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WINNIE P.H. POON AND KAM C. CHAN

The Effects of Credit Ratings on Stock Returns in China

Abstract: Domestic credit-rating agencies in China have been criticized for having no effect on the decisions of investors. We examine whether credit ratings and rating outlooks of the listed companies that are assigned by Chinese rating agencies have any effect on their stock returns. We use the pooled time-series cross-sectional issuer-rating data of 160 companies that are listed on the Shanghai and Shenzhen stock exchanges from Xinhua–Far East China Credit Ratings (a Hong Kong–based credit-ratings agency) for 2002 to 2004. Using a simultaneous equation model, we offer new insights into the determinants of Chinese credit ratings and whether credit ratings affect stock returns. The results suggest that profitability, debt structure, firm size, and past stock performance are important factors in determining Chinese credit ratings and rating outlooks.

Winnie P.H. Poon is an associate professor in the Department of Finance and Insurance, Lingnan University, Hong Kong; e-mail: winpoon@ln.edu.hk. Kam C. Chan is the Leon Page Professor of Banking and Finance at the Gordon Ford College of Business, Western Kentucky University, Bowling Green, KY 42101; e-mail: johnny.chan@wku.edu.

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The model shows that credit ratings and the stock performance of the rated companies simultaneously influence each other. Chinese credit ratings are important to the stock returns of the rated issuers in China. Our empirical results provide preliminary evidence that contrasts the conceptual argument that credit ratings in China are not important to investors.

To make use of its large amount of private funds and to reduce the financial dependence of its infrastructure projects on the state budget, the World Bank recommends that China develop a sophisticated bond market (*China Daily* 1998b). As credit-rating agencies perform an important role in the development of bond markets, it is important to examine the development of rating agencies in China. Until January 2004, the international rating agencies rated fewer than 100 Chinese firms when there were more than 8 million corporations and over 100 banks seeking capital with which to expand (Baglolle 2004; Lunsford 2004). If the Chinese regulatory authorities were to allow foreign credit agencies to rate Chinese domestic bonds and open up the rating industry for more competition, then there would be huge opportunity for credit-rating business. As of January 2006, Chinese bonds that are offered only to the domestic market are not required to obtain international credit ratings, unless they intend to raise capital from international capital markets or to cross-list on a foreign stock exchange. While Standard & Poor's (S&P) is one of the five "Nationally Recognized Statistical Ratings Organizations" (NRSROs)¹ in the United States (SEC 2005), Chinese regulatory authorities do not officially recognize it as an acceptable credit-ratings agency. One of the major problems that hinder the growth of the Chinese bond market is the absence of "authentic" issuer ratings on bonds (*China Daily* 1998a). Credit agencies in China have been criticized for not being completely independent and not being able to establish their own credibility (*China Daily* 2001; Harrison 2003). S&P (2003) states that, "although there are over a dozen local credit-rating agencies with the number constantly increasing, none of them has been able to establish a recognized domestic benchmarking standard."

Scott Kennedy (2003) believes that the domestic credit-rating

agencies in China have had no effect on the decisions of investors. Investors do not seem to pay attention to their ratings, and even a AAA rating is of little value to some speculators. Kennedy and other critics, however, offer no empirical evidence with statistical testing to support their claims. We argue that, with an evolving investment climate and the increasing sophistication of institutional investors in China in recent years, some investors must be aware of the information that is conveyed from the credit ratings issued by major Chinese rating agencies. Hence, whether there is an impact of credit ratings in China on companies' stock returns remains a question for research.

We have two objectives. First, we examine whether the credit ratings and rating outlooks of listed Chinese companies that are assigned by Chinese credit-rating agencies are having any effect on their stock returns. The results will shed light on the "importance" of these Chinese credit ratings to the investors of Chinese stocks. With the exception of Poon and Chan (2007), the literature only provides qualitative analyses on credit ratings in China and lacks empirical evidence. Our study is significant to the literature because it investigates Chinese credit ratings and their relationships to the stock market. Second, we provide an alternative research method. The common research method in the existing literature is primarily based on a single equation that focuses on a unilateral relationship. That is, extant studies either examine how credit ratings affect security price changes or examine the determinants of credit ratings. Our improved research method considers the bilateral relationship and simultaneity between credit ratings and security price changes.

Background to the Research

Background and Regulations for the Credit-Rating Industry in China

Credit ratings in China were initiated in 1987 when the State Council issued the "Temporary Regulations on the Management of Corporate Bonds" (Harrison 2003). This prompted provincial branches of the People's Bank of China (PBOC) to create credit-

rating departments. These rating departments then evolved into independent credit-rating firms, and other rating agencies emerged in subsequent years (Kennedy 2003 and 2004). The temporary regulations were effective until the release of the “Regulations on the Management of Corporate Bonds” (or the “Corporate Bond Regulations”) on August 2, 1993 (State Council 1993). Since 1994, the PBOC has promulgated regulations which stipulate that listed bond issuers and bank-loan borrowers must obtain credit ratings (*China Daily* 1998a). On December 16, 1997, in an attempt to keep the rating industry in order, the PBOC announced that all corporate bond issuers had to obtain credit ratings from PBOC-approved rating agencies before their issues (PBOC 1997; and Kennedy 2003).

Recently, the China Securities Regulatory Commission (CSRC) prepared a draft “Measure on Regulating the Securities Credit-Rating Business.” This move from the CSRC was an effort to formalize the accreditation process for credit-rating agencies, and to accredit agencies with more standard criteria for minimum asset requirements, rating experience, rating system, and prohibited activities (Kennedy 2003). To our knowledge, the final version of this regulation was not yet available to the public as of January 2006.

Recent Developments in the Credit-Rating Industry in China

Poon and Chan (2008) discuss several recent developments in the credit-rating industry in China. We only highlight several interesting aspects here. There are about twenty domestic rating agencies in China, but most of them are small and lack advanced technology (*China Daily* 1998b). They attempt to seek expertise and employ the rating methodologies of international credit-rating agencies (Kennedy 2003). The major players in China’s domestic corporate bond business are Shanghai Far East Credit Rating Co., Ltd. (SFE), China Chengxin International Credit Rating Co., Ltd. (CCXI), Dagong Global Credit Rating Co., Ltd. (Dagong), and China Lianhe Credit Rating Co., Ltd. (Lianhe) (SFE 2004; CCXI 2004; Dagong 2004; Lianhe 2004; and Kennedy 2003). The Xinhua Financial Network (XFN) of Xinhua Finance in Hong Kong

and SFE formed a strategic alliance called “XFN–Far East China Credit Rating” (Xinhua–Far East) in 2002 to conduct credit-rating analyses (SFE 2004).

In addition to local rating agencies, the top three international rating agencies, Moody’s Investors Service (Moody’s), S&P, and Fitch Ratings Ltd. (Fitch), have approached the nascent credit-rating industry in China in recent years. Fitch formed a joint venture with China Chengxin Credit Management Co., Ltd. (CCX), in 1999 and divested its 30 percent share in 2004. Moody’s signed a two-phase cooperative agreement with Dagong in 1999 (Moody’s 1999; Xinhua 1999). On February 12, 2003, to prepare for further development or independent credit research work in China, Moody’s established Beijing Moody’s Venture Information Technology Service Ltd. (BMVITS) (SinoCast 2003). S&P has also been active in assigning both interactive ratings (solicited ratings) and “pi” ratings (unsolicited ratings) to major Chinese banks and Chinese companies listed on international stock exchanges such as the New York Stock Exchange (NYSE), the London Stock Exchange (LSE), and the Stock Exchange of Hong Kong Limited (SEHK).²

Selected Credit-Rating Studies

There are two strands of literature on credit-rating research. The first strand examines whether changes in the credit ratings that are assigned by credit-rating agencies affect stock and bond prices (for example, Barron, Clare, and Thomas 1997; Elayan, Maris, and Young 1996; Goh and Ederington 1993; Hand, Holthausen, and Leftwich 1992; Holthausen and Leftwich 1986; Klinger and Sarig 2000; Poon and Chan 2008). These studies use single regression equation models and/or event study methods to examine the instantaneous effects of rating-change announcements on the changes in security prices. The rationale is that if credit ratings are useful, capital-market participants will react to the new information of rating changes. The second strand of the literature studies the determinants of credit ratings. The literature focuses on the predictability of credit-rating changes based on the accounting

information of the companies and capital-market conditions. The literature primarily uses deterministic models such as discriminant and cluster analyses to investigate the underlying determinants of credit ratings. This deterministic model approach assumes that the financial analysts of credit-rating agencies use all of the accounting information of the issuer and capital-market conditions in determining the credit rating of a particular company (issuer). Examples of the recent studies include those of Kumar and Haynes (2003), Chan and Jegadeesh (2004), and Wang (2004).

Research Design

Sample and Data

As the financial information and accounting data (for example, data from income statements, balance sheets, and statements of cash flow) and capital-market data (for example, stock and market returns) of Chinese firms with issuer credit ratings are required in this study, we selected only companies that are listed on the Shanghai Stock Exchange and Shenzhen Stock Exchange in our sample. The accounting data and stock-market data were obtained from the China Stock Market and Accounting Research Database (CSMAR). CSMAR is commonly used by researchers in China accounting and finance research. The credit-rating data are provided by the Xinhua-Far East China Ratings (Xinhua-Far East) because Xinhua-Far East has assigned the most comprehensive set of issuer credit ratings to major listed companies in China since 2002. The other Chinese rating agencies do not focus on listed companies. As of May 2004, Xinhua-Far East had rated more than 170 Chinese companies that were listed on the Shanghai Stock Exchange and the Shenzhen Stock Exchange in China, the SEHK, the NYSE, and the Singapore Stock Exchange, among others. Xinhua-Far East strives to adopt international rating standards to assign issuer ratings based on its unique knowledge of the Chinese market (XFN 2004). After screening out companies without the required accounting and stock-market information, there were 160 companies in the sample.

Methodology

In light of the two strands of the credit-rating literature, we propose a new approach to examining credit-rating changes in the emerging Chinese market. We argue that elements in both approaches should be incorporated into the Chinese credit-rating research.

Although credit rating is a new concept in China, the Chinese stock market was launched in the early 1990s. The stock market has significantly advanced in terms of participation and trading volume since then.³ It is logical to argue that at least some Chinese investors, especially institutional investors, must pay attention to credit-rating information. We assert that if credit ratings are important and relevant to investors in Chinese stock markets, we will find that stock prices react to credit-rating and credit-outlook announcements, and that credit-rating and credit-outlook assignments also react to new accounting information and stock-price performance. Given the emerging capital-market environment, the financial analysts of newly established credit-rating agencies would use all possible information available as references, including accounting and capital-market data, when evaluating a company's credit rating. Therefore, we anticipate that credit ratings also react to or depend on the stock market performance of the issuing companies in addition to the accounting information of the issuers.

In summary, we argue that there is simultaneity in credit-rating/rating-outlook assignments and stock returns in an emerging capital market such as China. The simultaneity and bilateral relationship between credit ratings and stock returns have been overlooked in the literature. We fill this gap by controlling this problem using a full information maximum likelihood (FIML) simultaneous equation system to estimate the following model.

Rating Equation

$$Y_{it} = \beta_0 + \beta X_{iy-1} + \gamma_1 R_{it} + \gamma_2 R_{it-1} + \varepsilon_i \quad (1)$$

(+ or -) (+) (+)

Stock Return Equation

$$R_{it} = \alpha_0 + \alpha R_{mt} + \delta Y_{it} + \zeta_{it} \quad (2)$$

(+)(+)

where

Y_{it} = initial (first) long-term issuer rating that is assigned to issuer i on date t by Xinhua–Far East (where date t is the announcement date of the initial long-term issuer rating, and these long-term ratings are coded on a nine-point ordinal scale where AAA = 9, AA = 8, A = 7, BBB = 6, BB = 5, B = 4, CCC = 3, CC = 2, and C = 1). All ratings with “+” or “-” designations are placed into the subgroups of their corresponding letter grades;

X_{iy-1} = a vector of financial ratios/variables of issuer i extracted from the last annual financial statements (for example, to explain the initial rating of issuer i in year 2003 (y), the financial ratios of year 2002 ($y - 1$) are used);

R_{it} = the spontaneous stock return of issuer i on date t (one-day return of issuer i on date t);

R_{it-1} = the one-month return of issuer i (one-month lag return of issuer i);

R_{mt} = the market return on date t (one-day return of the market on date t);

β_0, α_0 = intercept terms;

$\beta, \gamma_1, \gamma_2, \alpha, \delta$ = a vector of coefficients or coefficient; and

ε_i, ζ_i = the random error terms.

Both the spontaneous stock return (R_{it}) and the credit rating (Y_{it}) are endogenous variables in the system of equations (1) and (2). All other variables are exogenous variables. For the credit-rating variable (Y_{it}), we use the initial (first) long-term issuer rating that is assigned to a

company by Xinhua–Far East as the rating observation. According to Xinhua–Far East, a long-term issuer rating “assesses the obligors’ ability and willingness to meet financial obligations and commitments over a period of one year and above,” which ranges from AAA to C (see Table 1 for Xinhua–Far East’s nine rating categories and rating definitions) (Xinhua–Far East 2003).

The usual multiple regression equation assumptions apply to the random error terms (ϵ_i and ζ_i) in both Equations (1) and (2). These assumptions include equal variances and zero expected values of ϵ_i and ζ_i . The standard method to estimate a simultaneous system is a two-stage or three-stage least-square method. The system of Equations (1) and (2), however, has an endogenous variable (Y_{it}) (that is, the long-term issuer rating), which is a categorical dependent variable in Equation (1). Consequently, the usual two-stage or three-stage least-square system linear estimation method does not yield consistent coefficient estimates because the usual system estimation method requires all endogenous variables to be continuous variables (see Judge et al. 1985, 785–87).

To provide consistent estimates of the coefficients in Equations (1) and (2), we use the FIML procedure. The consistent estimation provided in FIML satisfies the equal variances of ϵ_i and ζ_i and zero expected values of ϵ_i and ζ_i in a large sample situation. If credit ratings are important in determining stock returns in China, then we expect δ to be positive and significant. Similarly, we also expect γ_1 and/or γ_2 to be positive and significant if stock-market conditions affect credit ratings. To provide robust results, we also use credit-rating outlooks issued by Xinhua–Far East (to replace credit ratings) as (Y_{it}) in both Equations (1) and (2).

To avoid the possible problem of multicollinearity, only key financial variables that represent profitability, capital/debt structure, cash-flow protection, liquidity, and company size are selected to explain the issuer’s ratings in the rating equation (Equation 1). Rating agencies use these factors in rating corporations (S&P 2000; S&P CTS 2000; Xinhua–Far East 2003). Six financial variables that are based on accounting data and three return variables that are based on market data are used in the model (see Appendix 1 for brief explanations of these variables). Specifically, the six ac-

Table 1

Rating Definitions and Distribution of Xinhua–Far East Long-Term Issuer Ratings from 2002 to 2004 Among Nine Rating Categories

Rating	Frequency	Percentage in the sample	Rating definitions
AAA	1	0.625	Strongest ability to meet financial commitments and the lowest likelihood of credit loss.
AA	12	7.5	Very strong ability to meet financial commitments and a low likelihood of credit loss.
A	35	21.875	Above-average ability to meet financial commitments and a below-average likelihood of credit loss.
BBB	58	36.25	Average ability to meet financial commitments and an average likelihood of credit loss.
Subtotal of “BBB”-or-above ratings	106	66.25	Investment-grade ratings
BB	37	23.125	Credit strength is below average and is the least vulnerable and speculative in the near term than other lower-rated obligors.
B	11	6.875	Credit strength is weak and is more vulnerable than obligors rated BB.
CCC	2	1.25	Credit strength is very weak and is currently vulnerable.
CC	0	0	Credit strength is extremely weak and is currently highly vulnerable to defaulting on financial commitments.
C	4	2.5	Credit strength is the weakest and has already defaulted on financial commitments.
Subtotal of “BB”-or-below ratings	54	33.75	Speculative-grade ratings
Total	160	100	

Notes: A Xinhua–Far East long-term issuer rating “assesses the obligors’ ability and willingness to meet financial obligations and commitments over a period of one year and above” (Xinhua–Far East 2003); all ratings with “+” or “–” designations are grouped according to their corresponding letter grades; rating definitions are excerpted from Xinhua–Far East 2003.

Table 2

**Definitions and Distribution of Xinhua–Far East Credit-Rating
Outlooks from 2002 to 2004**

Outlook	Frequency	Percentage in the sample	Outlook definitions
Positive	1	0.625	Positive means that ratings may be raised.
Stable	138	86.25	Stable means that ratings are not likely to change.
Uncertain	0	0	Uncertain means that ratings may be raised or lowered.
Not available	4	2.5	
Subtotal of non-negative outlooks	143	89.375	
Negative	17	10.625	Negative means that ratings may be lowered.
Total	160	100	

Notes: A Xinhua–Far East credit rating outlook “reflects the potential development of a long-term credit rating over the intermediate to long term. It takes into account the ongoing or expected changes in the business, financial, and economic environment that may impact on the creditworthiness of the issuers” (Xinhua–Far East 2003); outlook definitions are excerpted from Xinhua–Far East 2003.

counting ratios and variables are: (1) return on total assets (ROA); (2) earnings before interest and taxes margin (EBIT margin), which represent profitability; (3) the gross debt to total capital ratio, which represents the company’s debt structure; (4) the funds-from-operations-to-total liabilities ratio (FFO-to-liabilities ratio), which represents the cash-flow protection (to measure whether the company has sufficient funds or cash flow to meet its total debts); (5) cash ratio which represents liquidity; and (6) book value to total assets (LNASSET), which measures the size of the company. The three return variables are (1) R_{it} (one-day stock return or spontaneous stock return), (2) R_{t-1} (one-month lag stock return), and (3) R_{mt} (one-day market return). The expected signs of the estimated coefficients are given under the variables in each equation.

Discussion of Results

Descriptive Statistics

Table 1 provides a brief description of Xinhua–Far East long-term issuers from AAA to C. The table also lists the sample frequency and sample percentage of 160 observations across the nine rating levels from 2002 to 2004. All issuers in the sample are listed companies on the Shanghai Stock Exchange and the Shenzhen Stock Exchange. About two-thirds of the companies received BBB-or-above ratings, which are Xinhua–Far East’s investment-grade ratings. About one-third of the sample issuers received BB ratings or below, which are considered as noninvestment- or speculative-grade ratings (Xinhua–Far East 2003). Only one company obtained the highest “AAA” rating, and four issuers received the lowest “C” rating.

Table 2 shows the sample issuers sorted by credit-rating outlook. Xinhua–Far East has four types of rating outlook: positive, stable, uncertain, and negative. The meaning of “rating outlook” and the definition of each type of outlook are also presented in Table 2. Most of the companies (138 companies and about 86 percent of sample issuers) had “stable” outlooks, while only seventeen companies (about 11 percent of the sample issuers) had “negative” outlooks. None of the companies had “uncertain” outlooks and four companies had no rating outlooks from Xinhua–Far East. Therefore, we classify the sample companies into two rating-outlook groups—negative outlook and nonnegative outlook—for later analysis.

The descriptive statistics of the nine financial variables that are used for the simultaneous equation model are presented in Table 3. The six accounting ratios/variables attempt to assess profitability, debt/capital structure, cash-flow protection, liquidity, and the size of the company. In addition, there are three return variables: R_{it} (one-day stock return or spontaneous stock return), R_{t-1} (one-month lag stock return), and R_{mt} (one-day market return). On average, all three return variables are negative over the period. For the average profitability ratios, the companies in the sample show positive

Table 3

Descriptive Statistics of Financial Variables Used for the Simultaneous Equation Model

Variables	Mean	Standard deviation	Median	Minimum	Maximum
Accounting data and ratios					
Return on total assets (%)	4.1802	4.8185	4.0850	-23.8330	21.9746
Earnings before interest and taxes margin (%)	12.5549	15.9869	9.8119	-61.7106	63.6730
Gross debt to total capital ratio (%)	27.1691	18.7767	26.2184	0	75.5504
Funds from operations-to-total liabilities ratio (%)	24.9112	26.3849	17.7155	-29.0042	175.1964
Cash ratio (%)	64.4395	83.05588	38.5806	0.3542	552.4817
Total assets (in log)	22.1254	0.8951	22.0841	20.1162	26.6102
Market data					
R_{it} (%) (one-day stock return)	-0.5568	1.6621	-0.6594	-5.7627	6.7692
R_{t-1} (%) (one-month lag stock return)	-3.2051	9.2102	-2.8341	-44.6809	34.3096
R_{mt} (%) (one-day market return)	-0.4991	1.1129	-0.4703	-2.8029	4.2195

Note: See Appendix 1 for variable explanations.

returns on assets as well as earnings before interest and taxes margin. In terms of the debt structure, the average debt-to-capital ratio is 27 percent.

Simultaneous Equation Model Results

Tables 4 and 5 show the results of the simultaneous equation model for credit ratings/outlook and stock returns in China. The dependent variable (Y_{it}) of Equation (1) in Table 4 is the “initial credit-rating level” (the first issuer rating that was assigned to each company by Xinhua–Far East), while the dependent variable of Equation (1) in Table 5 is the dummy variable for “rating outlook” (“0” for a negative outlook and “1” for a nonnegative outlook). Both tables portray similar findings and are consistent with our expectations.

The results of the rating equation (Equation 1) in Table 4 demonstrate that companies with higher return on assets (ROAs) and EBIT margins (higher profitability), or which are larger in size (measured by total assets), tend to have higher issuer ratings. That is, larger firms with higher profitability have higher credit ratings, holding other things constant. The debt-to-capital ratio (capital-structure ratio) negatively affects issuer ratings. Other things being equal, the higher the debt ratio, the higher the default risk, and hence the lower the credit rating. In addition, the one-month-lag stock return also explains the credit rating of the company. These results suggest that credit agencies, as expected, use key accounting information and historical stock returns in determining the credit ratings of listed companies.

The results of the stock-return equation (Equation 2) in Table 4 indicate that the market return and the credit rating positively affect the stock return of the company. That is, a company that receives a higher credit rating tends to have a higher stock return. Table 5 offers similar findings, which suggest that our conclusions are robust to different measures of credit ratings. Hence, contrary to some perceptions, the credit ratings that are assigned by major credit agencies such as Xinhua–Far East have significant effects on

Table 4

Results of the Simultaneous Equation Model for Credit Ratings and Stock Returns in China

Variables	Expected sign	Rating equation (Equation 1) (dependent variable = Y_{it} or "credit-rating level")		Stock return equation (Equation 2) (dependent variable = R_{it} or spontaneous stock return on rating announcement day/date t)	
		Coefficient	t-statistics	Coefficient	t-statistics
Intercept		-4.2507	-2.27**	-1.5194	-2.29**
Return on total assets (%)	+	0.0746	3.68***		
Earnings before interest and taxes margin (%)	+	0.0218	3.83***		
Gross debt-to-total capital ratio (%)	-	-0.0226	-4.76***		
Funds from operations-to-total liabilities ratio (%)	+	0.0001	0.02		
Cash ratio (%)	+	-0.0005	-0.43		
Total assets (in log)	+	0.4620	5.56***		
R_{t-1} (%) (one-month-lag stock return)	+	0.0141	1.84*		
R_{it} (%) (spontaneous stock return on date t)	+	0.0271	0.34		
R_{mt} (%) (one-day market return)	+			0.8126	8.22***
Initial credit rating (Y_{it})	+			0.2336	2.13**

Note: ***, **, and * indicate significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 5

Results of the Simultaneous Equation Model for Credit-Rating Outlook and Stock Returns in China

Variables	Expected sign	Rating equation (Equation 1) (dependent variable = Y_{it} or "credit rating outlook")		Stock return equation (Equation 2) (dependent variable = R_{it} or spontaneous stock return on rating announcement day/date t)	
		Coefficient	t -statistics	Coefficient	t -statistics
Intercept		0.6966	1.85*	-4.4843	-3.08***
Return on assets (%)	+	0.0133	2.45**		
Earnings before interest and tax margin (%)	+	0.0006	0.54		
Gross debt-to-total capital ratio (%)	-	-0.0021	-1.90*		
Funds from operations-to-total liabilities ratio (%)	+	-0.0014	-1.53		
Cash ratio (%)	+	-0.0002	-0.89		
Total asset (in log)	+	0.0120	0.72		
R_{t-1} (%) (one-month-lag stock return)	+	0.0056	2.61***		
R_{it} (%) (spontaneous stock return on date t)	+	0.0173	0.65	0.7387	5.14***
R_{mt} (%) (one-day market return)	+			4.8070	3.01***
Initial credit-rating outlook (Y_{it}) (where zero for negative outlook; otherwise is 1)	+				

Note: ***, **, and * indicate significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

the stock returns of rated companies. Our findings are consistent with those in Poon and Chan (2008).

Conclusions

Domestic credit-rating agencies in China have been criticized for having no effect on the decisions of investors, and investors might not pay any attention to the credit ratings given by these Chinese rating agencies. The criticisms, however, have no statistical support. We argue, on the contrary, that the continued development of China's capital market should lead to a general awareness and use of credit ratings in China. Thus, we examine whether the credit ratings and rating outlooks of the listed companies that are assigned by Chinese rating agencies affect their stock returns. We use the pooled time-series cross-sectional issuer rating data of 160 companies listed on the Shanghai and Shenzhen stock exchanges from Xinhua–Far East for 2002 to 2004. In addition to providing the institutional background and recent developments in the Chinese credit-rating industry, we use a simultaneous equation model to offer new insights into the determinants of Chinese credit ratings and whether credit ratings affect stock returns.

The results of the model show that the return on total assets, earnings before interest and taxes margin, total assets, and one-month-lag stock return of the rated company positively affect the sample credit ratings, and that the gross debt-to-total capital ratio negatively affects the ratings. The findings suggest that profitability, debt structure, the size of the firm, and past stock performance are important factors in determining Chinese credit ratings and rating outlooks. The model also shows that these credit ratings and the stock performance of the rated companies simultaneously influence each other. Although some qualitative arguments suggest that credit ratings in China are not important to investors—probably due to China's unique political and cultural factors—our empirical results provide contrary evidence. Credit ratings that are assigned by major Chinese rating agencies have significant effects on the stock returns of the rated companies. The credit ratings that are

assigned by domestic rating agencies are important to the stock returns of rated issuers in China.

Notes

1. The others are A.M. Best Company, Dominion Bond Rating Service, Fitch, and Moody's Investors Service (SEC 2005).

2. S&P's rating with a pi subscript is based on publicly available information about the issuer. It relies upon less comprehensive information than do solicited interactive ratings and does not indicate in-depth meetings with an issuer's management (S&P 2004).

3. The Shanghai Stock Exchange had tremendous growth during the period 1991 to 2005. According to the *Shanghai Stock Exchange Yearbook* in 1991, market capitalization for the listed companies was RMB2.9 billion, annual turnover was RMB4.6 billion, and total number of listed companies was eight. In 2005, the same indicators grew to RMB3.8 trillion, RMB4.9 trillion, and 824 companies. The Shenzhen Stock Exchange had a similar rate of growth during the same period.

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Appendix 1

List of Financial Variables Used for Statistical Analyses

Variable code	Variable name and brief explanation
<i>Accounting data</i>	
ROA (%)	<i>Profitability</i> return on total assets = net income/total assets * 100
EBIT margin (%)	earnings before interest and taxes (EBIT) margin = EBIT/sales revenue * 100
<i>Debt structure</i>	
Gross debt-to-total capital ratio (%)	gross debt-to-total capital ratio = gross debt/total capital * 100 where gross debt = (short-term debts + long-term liabilities due within one year + long-term debts), total capital = (gross debt + total shareholders equity + minority interests)
<i>Cash flow protection</i>	
FFO to liabilities ratio (%)	funds from operations (FFO)/total liabilities = (FFO/total liabilities) * 100 where FFO = (net income + depreciation + amortization), total liabilities = (current liabilities + long-term liabilities + other deferred expenses/taxes).
<i>Liquidity</i>	
Cash ratio (%)	cash/current liabilities * 100
<i>Size</i>	
LNASSET	logarithm of book value of total assets (in RMB million)

Market data	Return variables
R_{it} (%) (one-day stock return)	one-day return of issuer i on date t , where date t is the announcement date of the initial (first-time) long-term issuer rating assigned to issuer i by Xinhua–Far East.
$R_{i,t-1}$ (%) (one-month stock return)	One-month return of issuer i (one-month-lag return of issuer i), where one month refers to the thirty trading days before date t .
R_{mt} (%) (one-day market return)	One-day return of the market on date t , where market return refers to the return on the Shanghai Composite Index if the issuer is listed on the Shanghai Stock Exchange, and to the return on the Shenzhen Composite Index if the issuer is listed on the Shenzhen Stock Exchange.

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