

Financial Conservatism and Firms' Financing and Investment Behaviors during the Global Financial crisis

—Evidence from Listed Chinese Companies

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Abstract—Under the backdrop of current global financial crisis, this paper empirically investigates the impacts of financially conservative policy adopted during the pre-crisis period on firms' financing and investment behaviors in crisis. This paper shows that, financially conservative firms have greater capacity to raise debt funds, and their sensitivity of investment to internal funds is relatively lower than that of control firms, Which, In contrast, rely much on internal cash flow to support their investment expenditures. In general, the empirical evidence provided in the paper supports the view that, when hit by adverse shock, firms adopting conservative financial policy before crisis possess great financial flexibility, and can raise more needed funds for valuable investment opportunities.

Keywords- *Financial Conservatism; Financial Crisis; Corporate Financing; Corporate Investment*

I. INTRODUCTION

Focusing on firm's capital structure, financial conservatism, in general, means firms adopt conservative financial policy, of which low leverage is maintained for a relatively long period. According to surveys and statistics of capital structure from western firms, many firms intend to carry out conservative financial policy, and hold substantially less debt than predicted by the dominant theories of capital structure. For example, there are more than one hundred companies with a zero long-term debt ratio for five continuous years in New York Stock Exchange (NYSE). Graham and Harvey (2001) survey 392 CFOs about capital structure decision in US, and find that most firms keep financial conservative policy. And in China, both theoretical and empirical studies discover that, Chinese public listed companies prefer equity financing, which result in lower financial leverage ratio, and financial conservative behaviors prevail in China.

Although financial conservatism is common in practice, traditional capital structure theories, including agency model, signal model, tax shield and financial distress tradeoff model, cannot offer justifiable explanations on the motivations behind these behaviors. According to the study by Minton and Wruck (2001), the tax rate faced by financially conservative firms is not lower, which also not confronted with serious asymmetric information and corporate governance problems, this indicate debt's tax shield and

capital cost are not the primary elements that financially conservative firms take into account when making capital structure decision.

The theory of financial flexibility try to interpret financial conservatism from the perspective of preserving debt capacity to cope with unexpected cash shortfall or/and to finance profitable investment opportunities in the future. Donaldson (1969) discovered managers fail to follow the optimal principles proposed by the pecking order theory, on the contrary, they stress unused debt capacity. By surveying firm's managers in Europe and US, Pinegar and Wilbricht (1989), Graham and Harvey (2001), Bancel and Mittoo (2004) and Brounen et al. (2004) show that, firms' managers definitely claim that they are most concerned about "financial flexibility" in capital structure decision-making. That is, how to enhance firm's ability to deal with potential and unpredicted future emergencies and exploit future profitable investment opportunities by rational selecting of capital structure. Namely, firms should adopt financial policy that can maintain "substantial untapped debt capacity" (Modigliani & Miller, 1963), in this way, they have easy access to capital market in responding to the future profitable investment opportunities. At the same time, Goldstein, Ju and Leland (2001) also observed that low-leveraged firms have subsequent option to increase leverage ratio.

This interpretation is supported by empirical findings from two different aspects. On the one hand, firms establish debt capacity for future investment opportunities. Graham (2000) shows firms preserve debt capacity for expansion and acquisition in the future. Byoun (2008) provides evidence to demonstrate that, firms maintain borrowing capacity to raise money for future investment and growth opportunities. Minton and Wruck (2001) observed 5613 firms with total assets above 100 million dollars during period 1974-1998, and find firms usually build financial flexibility or debt capacity to support potential acquisition, investment and stock repurchase in the future.

On the other hand, firms preserve debt capacity for future unexpected impacts. With the abrupt change of macroeconomic environment and industrial policies, financially aggressive firms, which with much higher financial leverage than conservative firms, are more likely to fall into financial distress (Campello, 2003). As to industrial policies, Zingales (1998) observes the impact of the Carter

deregulation on the survival and competitive position of trucking firms in US during 1980, and finds that operating efficiency alone can't ensure firms to survive, only those with both high operating efficiency and sufficient financial resources (i.e. adopting conservative financial policy) can succeed in the long run. With respect to the effect of sudden change of macroeconomic environment on firms' operating activities, Arslan, Florackis and Ozkan (2008) (hereafter AFO) investigate firms' behaviors prior to and during the East Asian financial crisis using data from over 1,000 firms in five East Asia's countries around 1997, and their findings reveal firms that keep low financial leverage and high cash balance before the financial crisis have greater capacity to invest in growth opportunities during the crisis.

After ten years, the current global crisis, which triggered by the subprime mortgage crisis burst out in the US in 2007, offers us another chance to examine whether financially conservative firms really preserve greater financial flexibility. By choosing the impact of currently global financial crisis on the listed companies in mainland China as event, our study chiefly explore the difference in investment and financing behaviors between conservative and non-conservative firms during the crisis, in order to empirically offer some ex post evidence on the view that conservative policy can preserve financial flexibility for firms.

The remainder of this paper is organized as follows. Section II identifies the financially conservative firms and develops our testable hypotheses. Section III describes the sample selection and presents model specification. Section IV provides the results of regression analysis, and Section V gets some conclusions.

II. IDENTIFICATION OF FINANCIAL CONSERVATISM AND DEVELOPMENT OF HYPOTHESES

A. Identification of Financial Conservatism

There are mainly two methods to identify financial conservatism in existing literature: one is percentile method; the other is target method. The percentile method is executed as follows. First, one need to conduct a statistical analysis using the data of financial leverage ratio for the sample firms, and then identify the firms, with a financial leverage ratio below a certain percentile of whole firms' distribution, as financially conservative ones. But in order to show that keeping low leverage is a persistent policy and not originated from any random factors, in general, several consecutive years of keeping low leverage is required for a firm to be classified as conservative one. For example, this method is used by Minton and Wruck (2001), and the judging criterion is that firm's annual long term debt ratio falls in the bottom 20% of all firms for five consecutive years. Similar methods are adopted in the studies by Titman and Wessels (1998), Fama and French (2002), Shyam-sunder and Myers (1999) and Graham (2000), but different persistent periods, in which to keep a low leverage ratio, are demanded for firms to be grouped as conservative ones.

The financial leverage ratios of other firms are utilized as reference points in above method, but the target leverage ratio (optimal or ideal ratio) of firm's own is neglected. So

another method, target method, is proposed naturally. In this method, a target leverage ratio for each firm should firstly be computed using a generally accepted econometric model. And then each firm's financial position can be identified by comparing its (real) observed leverage with the target one, if a firm's real leverage is less than or equal to the target one for several consecutive years, it can be grouped as a financially conservative firm. For example, Inoa, Leonida and Ozkan (2004) use this method to identify financially conservative firms in their research, in which they firstly obtain target capital structure using the model of target capital structure proposed by Rajan and Zingales (1995), then utilize the target level as the cut-off point to identify financially conservative firms.

Our sample period covers 5 years, from 2004 through 2008, which include three years prior to and two years after the global financial crisis broke out in 2007. In line with AFO (2008), the pre-crisis period runs for 3 years, from 2004 to 2006, and 2007 and 2008 constitute the crisis period¹. In order to investigate the impact of financial flexibility established through conservative leverage policy during the pre-crisis period on the investment behavior of firms in the crisis period, we identify financially conservative firms by their leverage ratios prior to the crisis.

Although target method takes firms' target capital structure into account, judging of target leverage ratio heavily relies on the target capital structure model used in the process, of which different estimated model leads the same firm to different target ratio. So in order to avoid subjectivism as possible as we can, we employ percentile method to identify financially conservative firms in our study. Specifically, if a firm's financial leverage ratio falls into the bottom 30% of the whole sample firms for three consecutive years before the crisis, it is classified as a financially conservative firm. And the rest are grouped into control firms. In this way, on the one hand, we can control for the survivorship bias imposed by our three-year definition of financial policy; on the other hand, we can make comparative analysis throughout our study.

B. Hypotheses Development

As we know, during the crisis period firms encounter significant impacts on their two key financing sources. On the one hand, with respect to the sources of internal funds, the sharp shrink of operating activities reduce firm's operating revenue substantially, and firms' operating cash inflow clearly decrease during crisis. On the other hand, as to the sources of external financing, firstly, the stock price dive sharply in crisis, and equity issuance become more difficult, so hoping to obtain equity funds in stock market is nearly impossible; at the same time, financial institutes encounter funds shortage, accompanied by a rise in interest rates, the conditions required to obtain a loan from the banks are

¹ Because Chinese governments carried out a huge economic stimulus plan, which up to RMB 4 trillion (US\$ 586 billion), during the period 2009-2010. This undoubtedly distorted firms' financing and investment behaviors in the financial crisis. In view of this fact, only studying the period before the execution of economic stimulus plan can tell a much more "real" story about firms' financing and investment behaviors.

highly heightened, this lead credit to become less available. So, in general, most firms find it hard to payout within its income in financial crisis, and some fall into financial distress and even bankruptcy, as a result, the total investment expenditures sharply decline. However, the prices of capital assets fall off substantially in crisis, and the value of the firms in financial distress or bankruptcy are highly depreciated, so this also offers a prodigious opportunity for firms with sufficient funds to expand quickly.

As discussed previously, because financially conservative firms always keep low debt ratio prior to the crisis, so they still can borrow funds for their investment projects from banks in spite of the heightened credit criteria in crisis. Hence, compared with control firms, conservative firms are more likely to obtain external funds and depend less on internal funds to finance their investment activities. So we propose the following two testable hypotheses:

H1: in the crisis, financially conservative firms raise more debt funds than control firms;

H2: in the crisis, financially conservative firms confront relatively weak financial constraints, and depend less on internal funds to support investment expenditures.

III. RESEARCH DESIGN

A. Model Specification

In an attempt to examine the hypothesis H1, based on an overall consideration of various factors that potentially affect firms' debt financing, we construct the following debt financing model.

$$\Delta Debt_{it} = \alpha_0 + \alpha_1 FC_{i(t-1)} + f(\text{ControlVariables}) + v_i + v_t + \varepsilon_{it} \quad (1)$$

Where, dependent variable $\Delta Debt$ represents firms' increased debt in current year, for which we employ two proxies: the first one is $\Delta LR = LR_t - LR_{t-1}$, where, LR denotes leverage ratio measured as the ratio of total debt to total assets at the end of period, which employed to measure the marginal increase in firms' total debt. And subscript t stands for current period, t-1 for prior period. Allowing for that increment of firms' leverage ratio can be derived from passive debts, such as account payable and notes payable and so on caused by operating activities, put differently, firms maybe increase their debt level just for poor paying capacity. So in order to accurately measure firms' active financing capacity, we create another variable $\Delta ALR = ALR_t - ALR_{t-1}$, where, ALR represents active leverage ratio measured as the ratio of short and long-term loans plus bonds payable to total assets at the end of period.

In order to provide evidence for H1, we construct a dummy variable FC (financially conservative firms) as independent variable. Specifically, if a firm is identified as conservative, the FC takes the value of 1, and equal to 0, otherwise. So if the regression coefficient on FC is significantly positive, that indicates financially conservative firms raise more debt funds than control firms under the same circumstance, and vice versa. According to the discussion in the subsection of hypothesis development, we expect the coefficients on FC are significantly positive.

Furthermore, based on the key determinants of capital structure choice in prior studies (e.g., Bradley, et al., 1984; Kim & Sorensen, 1986; Rajan & Zingales, 1995; Titman & Wessels, 1988), we also included the following variables in the financing models as control variables: collateral value of assets, cash flow, MTB, cash balance, operating revenue and firm size. The detailed measurements of each variable are presented in Table I.

Besides, in order to explore whether firms utilize newly raised debt funds to finance their investment activities, we also include firms' current and last period's investment expenditures in the models. At the same time, current period's active leverage ratio and last period's leverage ratio are also included in control variables list. And v_i is the firm effect, v_t , the year effect, and ε_{it} , the error term.

With regard to the test of hypothesis H2, we use investment model to run regression analysis for the two subsamples of firms, i.e. financially conservative firms and control firms, separately, then following the viewpoint in the studies by Fazzari et al. (1988), Hubbard et al. (1995), and Gilchrist and Himmelberg (1998), we employ the sensitivity of investment to cash flow as the criterion to judge the degree of financial constraints faced by firms. In this way, we can examine the hypothesis H2 by checking the value, sign and statistic significance of the coefficient on cash flow for each subsample.

Following Vogt (1994) and Richardson (2006) and taking the purposes of this study into account, we construct the following investment model to explore the relationships between financially conservative behavior and investment scale and the degree of reliance of investment expenditures on internal financing:

$$Investment_{it} = \beta_0 + \beta_1 CashFlow_{i(t-1)} + \beta_2 MTB_{i(t-1)} + \beta_3 FC_{i(t-1)} + f(\text{ControlVariables}_{i(t-1)}) + \mu_i + \mu_t + \sigma_{it} \quad (2)$$

Where, dependent variable Investment measured as the ratio of current capital expenditures to total assets at the end of year. Independent variables contain cash flow, MTB and dummy variable FC. And control variables include prior period's values of investment expenditures, cash balance, operating revenue, leverage ratio and firm size etc. Dummy variables FC are measured at their pre-crisis levels.

TABLE I. MEASUREMENTS OF RELEVANT VARIABLES

Var. Name	Var. Abbr.	Measurement
Increased Leverage Ratio	ΔLR	The difference in leverage ratio between current and prior periods
Increased Active Leverage Ratio	ΔALR	The difference in active leverage ratio between current and prior periods
Investment	Inv	The ratio of capital expenditures to total assets
Cash Flow	CF	The ratio of net operating cash flow to total assets
MTB	MTB	The ratio of the market value of equity plus the book value of debt to the book value of total assets
FC	FC	Financially conservative firms take the value of 1, and 0 otherwise
Collateral Value	CVal	The ratio of inventories plus fixed assets to total assets
Cash	Cash	Cash plus short term investment, divided by total assets
Operating Revenue	ORev	The natural logarithm of operating revenue

Growth Rate of Operating Revenue	GROR	The difference between current and prior operating revenue, divided by prior period's operating revenue
Firm Size	Size	The logarithm of total assets
Leverage Ratio	LR	The ratio of Total debt to total assets
Active Leverage Ratio	ALR	Short and long-term loan plus bonds payable, divided by total assets

B. Sample Selection

We construct our primary sample starting from all Chinese A-share listed firms present in Wind Financial Database between 2003 and 2008. We remove financial firms because their capital structures are likely to differ substantially from those of non-financial industry. In order to ensure firms' financial decisions behaviors are relatively mature, we exclude those listed after 2002. Firms with abnormal or missing values of relevant variables are also deleted, for example, firms with leverage ratio greater than 1 are removed from sample. In order to ensure that firms are competing under similar financing circumstance, we exclude firms issued both A share and B share or/and H share, N share stocks. Finally, we also delete cST and ST firms, because assets restructurings often happen to these firms, which leads them to obviously abnormal investment behaviors. After these adjustments, we are left with 920 firms, which constitute the whole sample used in our study.

And then we proceed to identify two subsamples, namely financially conservative firms and control firms, from the whole sample using the method presented previously. This results in a financially conservative group with 178 firms and 890 firm year observations, and a control group with 742 firms and 3710 firm year observations. The data used in this paper are derived from CSMAR (China Stock Market and Accounting Research) Database and Wind Financial Database.

IV. EMPIRICAL RESULTS

A. Financial Conservatism and Firms' Financing Capacity

In order to test the hypothesis H1, which claims that conservative firms possess higher financial flexibility than control firms, and can raise more debt funds to support their investment activities during the crisis, we conduct multivariate regression analysis. The results are reported in Table II.

It can be seen from model (3) and model (4) in panel B for the crisis period, the regression coefficients on dummy variable FC both are positive and significant at the level of 1%, this indicates that in the crisis period, compared with control firms, financially conservative firms have greater marginal financing capabilities both in active finance and total debt level. While, the result of Model (2) shows that conservative firms are more reluctant to utilize new debt in the pre-crisis period, so they can maintain lower level of debt and preserve higher level of financial flexibility. So the results of multiple regression analyses provide supportive evidence for the hypothesis H1.

Moreover, there are still some interesting findings. For example, from model (1) and (3), we can see that before the crisis, the increments of firms' active leverage ratio are only weakly correlated with current investment expenditures, and

the regression coefficients are not statistically significant; while in the crisis period, the relation between the two variables turns out to be not only economically increased, with a rise from 0.005 to 0.027 in the coefficients, but also

TABLE II. REGRESSION RESULTS OF FIRMS' DEBT FINANCING CAPACITY

Variables	Panel A. Pre-crisis Period (2004-2006)		Panel B. Crisis Period (2007-2008)	
	Model (1)	Model (2)	Model (3)	Model (4)
Dep.Var.	ΔALR_t	ΔLR_t	ΔALR_t	ΔLR_t
ALR _t	0.148 ^a (14.734)	-0.010 (-1.053)	0.332 ^a (23.449)	0.281 ^a (17.648)
LR _{t-1}	-0.014 ^c (-1.747)	0.135 ^a (17.916)	-0.196 ^a (-14.238)	0.048 ^a (6.348)
Inv _t	0.005 (0.429)	-0.015 (-1.292)	0.027 ^a (3.961)	-0.012 ^c (-1.648)
Inv _{t-1}	-0.008 (-0.411)	-0.070 ^a (-4.067)	0.004 (0.592)	-0.033 (-1.393)
CF _{t-1}	-0.003 (-1.117)	-0.011 ^a (-3.790)	0.016 (0.760)	-0.004 ^d (-2.875)
MTB _{t-1}	0.015 (1.400)	-0.010 (-1.020)	0.002 (1.422)	-0.022 ^c (-1.842)
CVal _{t-1}	0.001 (0.061)	0.000 (-0.059)	-0.016 (-1.446)	0.018 (0.882)
Cash _{t-1}	0.004 (1.263)	0.003 (0.966)	0.034 ^c (1.836)	0.013 ^a (4.252)
ORev _{t-1}	0.003 (0.260)	-0.212 ^a (-19.659)	0.020 ^a (7.194)	-0.224 ^a (-14.532)
Size _{t-1}	-0.004 ^b (-2.158)	-0.004 ^b (-2.131)	0.006 ^a (3.501)	0.004 ^b (1.986)
FC	0.003 (0.611)	-0.067 ^a (-14.599)	0.018 ^a (3.267)	0.019 ^a (3.144)
Intercept	0.054 (1.345)	0.225 ^a (5.979)	-0.136 ^a (-3.727)	-0.041 (-0.990)
Ind./Year	yes	yes	yes	yes
Adj. R ²	0.081	0.252	0.298	0.252
N	2760	2760	1840	1840

Notes: The T values are reported in parentheses below regression coefficients, and a, b, c represent 1%, 5%, 10% significance levels, respectively.

significant statistically at the level of 1%. These demonstrate that firms are more likely to actively raise debt funds for their investment activities in the crisis. However, model (4) shows that the increment of firms' total debt is negatively correlated with current investment expenditures; this result maybe is derived from the fact that firms with higher ratio of passive debt to total debt can invest less in the crisis.

And besides, we also can see that collateral value, an important factor affecting firms' capital structure decision, in reality has no obvious effect on marginal change in firms' debt both in the pre-crisis and crisis period. In addition, firms with bigger size hold fewer assets in debt before the crisis, but utilize more debt funds in the crisis.

B. Financial Conservatism and Firms' Investment Behaviors

As can be seen in Table II, compared with control firms, financially conservative firms have greater capacity to raise debt funds in the crisis period. In this subsection, in order to provide a test of the hypothesis H2, we further run subsample regression to explore the financial constraints issues in the crisis period. The results of regressions are presented in Table III.

Among all the regression coefficients reported in Table III, we focus on the investment sensitivity to cash flow. First of all, we observe the financially conservative group in panel A. Although the coefficients on cash flow are highly significant both economically and statistically during the pre-crisis period, they are no longer significant in the crisis. On the

contrary, the MTB, which is never significantly correlated with investment in the pre-crisis period, becomes

significantly correlated in the crisis period, and at the 1% level. Furthermore, based on adjusted R^2 , the unreported

TABLE III. INVESTMENT SENSITIVITIES TO CASH FLOW ACROSS DIFFERENT SUBSAMPLES OF FIRMS

Variables	Panel A: FC Firms								Panel B: CF firms							
	Pre-crisis Period				Crisis Period				Pre-crisis Period				Crisis Period			
	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)		Model (6)		Model (7)		Model (8)	
	Coef.	T	Coef.	T	Coef.	T	Coef.	T	Coef.	T	Coef.	T	Coef.	T	Coef.	T
Inv _{t-1}			0.078	0.93			0.183 ^b	2.17			0.148 ^a	4.56			0.130 ^a	5.56
CF _{t-1}	0.346 ^a	4.45	0.204 ^b	2.32	-0.179	-0.87	-0.189	-0.86	0.262 ^a	5.42	0.163 ^a	3.33	0.272 ^a	3.56	0.229 ^a	2.95
MTB _{t-1}	0.004	0.40	0.002	0.24	0.033 ^a	4.32	0.031 ^a	3.96	0.004	0.48	0.017 ^c	1.89	-0.002	-0.39	0.001	0.26
Cash _{t-1}			0.069	1.42			0.065	0.55			0.014	0.29			-0.011	-0.14
ORev _{t-1}			0.047 ^a	3.31			-0.010	-0.35			0.019 ^b	2.31			0.009	0.83
Lev _{t-1}			-0.106 ^c	-1.68			-0.261 ^c	-1.83			-0.230 ^a	-7.52			-0.046	-0.97
Size _{t-1}			0.007	0.96			-0.002	-0.09			0.018 ^a	3.49			0.008	1.28
Intercept	0.045 ^b	2.14	-0.110	-0.70	-0.008	-0.27	0.092	0.25	0.110 ^a	6.91	-0.193	-1.68	0.088 ^a	6.85	-0.086	-0.62
Ind./Year	yes		yes		yes		yes		yes		yes		yes		yes	
Adj R ²	0.058		0.079		0.103		0.109		0.079		0.116		0.043		0.064	
N	534		534		356		356		2226		2226		1484		1484	

Notes: T stands for T value, and a, b, c represent 1%, 5%, 10% significance levels, respectively.

results of univariate regression analysis show that, only with one explanatory variable, namely MTB, the adjusted R^2 is also up to 10.3% (Besides, compared with model 3, five more control variables commonly used in classical investment models are introduced in model 4, but the explanatory power of adjusted R^2 only increased by 0.6%, which, from another aspect, also document that firm's investment expenditures are primarily determined by its growth in the crisis period). This finding show that, in the crisis, the investment expenditures of conservative firms is unrelated to the amount of cash flow, and depends only on the valuable growth opportunities faced by them. But when making a further observation on the control firms in panel B, we find the coefficients on cash flow are statistically significant in both periods, and there is a further rise in economic significance in the crisis period. These findings confirm some support for the hypothesis H2, and also for the hypothesis H1 to some extent, which document that financially conservative firms have greater capacity to secure funds in the debt market for the profitable investment opportunities, so their investment expenditures rely less on internal funds during the crisis period.

V. CONCLUSIONS AND DISCUSSION

This paper empirically investigates the impacts of financially conservative policy adopted during the pre-crisis period on firms' financing and investment behaviors and contributes to the following conclusions: financially conservative firms have greater capacity to raise debt funds, and their sensitivity of investment to the availability of internal funds (cash flow) is relatively lower than that of control firms, which, in contrast, rely much on internal operating cash flow to support their investment expenditures, and financially conservative firms' investment expenditures mainly depend on their growth opportunities during the global crisis.

The findings in this paper provide strong evidence for the view that, when faced with earnings shortfall caused by unanticipated exogenous impacts, firms can rely on their financial flexibility preserved by adopting conservative financial policy ex ante to raise money for profitable investment opportunities. For this reason, when firm making

capital structure decisions, how to maintain optimal financial flexibility is not only a significant direction for current researches of capital structure theories, but also an important practical issue. While with respect to maintaining financial flexibility, in addition to conservative policy, there are still many alternative and complementary financial policies, for example, holding excess cash reserves, preserving capability of raising equity capital etc. due to limited space, we don't take these factors into consideration, which is a limitation of this paper, and also a direction for future studies. In addition, except for the impact on investment behaviors in the crisis, firm's conservative financial policy adopted in pre-crisis period is sure to affect its performance throughout the crisis period, which calls for some further studies.

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