is a dummy variable that equals one if bank i has requested an individual rating and zero otherwise. Although $Rating_i$ takes nine different discrete values, it is treated as a continuous variable in the remainder of the

analysis. Aside from simplifying the estimation of the regression models, this choice is made for two reasons. First, researchers often treat discrete variables as continuous when the range of values that they take is large enough and when the gaps between successive values are equivalent (Abrevaya and Hausman, 1999). Both conditions are met in this case since individual ratings are split into nine different categories and much of the empirical literature assumes that credit ratings can be interpreted as cardinal values. Second, the existing studies on the determinants of credit ratings show that this type of analysis is not very sensitive to the choice between ordinary least squares and ordered probit, a statistical model for discrete random variables (see, e.g., Cantor and Packer, 1997; Pottier and Sommer, 1999).[10]

Looking at equation (1), the coefficient of $Solicited_i$, δ, measures the so-called treatment effect. In this context, the treatment is whether or not banks have requested an individual rating from Fitch. The null hypothesis to be tested is whether $\delta = 0$, i.e., whether soliciting a rating has no effect on the rating itself once controlling for relevant bank characteristics. One issue that arises in this setup is the potential endogeneity of the variable $Solicited_i$ i.e., the possibility that corr ($Solicited_i$, ε_i) $\neq 0$, yielding biased and inconsistent least squares estimates. For instance, if the typical bank which chooses to request a rating would have a relatively high rating whether or not it asked to be rated, there will be a positive correlation between $Solicited_i$ and ε_i. In this case, the least squares estimates of δ will actually overestimate the treatment effect. Therefore, I use two extensions of the standard model of sample selection due to Heckman (1979) to account for potential self-selection into solicited status.[11]

4.2. Treatment effect model

The treatment effect model complements the outcome equation (1) with the following latent model:

$$Solicited_i^* = W_i\gamma + u_i, \tag{2}$$

$$Solicited_i = 1 \quad \text{if } Solicited_i^* > 0, 0 \text{ otherwise}, \tag{3}$$

[10] As a robustness check, I also estimated equation (1) using an ordered probit model. The results, which are shown in Table 9 (Appendix B), are very similar to those of ordinary least squares.

[11] Poon (2003a) and Poon (2003b) use Heckman's standard model of sample selection and are therefore unable to estimate the impact of soliciting a rating while simultaneously controlling for the selection bias. Butler and Rodgers (2003) and Gan (2004) do not control for sample selection.

where W collects all variables in X plus any other variables that affect the decision to request an individual rating but not the rating itself. The model further assumes that X and W are exogenous and that ε and u follow a bivariate normal distribution with mean vector zero and symmetric covariance matrix Ω equal to:

$$\Omega = \begin{bmatrix} \sigma_{\varepsilon}^2 & \sigma_{\varepsilon u} \\ . & \sigma_{u}^2 \end{bmatrix}, \tag{4}$$

where σ_{ε}^2 is the variance of the error term in the outcome equation, σ_{u}^2 is the variance of the error term in the selection equation and $\sigma_{\varepsilon u}$ is the covariance between both error terms. Since γ can be estimated only up to a scale factor, it is assumed that $\sigma_{u}^2 = 1$ hence $\sigma_{\varepsilon u} = \rho\sigma_{\varepsilon}$ where ρ is the coefficient of correlation between ε and u.

Using equation (1), one can show that the expected rating conditional on having requested one is given by:

$$\mathrm{E}(Rating_i \mid Solicited_i = 1, X_i, W_i) = X_i\beta + \delta + \rho\sigma_{\varepsilon}\left[\frac{\phi(W_i\gamma)}{\Phi(W_i\gamma)}\right], \tag{5}$$

where ϕ denotes the normal density function and Φ the normal cumulative function. For banks with unsolicited ratings, the counterpart to (5) is:

$$\mathrm{E}(Rating_i \mid Solicited_i = 0, X_i, W_i) = X_i\beta + \rho\sigma_{\varepsilon}\left[\frac{-\phi(W_i\gamma)}{1-\Phi(W_i\gamma)}\right]. \tag{6}$$

The difference in expected rating between banks which request a rating and those which do not is given by the difference between equations (5) and (6):

$$\mathrm{E}(Rating_i \mid Solicited_i = 1, X_i, W_i) - \mathrm{E}(Rating_i \mid Solicited_i = 0, X_i, W_i) =$$
$$\delta + \rho\sigma_{\varepsilon}\left[\frac{\phi(W_i\gamma)}{\Phi(W_i\gamma)\left[1-\Phi(W_i\gamma)\right]}\right], \tag{7}$$

where the first term on the right-hand side, δ, measures the treatment effect and the second term in brackets is the hazard rate. If the latter term is omitted from equation (1), the above difference is what is estimated by the least squares coefficient of the dummy variable $Solicited_i$. For instance, in the presence of positive self-selection ($\rho > 0$), the second term in (7) is positive hence the least squares estimator of δ overestimates the treatment effect.

The treatment effect model can be consistently estimated by a standard instrumental variable approach or by a two-step approach in the spirit of Heckman (1979). The latter method, which is used in this study, consists in estimating a probit equation for the

probability of soliciting a rating, before estimating equation (1) augmented with the hazard rate obtained from the probit equation (the standard errors of the least squares estimates must be corrected). A test for $\rho\sigma_\varepsilon = 0$ is a test of selection based on unobservable rating determinants. If $\rho\sigma_\varepsilon$ is not significantly different from zero, one can reasonably decide that selectivity is not a problem and proceed to use ordinary least squares as usual (Davidson and MacKinnon, 1993).

4.3. Endogenous switching regression model

All methods examined so far are based on equation (1), which assumes that soliciting a rating has only an intercept effect on individual ratings. However, soliciting a rating may also have a slope effect, i.e., the coefficients of the *X*s may differ according to the solicited status. In addition, the above models assume that the variance of the unobserved component of individual ratings is the same for banks with solicited ratings and for banks with unsolicited ratings. A more general version of the outcome equation, which allows for treatment heterogeneity and for error terms with different variances, is given by:

$$Rating_{1i} = X_i\beta_1 + \varepsilon_{1i} \quad \text{if } Solicited_i = 0, \tag{8}$$

$$Rating_{2i} = X_i\beta_2 + \varepsilon_{2i} \quad \text{if } Solicited_i = 1, \tag{9}$$

where it is assumed that X is exogenous and that ε_1, ε_2 and u follow a trivariate normal distribution with mean vector zero and symmetric covariance matrix Ω equal to:

$$\Omega = \begin{bmatrix} \sigma_1^2 & . & \sigma_{1u} \\ . & \sigma_2^2 & \sigma_{2u} \\ . & . & \sigma_u^2 \end{bmatrix}, \tag{10}$$

where σ_1^2 and σ_2^2 are the variances of the error terms in the outcome equations, σ_u^2 is the variance of the error term in the selection equation and σ_{1u} and σ_{2u} are the covariances between ε_1 and u and ε_2 and u, respectively (the covariance between the error terms in the outcome equations is not defined since $Rating_{1i}$ and $Rating_{2i}$ are never observed simultaneously). Since γ can be estimated only up to a scale factor, it is assumed that $\sigma_u^2 = 1$ hence $\sigma_{1u} = \rho_{1u}\sigma_1$ and $\sigma_{2u} = \rho_{2u}\sigma_2$ where ρ_{1u} and ρ_{2u} are the coefficients of correlation between ε_1 and u and ε_2 and u, respectively.

Let the decision to request a rating be generated from the same model described by equations (2) and (3). One can show that the expected rating conditional on having requested one is given by:

$$\mathrm{E}(Rating_{2i} \mid Solicited_i = 1, X_i, W_i) = X_i\beta_2 + \rho_{2u}\sigma_2 \left[\frac{\phi(W_i\gamma)}{\Phi(W_i\gamma)} \right]. \tag{11}$$

For banks with unsolicited ratings, the counterpart to (11) is:

$$\mathrm{E}(Rating_{1i} \mid Solicited_i = 0, X_i, W_i) = X_i\beta_1 + \rho_{1u}\sigma_1 \left[\frac{-\phi(W_i\gamma)}{1 - \Phi(W_i\gamma)} \right]. \tag{12}$$

The difference in expected rating between banks which request a rating and those which do not is given by the difference between equations (11) and (12):

$$\begin{aligned} &\mathrm{E}(Rating_{2i} \mid Solicited_i = 1, X_i, W_i) - \mathrm{E}(Rating_{1i} \mid Solicited_i = 0, X_i, W_i) = \\ &X_i(\beta_2 - \beta_1) + \rho_{2u}\sigma_2 \left[\frac{\phi(W_i\gamma)}{\Phi(W_i\gamma)} \right] - \rho_{1u}\sigma_1 \left[\frac{-\phi(W_i\gamma)}{1 - \Phi(W_i\gamma)} \right], \end{aligned} \tag{13}$$

where the first term on the right-hand side, $X_i(\beta_2 - \beta_1)$, is the average treatment effect (ATE), which measures the average gain or loss from soliciting a rating for a randomly chosen bank (this quantity was denoted by δ in the models of Sections 4.1 and 4.2). Under fairly weak assumptions (Wooldridge, 2002), a consistent estimator of the average treatment effect is given by:

$$\hat{ATE} = \bar{X}(\hat{\beta}_2 - \hat{\beta}_1), \tag{14}$$

where $\bar{}$ is used to denote average and $\hat{}$ parameter estimates obtained by estimating the system formed by equations (2)-(3) and (8)-(9).

Another quantity of interest in this model is the average treatment effect on the treated (ATT), which measures the average gain or loss from soliciting a rating for those banks which have requested a rating. Formally, the average treatment effect on the treated is defined as:

$$\begin{aligned} &ATT \equiv \mathrm{E}(Rating_{2i} - Rating_{1i} \mid Solicited_i = 1, X_i, W_i) = \\ &\mathrm{E}(Rating_{2i} \mid Solicited_i = 1, X_i, W_i) - \mathrm{E}(Rating_{1i} \mid Solicited_i = 1, X_i, W_i) = \\ &X_{2i}(\beta_2 - \beta_1) + (\rho_{2u}\sigma_2 - \rho_{1u}\sigma_1) \left[\frac{\phi(W_i\gamma)}{\Phi(W_i\gamma)} \right], \end{aligned} \tag{15}$$

where X_{2i} denotes X_i in the group of banks with solicited ratings. A consistent estimator of the average treatment effect on the treated is given by:

$$\hat{ATT} = \bar{X}_2(\hat{\beta}_2 - \hat{\beta}_1) + (\hat{\rho}_{2u}\hat{\sigma}_2 - \hat{\rho}_{1u}\hat{\sigma}_1) \left[\overline{\frac{\phi(W_i\hat{\gamma})}{\Phi(W_i\hat{\gamma})}} \right]. \tag{16}$$

In this setup, a test for $\rho_{2u}\sigma_2 = \rho_{1u}\sigma_1 = 0$ is a test of selection based on unobservable rating determinants. If the test fails to reject that both parameters are jointly equal to zero, we cannot reject the null hypothesis of no selectivity bias in the solicited and unsolicited groups and we have no argument against using ordinary least squares. A Chow test can also be used to test whether the βs are identical in the solicited and unsolicited groups. If they are, the treatment effect model is more efficient than the endogenous switching regression model.

The endogenous switching regression model is estimated by maximum likelihood using the procedure outlined in Greene (1995).

5. Results

In this section, I discuss the results of the estimation procedures described above.

5.1. Ordinary least squares

Two basic specifications of equation (1) are reported in Table 5. To avoid multicollinearity problems, the first specification only includes five financial variables and four nonfinancial variables in addition to a solicited individual rating dummy. These variables cover the different areas of Fitch's bank rating methodology: risk management (loan loss provisions/net interest revenue), liquidity (net loans/total assets), capitalisation (equity/total assets), earnings and performance (cost to income ratio), market environment (consolidated statement dummy, communist country dummy), diversification/franchise (log of total deposits), corporate governance (bank ownership dummy – one if the bank is majority-owned by another bank and zero otherwise), and public disclosure (disclosure index). The second specification adds two variables that control for additional aspects of market environment (unqualified statement dummy) and corporate governance (state ownership dummy – one if the bank is majority-owned by the State and zero otherwise). In addition, the second specification also interacts the solicited individual rating dummy with an other individual rating dummy, which is equal to one if the bank had an individual rating from a competitor agency – Moody's or Capital Intelligence – before it obtained an individual rating from Fitch and zero otherwise. The resulting variable captures whether there is a rating difference between banks which request an individual rating without being rated by a competitor of Fitch

and banks which request an individual rating while being rated by a competitor agency. Such a difference may exist if banks which are already rated by Moody's or Capital Intelligence engage in rating shopping and only request an individual rating from Fitch when they are a confident that it will be higher than their existing individual rating.[12]

The two specifications are estimated by ordinary least squares (OLS) and by two-stage least squares (2SLS) to account for the potential endogeneity of equity/total assets and the disclosure index, i.e., the two variables that are most likely to suffer from an endogeneity bias (Bauman and Nier, 2004). The set of instruments for both variables consists of the other exogenous explanatory variables in the regression. In addition to these variables, I exploit the cross-country dimension of the data set by including country dummies which reflect the average level of the intrumented variables in each sample country. I also carried out a Durbin-Wu-Hausman test, the null hypothesis for which states that OLS delivers consistent estimates, i.e., that instrumental variables techniques (2SLS) are not required. The value of the Durbin-Wu-Hausman statistic in specifications (1) and (2) is 2.37 and 2.67, respectively, with associated probabilities of 0.31 and 0.26, meaning that one cannot reject the null hypothesis that OLS delivers consistent estimates in both specifications. The discussion of Table 5 is therefore based on the OLS results.

The coefficient of the solicited individual rating dummy in specifications (1) and (2) is equal to 0.866 and 1.181, respectively, and is highly significant. This means that there is an important premium for banks which request an individual rating once controlling for other rating determinants. For other variables, the results appear to be standard. For example, loan loss provisions/net interest revenue, the cost to income ratio, and the communist country dummy negatively impact individual ratings, while higher values of equity/total assets, the consolidated statement dummy, the bank ownership dummy, and the disclosure index are associated with higher individual ratings. Other variables common to both specifications as well as the variables added in the second specification are not significant at the 95% level. In particular, the marginal effect that the other individual rating dummy has on how individual ratings are affected by the solicited individual rating dummy is zero. The statistics at the bottom of the table also indicate that the two specifications have similar prediction rates and classify about one-third of banks in the correct rating category and about one-half in the rating category

[12] Note that no bank with unsolicited ratings from Fitch is rated by Moody's or Capital Intelligence, which prevents analyzing whether there is a difference in the way Fitch treats banks not soliciting a rating but having a rating from a competitor agency versus banks which have no other rating.

immediately above or below the actual rating. Since the variables added in specification (2) are not or only marginally significant, I work with specification (1) from now on.[13]

5.2. Treatment effect model

The coefficient of the solicited individual rating dummy in Table 5 suggests that there is an important difference in treatment between banks which ask for a rating and those which do not. This result confirms the findings of the studies reviewed in the introduction. However, as noted earlier, ordinary least squares may overestimate the impact of the treatment if banks which request a rating are positively self-selected. For this reason, I proceed to use the methods described in Section 4.2 and 4.3 to correct for the potential sample selection bias.

Table 6 reports the results of the treatment effect model. The first two columns report two-step estimates (Heckman, 1979) which treat equity/total assets and the disclosure index as exogenous. The last two columns report two-step estimates obtained by instrumenting equity/total assets and the disclosure index before applying the two-step method.[14] For each method (two-step and two-step + IV), Table 6 reports the results of the selection and of the outcome equations. The dependent variable in the selection equation is the solicited individual rating dummy. The dependent variable in the outcome equation is the bank individual rating.

For identification purposes, the selection equation must include at least one variable that affects the decision to ask for a rating but not the rating itself. The variable which enters the selection equation but not the outcome equation is a solicited long-term debt rating dummy (one if the bank had a solicited long-term debt rating from Fitch before it obtained an individual rating and zero otherwise).[15] This variable is used as an exclusion restriction because Fitch started to issue long-term debt ratings in the 1980s, long before individual ratings. Therefore, banks which initially requested a long-term debt rating from Fitch should be more likely to have subsequently asked for an individual rating. At the same time, it is unlikely that paying for a long-term debt rating influenced the

[13] I also interacted the solicited individual rating dummy with the other explanatory variables and found that it has an intercept but no slope effect on individual ratings.

[14] The instruments for equity/total assets and the disclosure index are the same as in Table 5. Robust t-statistics are in parentheses for the two-step estimates and bootstrapped t-statistics are in parentheses for the two-step + IV estimates.

[15] For the minority of banks which obtained both types of ratings at the same time, the solicited long-term debt rating dummy is thus equal to zero. Setting the solicited long-term debt rating dummy to one if the bank had a solicited long-term debt rating before or at the same time it obtained an individual rating and zero otherwise does not affect the results.

individual rating. Since I view the decision to request an individual rating as a sequential process (i.e., banks' decision to buy an individual rating was influenced by their decision for the long-term debt rating), I treat the solicited long-term debt rating dummy as a lagged endogenous variable which does not have to be instrumented.

The results of the two-step and two-step + IV methods are relatively similar. Therefore, I focus on the two-step results. Looking at the selection equation, the signs of the estimates suggest that banks which are located in a non-communist country, which publish a consolidated financial statement and which are already subscribing to Fitch's long-term rating services are more likely to request an individual rating than other banks. Interestingly, financial variables do not seem to play a significant role in the decision to ask for an individual rating. The statistics at the bottom of the selection equation further indicate that the model correctly predicts the decision to request an individual rating for slightly more than two-thirds of the sample banks. Looking at the outcome equation, the estimates and their significance are in line with those reported in Table 6 except for equity/total assets and the solicited individual rating dummy, which are now only marginally significant. However, the coefficient of the hazard rate does not differ significantly from zero, implying that there is no evidence that there is a selectivity problem in the outcome equation. Finally, the statistics at the bottom of the outcome equation show that the classification accuracy of the treatment effect model is comparable to that of ordinary least squares.

5.3. Endogenous switching regression model

The results so far could be due to the fact that the above models are misspecified or too restrictive. For this reason, I consider a more general framework which allows the parameters of the outcome equation to differ according to whether or not banks have solicited a rating, while simultaneously controlling for sample selection.

Table 7 reports the results of the endogenous switching regression model. For clarity, I only report the results of the outcome equations, i.e., equations (8) and (9), and the results of the selection equation are omitted. The first two columns report maximum-likelihood estimates (Greene, 1995) which treat equity/total assets and the disclosure index as exogenous. The last two columns report maximum-likelihood estimates obtained by instrumenting equity/total assets and the disclosure index before performing the

maximum-likelihood estimation.[16] The dependent variable in each outcome equation is the bank individual rating.

Looking at Table 7, three variables are significant in the first two outcome equations and only two in the last two outcome equations. These variables have the expected sign, i.e., higher values of loan loss provisions/net interest revenue, the cost to income ratio, and the communist country dummy are negatively related to Fitch's assessment of banks' financial strength. The statistics at the bottom of the table indicate that the classification accuracy of the model is slightly better in the unsolicited than in the solicited group. For clarity, I focus on the maximum-likelihood estimates to further discuss the results of the endogenous switching regression model (the maximum-likelihood + IV estimates offer similar results).

First, the average treatment effect and the average treatment effect on the treated, which measure respectively the average gain from soliciting a rating for a randomly chosen bank and the average gain from soliciting a rating for those banks which have requested one, are obtained by estimating equations (14) and (16). The average treatment effect (ATE) is equal to 2.177 while the average treatment effect on the treated (ATT) is equal to 0.631. Bias-corrected confidence intervals based on bootstrap replications indicate that both effects are significantly different from zero (the confidence intervals are [2.146; 3.281] for ATE and [0.314; 1.042] for ATT).

Second, a Chow test of the null hypothesis that the coefficients of individual rating determinants are the same in the solicited and unsolicited groups was carried out. The value of the test statistic is 1.52 with an associated probability of 0.14, meaning that one cannot reject the null hypothesis that the coefficients of individual rating determinants are identical in both groups and that the endogenous switching regression model is less efficient than the treatment effect model. This result contrasts with Butler and Rodgers (2003), who find that soliciting a rating induces Moody's and S&P to place less weight on rating determinants reflecting public information.

Third, an F-test of the null hypothesis that the correlation coefficients between the error term in the selection equation and the error terms in the outcome equations are jointly insignificant was performed. The value of the test statistic is 0.60 with an associated probability of 0.55, meaning that one cannot reject the null hypothesis that ρ_{1u} and ρ_{2u} are both equal to zero and that there is no selection bias in individual

[16] The instruments for equity/total assets and the disclosure index are the same as in Tables 5 and 6. Robust t-statistics are in parentheses for the maximum-likelihood estimates and bootstrapped t-statistics are in parentheses for the maximum likelihood + IV estimates.

ratings. Thus, the results in Table 7 (like the results in Table 6) do not support the self-selection hypothesis and contrast with Poon (2003a), Poon (2003b), and Poon and Firth (2005) who find evidence of sample selection in S&P's and Fitch's ratings. However, as noted earlier, these papers use Heckman's standard model of sample selection and/or different sample of credit ratings hence their results are not necessarily comparable with those of this paper.

To sum up, the ordinary least squares regression, the treatment effect model, and the endogenous switching regression model all find a positive and significant difference between solicited and unsolicited ratings.[17] However, the treatment effect model and the endogenous switching regression model both fail to provide evidence for a sample selection problem in individual ratings. There is thus no evidence that that these models are more appropriate than ordinary least squares to study the determinants of bank individual ratings. For this reason, I rely on OLS and 2SLS regressions to test the public disclosure hypothesis, the results of which are presented in Table 8.

5.4. Test of the public disclosure hypothesis

According to the public disclosure hypothesis, banks which choose not to request a rating and which disclose a low amount of public information receive a lower rating than similar banks which have solicited a rating. However, banks which choose not to request a rating and which disclose a high enough amount of public information do not receive a lower rating than similar banks which have solicited a rating. The public disclosure hypothesis is tested using a regression of the form:

$$\begin{aligned} Rating_i = X_i\beta + \delta_1(Unsolicited_i \times High\ disclosure_i) \\ + \delta_2(Unsolicited_i \times (1 - High\ disclosure_i)) + \varepsilon_i \end{aligned} \tag{17}$$

where $Unsolicited_i$ is a dummy variable equal to one if bank i has not requested a rating and zero otherwise, and $High\ disclosure_i$ is a dummy variable equal to one if bank i is a high disclosure bank and zero otherwise (the comparison group is thus the banks with solicited ratings). In the following, high disclosure banks are defined as those having a disclosure index equal to or higher than the 50th percentile of the sample distribution of disclosure indexes, but the results also hold if higher percentiles are chosen.[18]

[17] This difference is only marginally significant in the case of the treatment effect model.
[18] The results also hold if High disclosure is defined using the percentiles of the world distribution of bank disclosure indexes instead of their sample distribution. The world distribution of bank disclosure indexes was obtained by calculating the disclosure index of 10,577 banks from Bankscope.

Equation (17) is estimated by ordinary least squares and by two-stage least squares to account for the potential endogeneity of equity/total assets, Unsolicited interacted with High disclosure, and Unsolicited interacted with (1 - High disclosure). As in previous regressions, the instruments consist of the exogenous variables in equation (17) and country dummies. Since a Durbin-Wu-Hausman test rejects the null hypothesis that OLS delivers consistent parameter estimates (the value of the test statistic is 12.6 with an associated probability of 0.01), the discussion of Table 8 is based on the 2SLS results.

Looking at Table 8, the estimated coefficients of the first seven explanatory variables (loan loss provisions/net interest revenue to log of total deposits) are close to those shown in Table 5, which is not surprising given that equations (1) and (17) are relatively similar. More interesting are the results for the coefficient of Unsolicited interacted with High disclosure and Unsolicited interacted with (1 - High disclosure). I find that the coefficient of the former variable is insignificant while the coefficient of the latter variable is significant and equal to -2.351. These results imply that banks which choose not to request a rating and which disclose a high amount of public information do not receive a lower rating than similar banks which have solicited a rating, while banks which choose not to request a rating and which disclose a low amount of public information receive a rating which is lower than the rating of banks which have asked to be rated. This finding is consistent with the public disclosure hypothesis.

Even though credit rating agencies generally do not distinguish between solicited and unsolicited ratings in developed countries, an interesting question is whether the above results are transferable to European banks. Indeed, Fitch has recently started to develop internal ratings for Central and Eastern European banks (Fitch, 2005b).

Interestingly, evidence from Bankscope suggests that rated EU-25 banks have a level of disclosure comparable to that of rated Asian banks (the disclosure index averages 64.3 for rated EU-25 banks compared to 62.9 for rated Asian banks).[19] Moreover, the disclosure level of rated EU-25 banks appears to less homogenous than that of rated Asian banks (the standard deviation of the disclosure index is equal to 17.0 for rated EU-25 banks compared to 14.7 for rated Asian banks). Thus, there may be reason to believe that a lack of public disclosure might also explain any potentially lower unsolicited ratings of European banks.

[19] These figures are for banks rated by Moody s, S&P, or Fitch.

6. Conclusion

This paper investigates whether there is a difference between Fitch's solicited and unsolicited bank ratings and, if so, why. Using ratings assigned to Asian banks, I find no evidence that, in determining bank ratings, Fitch assigns different weights across solicited and unsolicited groups to observable bank characteristics. This result gives some credence to Fitch's claim that the methodology for its unsolicited bank ratings is "nearly the same" as for its solicited bank ratings (Fitch, 2001). However, I do find that unsolicited bank ratings tend to be lower than solicited ones after controlling for observable bank characteristics. The difference between both types of ratings is economically significant, as it averages 0.9 notches on a 1 to 9 rating scale.

The existence of a difference between solicited and unsolicited ratings has already been documented for other credit rating agencies. Several explanations are consistent with such a difference, including the fact that better-quality issuers may request a rating or that unsolicited ratings do not involve the disclosure of non-public information and, as a result, may be more conservative than solicited ones. In addition, many issuers also believe that credit rating agencies assign a lower unsolicited rating to persuade them to pay for a solicited rating.

In contrast to previous research on the differences in solicited and unsolicited ratings, the analysis of this paper explicitly controls for potential sample selection by using a treatment effect model and an endogenous switching regression model to test whether better-quality banks self-select into the solicited group (self-selection hypothesis). Although the analysis does find a significant difference between solicited and unsolicited ratings, no evidence is found in favour of the sample selection hypothesis. The analysis also tests whether the difference between solicited and unsolicited ratings disappears for banks with unsolicited ratings but which disclose a high enough amount of information (public disclosure hypothesis). Support is found for this hypothesis: banks with unsolicited ratings but a high amount of disclosure receive ratings that are not significantly different from the ratings of similar banks which have solicited a rating.

The above-mentioned findings are interesting for several reasons. First, possible measures concerning the use of unsolicited ratings are currently being discussed at the European and U.S. levels (SEC, 2003; European Commission, 2004). Although the results of this study find no evidence of wrongdoing by Fitch, they support additional measures designed to clarify the differences between solicited and unsolicited ratings. For instance, it should be required that credit rating agencies clearly label unsolicited ratings

as such in their publications and that they make the specific characteristics and the limitations of this type of ratings, inclusive of the conservative bias documented in this paper, completely transparent to the public. In this respect, Fitch's recent decision to give up disclosing whether a rating is solicited or not in its regular publications does not represent a step toward more transparency in the credit rating industry. It also contradicts the new IOSCO code of conduct for credit rating agencies, which clearly states that "each rating not initiated at the request of issuer should be identified as such" (IOSCO, 2004).

Second, the New Basel Accord, which is due to be implemented by G-10 banks at the beginning of 2007, aims at increasing public disclosure by banks in order to ensure that market participants can better understand banks' risk profiles and the adequacy of their capital positions (Basel Committee, 2004). It is therefore necessary that financial institution managers understand the need for more disclosure and move in this direction on their own. This paper provides an incentive for bank managers to disclose information as it documents the impact of public disclosure on credit ratings and on the relation between soliciting a rating and the actual rating outcome. Public disclosure not only appears to have a positive effect on credit ratings, but it also seems to eliminate the downward bias of unsolicited ratings.

Third, Fitch recently announced that it was about to assign unsolicited ratings to European and U.S. insurance companies "in order to provide more comprehensive coverage" in the European and U.S. insurance sectors "to meet the growing demand" for its ratings. In contrast to traditional solicited insurance ratings, these ratings would be "generated solely using a statistical model that utilizes financial statement information" (Fitch, 2004b; Fitch, 2005c). Fitch's announcement triggered an immediate reaction from the German Insurance Industry Association (GDV), which expressed its deepest concerns and urged Fitch to refrain from publishing any unsolicited ratings unless the new rating methodology had been "fully disclosed and widely discussed with the German insurance industry and the general public" (GDV, 2004). Fitch replied by clarifying some points underlying its methodology for unsolicited insurance ratings but decided to press ahead with the publication of these ratings (Fitch, 2005d). The results of this paper, which indicate the existence of a conservative bias in unsolicited ratings of low disclosure banks, suggest that insurance industry associations should be more worried about the level of public disclosure of their members than by the issuance of unsolicited ratings per se.

Finally, it is worth stressing once again that the credit ratings used in this study are assigned to banks located in Asia. To some extent, this may limit the relevance of the results of this paper for other contexts. Although this caveat implies that the policy recommendations should be interpreted with care, the fact that European banks exhibit a comparable and more dispersed level of public disclosure than Asian banks suggests that the results could well carry over.

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Table 1
Distribution of sample bank individual ratings by country

Country	Solicited		Unsolicited		Total	
	#	%	#	%	#	%
Bangladesh	1	0.6	5	3.0	6	3.6
China	1	0.6	15	8.9	16	9.5
Hong Kong	8	4.7	10	5.9	18	10.7
India	4	2.4	28	16.6	32	18.9
Indonesia	10	5.9	2	1.2	12	7.1
Macau	2	1.2	1	0.6	3	1.8
Malaysia	7	4.1	4	2.4	11	6.5
Philippines	11	6.5	2	1.2	13	7.7
South Korea	9	5.3	3	1.8	12	7.1
Taiwan	20	11.8	19	11.2	39	23.1
Vietnam	1	0.6	6	3.6	7	4.1
Total	74	43.8	95	56.2	169	100

The whole sample consists of 169 bank individual ratings assigned by Fitch. Ratings are as of January 31, 2004, and come from Bankscope and Fitch Research. Only those countries that have both solicited and unsolicited bank individual ratings are included in the sample.

Table 2
Distribution of sample bank individual ratings by rating level

Individual rating	Interpretation	Solicited		Unsolicited		Total	
		#	%	#	%	#	%
A	A very strong bank	-	-	-	-	-	-
A / B		1	0.6	1	0.6	2	1.2
B	A strong bank	2	1.2	0	0.0	2	1.2
B / C		11	6.5	3	1.8	14	8.3
C	An adequate bank	17	10.1	14	8.3	31	18.3
C / D		14	8.3	11	6.5	25	14.8
D	A bank with weaknesses	20	11.8	20	11.8	40	23.7
D / E		5	3.0	23	13.6	28	16.6
E	A bank with serious problems	4	2.4	23	13.6	27	16.0
Total		74	43.8	95	56.2	169	100

The whole sample consists of 169 bank individual ratings assigned by Fitch. Ratings are as of January 31, 2004, and come from Bankscope and Fitch Research. See Appendix A for a detailed interpretation of each rating category.

Table 3
Descriptive statistics of bank characteristics

Variable	Definition	Obs	Mean	SD	Min	Max
Risk management						
Loan loss provisions/Net int. rev.	100 × (Loan loss provisions/Net interest revenue)	155	35.4	53.5	-75.9	312.9
Impaired loans/Gross loans	100 × (Impaired loans/(Loans + Loan loss reserve))	123	12.1	15.4	0	97.3
Funding and liquidity						
Net loans/Total assets	100 × (Loans/Total assets)	169	50.7	17.0	-0.1	91.4
Liquid assets/Total deposits	100 × (Liquid assets/Customer and short-term funding)	156	39.0	49.7	0.7	471.3
Capitalisation						
Total capital ratio	100 × ((Tier 1 + Tier 2 capital)/Risk-weighted assets)	140	14.7	12.2	-12.1	137.8
Equity/Total assets	100 × (Equity/Total assets)	169	9.3	12.2	-20.2	84.0
Securitisation						
(no variable found in Bankscope)						
Earnings and performance						
Return on assets	100 × (Net income/Total assets)	169	0.5	2.0	-11.0	7.2
Cost to income ratio	100 × (Overheads/(Net Interest Revenue + Other Operating Income))	168	52.1	23.5	14.5	240.3
Market environment						
Consolidated statement	100 if the bank's statement is consolidated, 0 otherwise	169	52.1	50.1	0	100
Unqualified statement	100 if the bank's statement has been audited and the accounts have been accepted by the auditors without any remark, 0 otherwise	169	82.1	25.4	0	100
Commercial bank	100 if commercial bank, 0 otherwise	169	87.0	33.7	0	100
Communist country	100 if the bank is located in China or Vietnam, 0 otherwise	169	13.6	34.4	0	100
Sovereign rating long-term	Fitch's sovereign foreign currency long-term rating coded on a 20 (AAA) to 1 (D) scale	160	12.8	3.4	7	17
Diversification/franchise						
Total deposits	Total deposits (in billion of U.S. $)	160	22.0	61.4	0.0	506.0
Market share (deposits)	100 × (Total deposits at bank j/Total banking deposits in the country of bank j)	156	5.5	9.0	0.1	56.6
Number of branches/Total assets	Number of branches/Total assets (in billion of U.S. $)	122	64.3	86.3	1.4	460.1
Number of banks per 1,000,000 inhabitants	Number of banks in country j/(Total population in country j/1,000,000)	169	2.7	4.8	0.0	21

Table 3. (Continued)

Variable	Definition	Obs	Mean	SD	Min	Max
Management and strategy						
Number of directors and managers	Number of directors and managers who are members of the supervisory board, the board of managing directors, the executive committee, and/or the audit committee	131	20.8	12.0	1	70
Corporate governance						
Domestic shareholders	100 if all bank shareholders are from the bank's country, 0 otherwise	158	75.9	42.9	0	100
Percentage of shares owned by:	Percentage of bank shares owned by:					
Banks	other banks (0 - 100)	163	28.1	40.0	0	100
Individuals/Families	individuals and families (0 - 100)	163	2.1	9.8	0	92
Industrial companies	industrial companies (0 - 100)	163	10.4	22.2	0	100
State/Public authority	State and public authority (0 - 100)	163	19.7	35.3	0	100
Number of subsidiaries majority owned	Number of bank and non bank subsidiaries majority owned by the bank	137	4.8	6.1	0	42
Public disclosure						
Disclosure index	Disclosure index $= \frac{1}{21}\sum_{i=1}^{17} \text{category}_i$, where category_i is equal to 0 if there is no entry in any of the corresponding sub-categories in Bankscope and 100 otherwise (some categories receive an extra-weight - see Baumann and Nier, 2004). The 17 categories include asset categories (loans by maturity, loans by type, loans by counterparty, problem loans, problem loans by type, securities by type, securities by holding purpose), liabilities categories (deposits by maturity, deposits by type of customer, money market funding, long-term funding), memo lines categories (reserves, capital, contingent liabilities, off-balance-sheet items) and income statement categories (non-interest income, loan loss provision).	169	64.8	12.4	23.8	93.3

The whole sample consists of 169 bank individual ratings assigned by Fitch. Ratings are as of January 31, 2004, and come from Bankscope and Fitch Research. Variables in the table were selected according to Fitch's bank rating methodology (Fitch, 2004a). Statistics include number of observations (Obs), mean (Mean), standard deviation (SD), minimum (Min) and maximum (Max) of each variable. Following Fitch's bank rating methodology, the 5-year average of variables (1999 to 2003) is used if available, the 3-year average (2001 to 2003) if not.

Table 4
Comparison of banks characteristics in the solicited and unsolicited groups

Variables	Solicited			Unsolicited			t values
	Mean	SD	Obs	Mean	SD	Obs	
Risk management							
Loan loss provisions/Net int. rev.	33.9	69.6	65	36.4	38.3	90	-0.30
Impaired loans/Gross loans	14.9	19.6	64	9.1	7.7	59	2.14**
Funding and liquidity							
Net loans/Total assets	48.4	20.5	74	52.6	13.5	95	-1.59
Liquid assets/Total deposits	47.7	71.5	70	31.9	15.7	86	1.99**
Capitalisation							
Total capital ratio	17.3	17.0	65	12.5	4.4	75	2.35**
Equity/Total assets	13.2	17.2	74	6.2	3.9	95	3.81***
Securitisation							
(no variable found in Bankscope)							
Earnings and performance							
Return on assets	0.5	2.7	74	0.5	1.0	95	-0.11
Cost to income ratio	49.0	21.6	73	54.5	24.7	95	-1.51
Market environment							
Consolidated statement	62.2	48.8	74	44.2	49.9	95	2.34**
Unqualified statement	88.3	17.4	74	77.2	29.4	95	2.86***
Commercial bank	77.0	42.4	74	94.7	22.4	95	-3.50***
Communist country	2.7	16.3	74	22.1	41.7	95	-3.78***
Sovereign rating long-term	12.9	3.7	71	12.8	3.1	89	0.07
Diversification/franchise							
Total deposits	15.3	27.4	65	26.5	76.3	95	-1.13
Market share (deposits)	5.6	6.5	62	5.4	10.4	94	0.11
Number of branches/Total assets	51.7	96.9	42	70.9	80.1	80	-1.17
Number of banks per 1,000,000 inh.	3.3	5.0	74	2.3	4.6	95	1.37
Management and strategy							
Number of directors and managers	19.3	10.0	52	21.8	13.0	79	-1.17
Corporate governance							
Domestic shareholders	73.5	44.4	68	77.8	41.8	90	-0.62
Percentage of shares owned by:							
Banks	33.8	41.7	73	23.4	38.2	90	1.66*
Individuals/Families	4.3	14.3	73	0.4	1.7	90	2.59***
Industrial companies	10.9	24.7	73	10.0	20.1	90	0.26
State/Public authority	9.1	24.3	73	28.3	40.3	90	-3.57***
Number of subsidiaries maj. owned	7.0	7.7	59	3.2	3.9	78	3.77***
Public disclosure							
Disclosure index	65.8	11.4	74	64.0	13.1	95	0.94

The whole sample consists of 169 bank individual ratings assigned by Fitch. Ratings are as of January 31, 2004, and come from Bankscope and Fitch Research. Variables in the table were selected according to Fitch's bank rating methodology (Fitch, 2004a). Statistics include mean (Mean), standard deviation (SD) and number of observations (Obs) of each variable. The t-values in the last column refer to the t-statistics of the means between the solicited rating group and the unsolicited rating group; * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5
Determinants of bank individual ratings: ordinary least squares and two-stage least squares regressions

Independent variables	Ordinary least squares		Two-stage least squares	
	(1)	(2)	(1)	(2)
Constant	0.352	0.326	-0.561	-0.426
	(0.23)	(0.22)	(0.31)	(0.25)
Loan loss provisions/Net interest revenue	-0.010**	-0.010**	-0.009*	-0.009**
	(2.20)	(2.35)	(1.95)	(1.99)
Net loans/Total assets	0.000	-0.006	0.000	-0.006
	(0.05)	(0.79)	(0.06)	(0.75)
Equity/Total assets	0.038**	0.038	0.048	0.046
	(2.07)	(1.60)	(1.26)	(1.15)
Cost to income ratio	-0.020***	-0.021***	-0.018**	-0.020***
	(2.87)	(3.29)	(2.42)	(2.77)
Consolidated statement dummy	0.700***	0.720***	0.694***	0.737***
	(3.26)	(3.32)	(3.08)	(3.31)
Communist country dummy	-1.248***	-1.438***	-1.038***	-1.206***
	(3.72)	(4.45)	(2.84)	(3.17)
Log (total deposits)	0.074	0.156*	0.065	0.135
	(0.86)	(1.67)	(0.60)	(1.19)
Bank ownership dummy	0.816***	0.580**	0.810***	0.596**
	(3.47)	(2.35)	(3.39)	(2.30)
Disclosure index	0.035***	0.030***	0.047***	0.045***
	(3.11)	(2.99)	(3.15)	(2.85)
Solicited individual rating dummy	0.866***	1.181***	0.836***	1.173***
	(3.94)	(3.94)	(3.75)	(3.89)
Unqualified statement dummy		-0.303		-0.505
		(0.81)		(1.14)
State ownership dummy		-0.585*		-0.495*
		(1.86)		(1.93)
Solicited dummy × Other rating dummy		-0.643*		-0.633*
		(1.92)		(1.89)
Observations	148	148	148	148
Adjusted R-squared	0.58	0.61	0.57	0.60
Classification accuracy (%):				
actual minus predicted rating = 0	31.8	31.8	34.5	29.7
actual minus predicted rating = -1 or 1	50.7	52.7	46.6	54.1
actual minus predicted rating ≥ -2 or 2	17.6	15.5	18.9	16.2

The dependent variable in each regression is the bank individual rating coded on a 9 (A) to 1 (E) scale. The first two columns report ordinary least squares estimates which treat equity/total assets and the disclosure index as exogenous. The last two columns report two-stage least squares estimates obtained by instrumenting equity/total assets and the disclosure index with the other (exogenous) explanatory variables and country dummies which reflect the average level of the intrumented variables in each sample country. Robust t-statistics are in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6
Determinants of bank individual ratings: treatment effect model

Independent variables	Two-step		Two-step + IV	
	Selection	Outcome	Selection	Outcome
Constant	0.516	0.176	-0.101	-0.693
	(0.28)	(0.12)	(0.05)	(0.42)
Loan loss provisions/Net interest revenue	0.007*	-0.011***	0.007	-0.010**
	(1.70)	(2.77)	(1.54)	(2.49)
Net loans/Total assets	-0.001	0.000	-0.003	0.000
	(0.13)	(0.02)	(0.29)	(0.06)
Equity/Total assets	0.007	0.036*	0.056	0.038
	(0.25)	(1.66)	(1.24)	(0.86)
Cost to income ratio	0.001	-0.020***	0.005	-0.019***
	(0.19)	(4.20)	(0.74)	(3.20)
Consolidated statement dummy	0.804***	0.596**	0.757***	0.559*
	(3.09)	(2.01)	(2.88)	(1.87)
Communist country dummy	-1.170**	-1.143***	-1.449**	-0.855*
	(2.15)	(2.88)	(2.45)	(1.70)
Log (total deposits)	-0.156	0.089	-0.056	0.070
	(1.50)	(1.04)	(0.46)	(0.70)
Bank ownership dummy	-0.080	0.833***	-0.051	0.829***
	(0.26)	(3.27)	(0.17)	(3.23)
Disclosure index	0.014	0.034***	-0.006	0.048***
	(1.18)	(3.41)	(0.33)	(3.06)
Solicited long-term debt rating dummy	1.060***		0.935***	
	(2.91)		(2.58)	
Solicited individual rating dummy		1.214*		1.325*
		(1.67)		(1.65)
Hazard rate $= \rho\sigma_\varepsilon$		-0.225		-0.260
		(0.50)		(0.53)
Observations	148	148	148	148
Pseudo R-squared	0.20		0.20	
Classification accuracy (%) - Selection:				
correctly classified	71.6		65.5	
Adjusted R-squared		0.54		0.54
Classification accuracy (%) - Outcome:				
actual minus predicted rating = 0		32.4		34.5
actual minus predicted rating = -1 or 1		51.4		50.0
actual minus predicted rating ≥ -2 or 2		16.2		15.5

The table reports the results of the treatment effect model. The first two columns report two-step estimates (Heckman, 1979) which treat equity/total assets and the disclosure index as exogenous. The last two columns report two-step estimates obtained by instrumenting equity/total assets and the disclosure index before applying the two-step method (the instruments for equity/total assets and the disclosure index are the same as in Table 5). For each method (two-step and two-step + IV), the table reports the results of the selection and of the outcome equations. The dependent variable in the selection equation is the solicited individual rating dummy (1 if solicited, 0 otherwise). The dependent variable in the outcome equation is the bank individual rating coded on a 9 (A) to 1 (E) scale. Robust t-statistics are in parentheses for the two-step estimates; bootstrapped t-statistics are in parentheses for the two-step + IV estimates; * sign. at 10%; ** sign. at 5%; *** sign. at 1%.

Table 7
Determinants of bank individual ratings: endogenous switching regression model

Independent variables	Max. Likelihood		Max. Likelihood + IV	
	Unsolicited	Solicited	Unsolicited	Solicited
Constant	1.583	-1.187	0.140	0.102
	(0.71)	(0.37)	(0.06)	(0.02)
Loan loss provisions/Net interest revenue	-0.016**	-0.015**	-0.013**	-0.019**
	(2.29)	(2.32)	(2.12)	(2.49)
Net loans/Total assets	-0.009	0.018	-0.010	0.022
	(0.87)	(0.96)	(0.87)	(0.99)
Equity/Total assets	0.091	0.004	0.075	-0.066
	(1.56)	(0.10)	(0.67)	(0.56)
Cost to income ratio	-0.018***	-0.024**	-0.015	-0.034**
	(2.65)	(2.28)	(1.48)	(1.97)
Consolidated statement dummy	0.750	-0.266	0.665	-0.852
	(1.39)	(0.46)	(1.06)	(1.42)
Communist country dummy	-1.472***	1.341	-0.707	1.639
	(2.92)	(0.20)	(0.76)	(0.25)
Log (total deposits)	0.071	0.315*	-0.008	0.350
	(0.56)	(1.66)	(0.07)	(1.13)
Bank ownership dummy	0.659*	0.887	0.601*	0.806
	(1.81)	(1.56)	(1.75)	(1.24)
Disclosure index	0.023*	0.034	0.058*	0.036
	(1.89)	(1.60)	(1.86)	(0.81)
Standard deviation (ε_1) = σ_1	0.964***		0.941***	
	(8.29)		(7.36)	
Correlation (ε_1, u) = ρ_{1u}	0.131		-0.114	
	(0.12)		(0.08)	
Standard deviation (ε_2) = σ_2		1.442***		1.838***
		(4.99)		(6.50)
Correlation (ε_2, u) = ρ_{2u}		-0.841*		-0.887*
		(1.72)		(1.68)
Observations	85	63	85	63
Adjusted R-squared	0.57	0.36	0.59	0.28
Classification accuracy (%):				
actual minus predicted rating = 0	37.7	25.4	38.8	31.8
actual minus predicted rating = -1 or 1	51.8	52.4	50.6	47.6
actual minus predicted rating ≥ -2 or 2	10.6	22.2	10.6	20.6

The table reports the results of the endogenous switching regression model. The first two columns report maximum likelihood estimates (Greene, 1995) which treat equity/total assets and the disclosure index as exogenous. The last two columns report maximum likelihood estimates obtained by instrumenting equity/total assets and the disclosure index before performing the maximum-likelihood estimation (the instruments for equity/total assets and the disclosure index are the same as in Tables 5 and 6). The dependent variable in each equation is the bank individual rating coded on a 9 (A) to 1 (E) scale. Robust t-statistics are in parentheses for the maximum-likelihood estimates; bootstrapped t-statistics are in parentheses for the maximum-likelihood + IV estimates; * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8
Determinants of bank individual ratings: test of the public disclosure hypothesis

Independent variables	Ordinary least squares	Two-stage least squares
Constant	2.558*	0.902
	(1.79)	(0.45)
Loan loss provisions/Net interest revenue	-0.012***	-0.009**
	(2.62)	(2.02)
Net loans/Total assets	0.001	0.005
	(0.10)	(0.48)
Equity/Total assets	0.045**	0.084**
	(2.12)	(1.98)
Cost to income ratio	-0.021***	-0.015**
	(2.99)	(1.99)
Consolidated statement dummy	0.692***	0.702**
	(3.17)	(2.47)
Communist country dummy	-1.511***	-0.659
	(5.34)	(1.33)
Log (total deposits)	0.145*	0.188*
	(1.66)	(1.70)
Bank ownership dummy	0.894***	1.048***
	(3.56)	(3.22)
Unsolicited × High Disclosure	-0.675**	0.084
	(2.60)	(0.16)
Unsolicited × (1 - High Disclosure)	-1.303***	-2.351***
	(5.30)	(3.22)
Observations	148	148
Adjusted R-squared	0.55	0.41
Classification accuracy (%):		
actual minus predicted rating = 0	31.8	27.7
actual minus predicted rating = -1 or 1	50.0	46.0
actual minus predicted rating ≥ -2 or 2	18.2	26.4

The dependent variable in each regression is the bank individual rating coded on a 9 (A) to 1 (E) scale. The first column reports ordinary least squares estimates which treat equity/total assets, unsolicited × high disclosure, and unsolicited × (1 - high disclosure) as exogenous. The last column reports two-stage least squares estimates obtained by instrumenting equity/total assets, unsolicited × high disclosure, and unsolicited × (1 - high disclosure) with the other (exogenous) explanatory variables and country dummies which reflect the average level of the intrumented variables in each sample country. Robust t-statistics are in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Appendix A. Fitch's individual ratings: definition and scale

Definition:

Individual Ratings are assigned only to banks. These ratings, which are internationally comparable, attempt to assess how a bank would be viewed if it were entirely independent and could not rely on external support. These ratings are designed to assess a bank's exposure to, appetite for, and management of risk, and thus represent our view on the likelihood that it would run into significant difficulties such that it would require support. The principal factors we analyze to evaluate the bank and determine these ratings include profitability and balance sheet integrity (including capitalization), franchise, management, operating environment, and prospects. Finally, consistency is an important consideration, as is a bank's size (in terms of equity capital) and diversification (in terms of involvement in a variety of activities in different economic and geographical sectors).

Scale:

A A very strong bank. Characteristics may include outstanding profitability and balance sheet integrity, franchise, management, operating environment or prospects.

B A strong bank. There are no major concerns regarding the bank. Characteristics may include strong profitability and balance sheet integrity, franchise, management, operating environment or prospects.

C An adequate bank, which, however, possesses one or more troublesome aspects. There may be some concerns regarding its profitability and balance sheet integrity, franchise, management, operating environment or prospects.

D A bank, which has weaknesses of internal and/or external origin. There are concerns regarding its profitability and balance sheet integrity, franchise, management, operating environment or prospects. Banks in emerging markets are necessarily faced with a greater number of potential deficiencies of external origin.

E A bank with very serious problems, which either requires or is likely to require external support.

Intermediate categories, i.e., A/B, B/C, C/D, and D/E, are also used.

Source: http://www.fitchratings.com/

Appendix B.

Table 9 compares ordinary least squares and ordered probit estimates of equation (1).

Table 9
Determinants of bank individual ratings: ordinary least squares and ordered probit regressions

Independent variables	Ordinary least squares		Ordered probit	
	(1)	(2)	(1)	(2)
Constant	0.352	0.326	-	-
	(0.23)	(0.22)	-	-
Loan loss provisions/Net interest revenue	-0.010**	-0.010**	-0.009**	-0.011**
	(2.20)	(2.35)	(2.10)	(2.40)
Net loans/Total assets	0.000	-0.006	-0.003	-0.012
	(0.05)	(0.79)	(0.45)	(1.52)
Equity/Total assets	0.038**	0.038	0.034**	0.031
	(2.07)	(1.60)	(2.09)	(1.41)
Cost to income ratio	-0.020***	-0.021***	-0.020***	-0.023***
	(2.87)	(3.29)	(2.86)	(3.43)
Consolidated statement dummy	0.700***	0.720***	0.648***	0.649***
	(3.26)	(3.32)	(3.16)	(3.03)
Communist country dummy	-1.248***	-1.438***	-1.312***	-1.675***
	(3.72)	(4.45)	(3.73)	(4.73)
Log (total deposits)	0.074	0.156*	0.053	0.167*
	(0.86)	(1.67)	(0.62)	(1.68)
Bank ownership dummy	0.816***	0.580**	0.748***	0.495**
	(3.47)	(2.35)	(3.64)	(2.18)
Disclosure index	0.035***	0.030***	0.034***	0.029***
	(3.11)	(2.99)	(3.11)	(2.92)
Solicited individual rating dummy	0.866***	1.181***	0.851***	1.220***
	(3.94)	(3.94)	(4.15)	(4.17)
Unqualified statement dummy		-0.303		-0.004
		(0.81)		(0.01)
State ownership dummy		-0.585*		-0.772*
		(1.86)		(1.96)
Solicited dummy × Other rating dummy		-0.643*		-0.703**
		(1.92)		(2.19)
Observations	148	148	148	148
Adjusted R-squared	0.58	0.61		
Pseudo R-squared			0.24	0.26
Classification accuracy (%):				
actual minus predicted rating = 0	31.8	31.8	34.5	33.1
actual minus predicted rating = -1 or 1	50.7	52.7	48.0	49.3
actual minus predicted rating ≥ -2 or 2	17.6	15.5	17.6	17.6

The dependent variable in each regression is the bank individual rating coded on a 9 (A) to 1 (E) scale. The first two columns report ordinary least squares estimates. The last two columns report ordered probit estimates (for brevity, estimated cut points of the ordered probit are omitted). Robust t-statistics are in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

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