Corporate Finance and firm Value in China: Growth Opportunities vs Financial Constraints

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Abstract: This paper analyses how firms' leverage and corporate dividend policies affect the market value of Chinese listed firms depending on the availability of growth opportunities and the presence of financial constraints. We find that dividends play a dual role: while they are positively related to the value of firms with low growth opportunities or fewer financial constraints, they have a negative effect on the value of firms with high growth opportunities or more financial constraints. Conversely, leverage has a positive impact on firm value in all scenarios, which can be explained by the tighter financial constraints in Chinese capital markets.

Keywords: Corporate Finance, Financial Constraints, Growth Opportunities, China.

JEL codes: G32, G35.

1. Introduction

Much of modern financial research has shown that the influence of leverage and dividend policies on firm value may vary across firms depending on growth opportunities (McConnell and Servaes 1995). In this vein, D'Mello and Miranda (2010) examine the role of debt as a managerial discipline mechanism to prevent overinvestment problems, while Dang (2011) shows that UK firms alleviate the underinvestment problem by reducing their leverage. The payout policy is similarly affected by information problems and growth opportunities (Denis and Osobov 2008; Billett *et al.* 2007; Officer 2011).

Recent research has gone a step further by showing that the financial constraints the firm faces can also play a critical role in the relationship between firm value and financial policies (Li *et al.* 2018). As suggested by Allen *et al.* (2005), reputation and relationships can be key to the growth of the Chinese private sector. Throughout this study, we postulate that the financing decisions of firms in China can be influenced by the high ownership concentration, poor institutional environment and political connections, among other factors.

This study aims to analyse how firms' leverage and corporate dividend policies affect the market value of Chinese listed firms from a twofold perspective focusing on (i) the availability of growth opportunities and (ii) the presence of financial constraints. The first perspective is in line with the seminal work by McConnell and Servaes (1995), in which growth opportunities are shown to be a factor that moderates the influence of financing decisions and dividends on firm value. Regarding the latter perspective, we try to gain new insights into how an environment strongly characterized by the existence of financial constraints may influence this relationship. Furthermore, we are aware of the endogeneity problem that could arise in such a model and so we employ certain procedures and tests to ensure that our results are reliable.

Although there are a number of studies that examine the relationship between financial leverage, dividend policy and firm value in the most developed countries, the evidence from emerging countries is still scarce (Aras and Yildirim 2018; Ranajee *et al.* 2018; Saona and San Martín 2018). There are at least two reasons why China is a good choice in this regard. First, its stock exchanges have only recently been established. Despite the rapid growth that has resulted in Chinese capital markets slightly surpassing the average size of the other major emerging economies, its stock exchanges are still underdeveloped relative to those in the United States and Western European countries. The tight constraints imposed on stock trading and foreign investors can affect stock prices and the way in which corporate financial decisions impact firm value (Li *et al.* 2012; Wan and Zhu 2011; Lin *et al.* 2011). Second, unlike other, more developed countries, the Chinese legal framework is characterized as showing relatively weak protection of investors, poor rule of law, influential informal personal ties, and low regulatory quality. Furthermore, the State's large stake in the ownership of firms, the existence of controlling shareholders, and the business relevance of political connections can interfere with market mechanisms and impede the disciplinary and the signalling role of capital markets (Guariglia and Yang 2016).

In this paper, we make two contributions to the literature. First, we add to the existing evidence—which largely centres on Western and market-oriented countries—by examining China, an emerging country with a markedly different institutional and corporate system from those countries that have previously been the focus of analysis. As far as we are aware, no studies to date have provided evidence of the moderating role played by growth opportunities and financial constraints in financial decision-making in the Chinese capital markets. Therefore, the Chinese market provides a first-order research framework. Second, we formulate new hypotheses in order to capture the relationship between firm value and both leverage and dividend policies in an emergent setting. These new hypotheses are aimed at analysing the moderating role of growth opportunities and financial constraints, respectively.

We go a step further with financial constraints and propose new criteria to detect such factors in the Chinese corporate system.

Our findings show that dividends play a dual role: while they are positively related to the value of firms with low growth opportunities or fewer financial constraints, they have a negative effect on the value of firms with high growth opportunities or more financial constraints. However, leverage has a positive impact on firm value regardless of their growth opportunities or financial constraints.

The remainder of the paper is organized as follows. Section 2 presents the theoretical framework on which the hypotheses are based. Section 3 describes the sample, variables, and method. In Section 4, we report and discuss the results of the empirical analysis. Section 5 presents some robustness tests. Finally, Section 6 concludes and draws some implications from the research.

2.   Theoretical foundations and hypotheses

The main theoretical arguments regarding the influence of both corporate debt and dividends on firm value come from the asymmetric information approach. Nevertheless, due to the different legal protection offered to investors in China, the ubiquitous presence of the State in the ownership of listed firms, the high ownership concentration, and the relatively illiquid capital markets, a redefinition of the traditional relationships is required, conditional on investment opportunities and financial constraints (Liu *et al.* 2013; Pan and Tian 2015; Gunasekarage *et al.* 2007). Accordingly, in the following subsections we provide the theoretical rationale for the effect of leverage and dividends on firm value and offer some specific explanations within the context of the Chinese framework.

2.1. Corporate finance, growth opportunities and firm value

Numerous arguments have been given to support the link between firm value and leverage. Financial flexibility gives the firm the chance to take advantage of investment opportunities and, consequently, the capability to increase its value (Liping *et al.* 2013; Bae 2009; Arslan-Ayaydin *et al.* 2014). Thus, a conservative, low-leverage financial strategy can improve performance. According to this rationale, the relationship between leverage and firm value should be negative. However, contrary to the theorem of the irrelevance of capital structure, Ross (1977) argue that capital structure is a signalling mechanism that discloses information to capital markets. Consequently, issuing debt is seen as a good signal.

Nevertheless, whether corporate debt has a positive or negative effect on firm value depends on two conflicts related to informational asymmetries and firm growth opportunities: underinvestment and overinvestment problems (Moosa *et al.* 2011; McConnell and Servaes 1995). When firms have high growth opportunities, too much corporate debt can negatively affect firm value

because, as the underinvestment hypothesis suggests, a heavy debt load may cause managers to forego profitable investment projects (Myers 1977). On the contrary, if firms lack clear growth opportunities, the overinvestment hypothesis predicts that managers with free cash flow could invest in unprofitable projects (Jensen 1986). Thus, one way to safeguard the value of the firm and to discipline inefficient managers is to issue debt, so that managers lose control over free cash flow. Accordingly, financial leverage should be positively related with the value of firms with low growth opportunities.

Furthermore, an explanation based on agency cost theory holds that dividends reduce the problem of overinvestment since payout policy prevents managers or controlling shareholders from using free cash flow improperly (Faccio *et al.* 2001; Allen and Michaely 2003; He *et al.* 2019). Consequently, profitable investment opportunities also play a significant role in explaining the relationship between dividends and firm value. On the one hand, firms with more growth opportunities need to retain earnings in order to fund investment projects. For such firms, paying dividends could have a negative effect on the current price of stocks. On the other hand, firms with fewer growth opportunities can mitigate overinvestment costs by paying dividends. Consequently, dividend payout should be positively related to the value of the firms with low growth opportunities. Overall, as stated by Jiang and Kim (2013), little is known about payout policy in China as many of the firms are still growing.

Moreover, in 2006, the China Securities Regulatory Commission (CRSC) issued a new semi-mandatory dividend policy that stipulates that a listed firm should have a minimum level of dividend payments in order to access a seasoned equity offering (SEO). The dividend payments must amount to 20% of the net profits in the three years prior to the SEO and can include cash or stock dividends.[1] Deng *et al.* (2015) recently analysed the effectiveness of this new semi-mandatory dividend policy, and although Chinese listed firms seem to have increased the dividends paid, the authors do not find a notable impact on the payout policy. They additionally observe that companies paid dividends strategically to meet the requirements of the regulation, which limited the effectiveness of the semi-mandatory dividend policy and damaged the value of the firm (see also Zhou and Zhao (2014).

Keeping this rationale in mind, we state our first hypothesis in dual terms, as follows:

> ***H1a.*** *For Chinese firms with high growth opportunities, firm value is expected to be negatively related both to leverage and dividends*
>
> ***H1b.*** *For Chinese firms with low growth opportunities, firm value is expected to be positively related both to leverage and dividends.*

2.2. Corporate finance, financing constraints, and firm value

Financing constraints could affect the relationship between corporate finance and firm value. The level of financing constraints is strongly conditioned by

the legal and institutional setting in China. In this framework, there are some arguments to support a positive influence of debt on firm value. First, the ownership structure of Chinese firms is usually concentrated in the hands of few controlling shareholders whose voting rights outweigh their cash flow rights (Chen *et al.* 2006; Zuoping 2010). As documented in the literature, leverage can be used as a mechanism that helps prevent the conflicts that may arise between large dominating shareholders and minority shareholders (Faccio 2010; Bin-Sariman *et al.* 2016).[2]

Second, China has a relatively underdeveloped legal and institutional environment with weaker investor protection and less mature capital markets than other countries (Allen *et al.* 2005). The government holds important stakes in the ownership of firms and the banking system is dominated by several large State-controlled banks (Cull *et al.* 2015; Boateng *et al.* 2019). According to Zhu and Jiang (2012), domestic and foreign investors still have different levels of access to dual-class shares (A and B), while non-tradable shares have recently been reformed. All these factors are likely to result in additional financial constraints for Chinese firms (Chan *et al.* 2012). Accordingly, any source of funds—whether internal or external sources such as debt—should alleviate these financial constraints and enhance firm performance.

Third, political connections play a more important role in China than in other countries (Zhang *et al.* 2015). Dong *et al.* (2014) find a positive relationship between financial leverage and state ownership, consistent with the political patronage idea that firms in which the government has more of a stake are more likely to incur long-term debts. Conversely, a lack of political connections can cause firms to face financial shortages, meaning that the ability to borrow could have a positive effect on firm value.

Similarly, when firms face tighter financial constraints, dividends can have an important impact on firm value (Li *et al.* 2014). Given firms' need for financing, investors are likely to appreciate the firms retaining internal funds and avoiding disgorging cash as dividends. In fact, the sensitivity of firm investment to internal cash flow has traditionally been a metric of financial constraints (Fazzari *et al.* 2000; Kaplan and Zingales 2000). On the contrary, the firms that are least affected by financial constraints can afford to pay dividends since they have effective alternative sources of funds.

Consistent with this rationale, we formulate our second hypothesis, also in dual terms:

H2a. *For the most financially-constrained Chinese firms, firm value is expected to be positively related to leverage and negatively related to dividends*

H2b. *For the least financially-constrained Chinese firms, firm value is expected to be positively related both to leverage and dividends.*

Below, we provide a synopsis of the different influences on firm value based on the moderating effect of both growth opportunities and financial constraints.

	Growth opportunities		Financial constraints	
	High (H1a)	Low (H1b)	High (H2a)	Low (H2b)
Leverage	-	+	+	+
Dividends	-	+	-	+

3. Empirical design: Sample, variables and method

3.1. *Sample and variables*

Data on financial statements (balance sheets, and profit and loss accounts), the market value of the firms, and their ownership structure was sourced from the Thomson ONE Banker database. This database provides comprehensive worldwide coverage of industry- and firm-level data such as financial fundamentals, market data, and ownership profiles.

The sample includes 1,961 Chinese non-financial firms listed on the Hong Kong, Shanghai, or Shenzhen Stock Exchange for the period 2004-2013, amounting to a total of 5,030 observations with full information on the main variables.[3] However, the information on dividends in our database is missing many values (see Table 1). When dividends are excluded from the estimates, the number of observations rises to 13,382. Our database combines time series with cross-sectional data, although not all the firms have information for all the years, thus yielding an unbalanced data panel. To give a general idea of the representativeness of the sample, it accounts for between 41.8% and 50.8% of all listed firms (depending on the year) and between 22.6% and 44.9% of the whole market capitalization.

We use the market-to-book equity ratio *MBE* as our dependent variable since it is a measure of corporate equity value. It is defined as the ratio of the market value of equity to the book value of equity. As independent variables, we use two common determinants of firm value, which represent our main explanatory variables. This makes our research comparable with previous literature (Gul 1999; Jiang and Kim 2013; D'Mello and Miranda 2010). First, we define financial leverage, *LEV*, as the total debt to book value of equity. Second, we define dividend payout, *DIV*, as the ratio of total dividends (both common and preferred) to net income. As alternative measures, we use total debt to total assets and total dividends to total sales in our regressions, but the results do not change qualitatively. Additional definitions of these variables are later used as a robustness check.

Furthermore, we introduce two control variables: (i) return on assets, *ROA*, is the ratio of gross income to total assets, and (ii) *SIZE* is the natural logarithm of total assets. Return on assets and firm size are the two most commonly-used variables in the literature to control for firm value in emerging markets (Lins 2003; Wei and Zhang 2008).

To avoid bias in our results and to mitigate potential problems of heteroscedasticity due to extreme values, all the variables have been winsorized at the 2% level. Table 1 provides some descriptive statistics.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Q25	Q50	Q75	N
MBE	3.000	2.354	1.494	2.249	3.731	12,116
LEV	1.445	1.446	0.506	0.973	1.816	13,485
DIV	0.210	0.239	0.000	0.138	0.346	6,762
ROA	0.073	0.061	0.038	0.061	0.100	15,953
SIZE	5.885	1.422	4.962	5.727	6.659	16,395
AGE	15.94	5.721	12	16	20	17,908
MBA	1.879	1.150	1.131	1.513	2.241	12,118

This table shows mean, standard deviation, 25th, 50th (median) and 75th quantiles, and the number of observations for the main variables. Variables are winsorized at the 2% level.

As displayed in Table 1, our dependent variable, market value (*MBE*), indicates that the market value of equity is, on average, three times its book value. Moreover, regarding our variables of interest, the leverage variable (*LEV*) shows that debt is, on average, 1.44 times the value of book equity and the value of dividends paid (*DIV*) is more than one-fifth of net income. For an overall analysis of the correlations among the variables, and in order to detect potential problems of multicollinearity, we report a Pearson correlation analysis in Table 2.

Table 2: Correlation Matrix

	MBE	*LEV*	*DIV*	*ROA*	*SIZE*
MBE	1				
LEV	0.1726	1			
DIV	-0.0651	0.0769	1		
ROA	0.1210	-0.2642	-0.1205	1	
SIZE	-0.1687	0.3333	0.1567	-0.0371	1

Correlations are calculated as the Pearson correlation coefficient.

3.2. Method

We define a multivariate regression model in which the market-to-book equity ratio, *MBE*, depends on the leverage (*LEV*), dividends (*DIV*), firm performance (ROA) and firm size (SIZE) as follows (subscript *i* refers to the firm and *t* to time):

$$\text{MBE}_{it} = \beta_0 + \beta_1 \cdot \text{LEV}_{it} + \beta_2 \cdot \text{DIV}_{it} + \beta_3 \cdot \text{ROA}_{it} + \beta_4 \cdot \text{SIZE}_{it} + \eta_i + \eta_t + \eta_s + \varepsilon_{it} \quad (1)$$

Equation 1 is estimated with panel data methodology and allows us to test the hypotheses presented above. Thus, the analysis focuses primarily on parameters β_1 and β_2, which are associated with the main variables in this study: leverage and dividends, respectively. We start by reporting a baseline estimation for the whole sample. The purpose of this first step is to check the overall fit of the model and compare with previous results in the literature. In

a second step, we estimate the model separately, that is, with the sample divided according to growth opportunities and financial constraints, and we look at the coefficients β_1 and β_2 to check whether capital structure and dividends play a different role in each scenario.

Following McConnell and Servaes (1995), we divide the sample of firms into two groups depending on the value of the growth opportunities. This approach has become common in similar studies on the moderating effect of growth opportunities (Chow *et al.* 2012). Recent research shows that the ratio of the market value of assets to the book value of assets (*MBA*), a rough proxy for Tobin's Q, provides reliable information on investment opportunities (Adam and Goyal 2008). As is common practice in current research, the market value of assets is taken as the sum of the market value of equity plus the book value of debt (Officer 2011; Bai *et al.* 2004). The underlying notion is that the higher the *MBA*, the lower the value due to assets-in-place and, obviously, the higher the value due to growth opportunities. Accordingly, we define a dummy variable, *OPORT*, which equals 1 when *MBA* is over the median value, and 0 otherwise. The observations above the median value (*OPORT*=1) are assumed to be the firms with the most growth opportunities and the observations below the median value (*OPORT*=0) are assumed to be the firms with the poorest growth opportunities.

As far as the financial constraints are concerned, there has been some debate in the literature as to the most reliable metrics (Fazzari *et al.* 2000; Kaplan and Zingales 2000; Farre-Mensa and Ljungqvist 2016). As shown by prior research, firm size and age are particularly useful predictors of financial constraint levels (Hadlock and Pierce 2010; Fee *et al.* 2009; Hoberg and Maksimovic 2015). Therefore, we first divide the sample according to the *SIZEDUMMY* variable, which equals 1 when a firm's assets are above the median value, and 0 otherwise. Second, we divide the sample according to the *OLD* variable, which equals 1 when a firm's *AGE* is above the median value, and 0 otherwise.

The panel data methodology makes it possible to control for the so-called constant and unobservable heterogeneity, denoted η_i, and mitigates potential problems in the estimates—mainly biased and inconsistent coefficients (Baltagi 2008; Dang *et al.* 2015). By increasing the number of observations, this methodology also reduces collinearity among the variables introduced. Lastly, it provides some mechanisms to address the problem of endogeneity. Our model could be subject to endogeneity problems caused by reverse causality, which will be dealt with later. We also control for time effects, denoted η_t, and for sector effects, η_s, using a set of dummy variables. Industry effects are controlled for using ten 1-digit level SIC code dummy variables. The random error term ε_{it} controls both for the error in the measurement of the variables and for the omission of some relevant explanatory variables.

4. Results

4.1. Means analysis

Before showing the results of the regression analysis, we perform a means comparison test on the two subsamples, partitioned according to the availability of growth opportunities (*MBA*) and financial constraints (*SIZE* and *AGE*). This univariate analysis compares the level of the different variables of Equation 1 across the two partitions and allows us to identify any significant differences.

Table 3 presents the results of this analysis. There are statistically significant differences in firm value, corporate debt, dividend policies, firm performance and size across firms according to the availability of growth opportunities and financial constraints. The picture that emerges from this table is that firms with more profitable investment opportunities have higher market valuation, lower leverage, pay less in dividends, are more profitable and are smaller. The firms that are assumed to be unconstrained (by size or age) show lower market valuation and have higher financial leverage. This evidence is consistent with Chow *et al.* (2012) and suggests that both growth opportunities and financial constraints can be critical factors affecting the influence of financial policies on firm value.

Table 3: Means Comparison

Variable	MBA			SIZE			AGE		
	High	*Low*	*P-value*	*Large*	*Small*	*P-value*	*Old*	*Young*	*P-value*
MBE	3.917	1.360	0.000	2.671	3.298	0.000	2.228	2.518	0.000
LEV	1.169	1.756	0.000	1.718	1.138	0.000	1.718	1.576	0.000
DIV	0.230	0.256	0.000	0.256	0.145	0.000	0.241	0.243	0.719
ROA	0.070	0.051	0.000	0.068	0.077	0.000	0.077	0.006	0.000
SIZE	5.689	6.605	0.000	6.947	4.768	0.000	6.321	6.307	0.731

Mean values for groups into which the sample is divided according to growth opportunities (*MBA*) and financial constraints (size and age). *High* and *Low* columns capture mean values for firms with high or low growth opportunities, respectively. *P-value* for *t* test of mean differences is reported.

4.2. Baseline estimates

We first analyse the effect of corporate finance policies on the value of Chinese listed firms for the whole sample. We run a parsimonious model, so we first check the individual effect of leverage and dividends before introducing both variables jointly. Table 4 shows the results of the baseline estimation. As we can see (Columns I and III), financial leverage has a positive and significant influence on firm value. This result can be explained with reference to the asymmetric information theory or the signalling theory. Alternatively, in the context of the Chinese business environment, it can be interpreted as indicating a managerial discipline mechanism. In contrast, the dividend policy has a

negative influence on the value of the firm (Columns II and III). Financial constraints as well as certain Chinese institutional factors may offer possible theoretical explanations (Kumar and Robe 2011). As expected, the higher the profitability of the firm (*ROA*), the higher its market value. The firm's size has a negative effect on firm value.

Overall, the goodness-of-fit of the model (*R²-within*) is acceptable and the joint model (*F-test*) is statistically significant. However, as mentioned above, the results should be taken with caution as the number of observations per firm drops markedly when dividends are included in the regressions. The Hausman test is used to examine the correlation between the fixed-effects term and the explanatory variables. When the null hypothesis of no correlation is rejected, fixed-effects regressions should be used. All estimations include time and industry effects. Furthermore, as mentioned above, results hold when we use alternative measures for leverage (total debt to total assets) and dividend policy (dividends paid to total sales). Lastly, we control for the fact that the observations are sourced from different stock exchanges: after incorporating stock exchange dummies in the regressions, the results remain qualitatively unchanged.

Table 4: Pooled Baseline Estimates

	(I)	*(II)*	*(III)*
LEV	0.668***		0.520***
	(42.96)		(19.74)
DIV		-0.235**	-0.292**
		(2.02)	(2.15)
ROA	8.796***	5.376***	6.886***
	(28.24)	(11.68)	(13.56)
SIZE	-1.032***	-0.437***	-0.824***
	(38.12)	(17.02)	(17.10)
R²-within	0.500	0.257	0.349
F-test	53.37***	18.22***	31.58***
N	13,382	5,030	5,030
Hausman test	178.85***	140.00***	184.23***

Pooled estimates of Equation 1. ***, **, and * are confidence levels at 99%, 95% and 90%, respectively.

4.3. The dual effect of debt and dividends

The results reported in Table 4 (pooled estimates) do not account for the asymmetric effect of growth opportunities. Thus, in order to test the moderating role of growth opportunities (Hypotheses *H1a* and *H1b*), we run separate regressions for firms with high or low growth opportunities. Results are reported in Table 5. Once we divide our sample according to the median value of *MBA* (that is, using the *OPORT* variable), the results change noticeably.

Table 5 shows that when firms have high growth opportunities (Panel A), leverage (*LEV*) has a positive impact on firm value (Columns I and III) whereas dividends (*DIV*) have a negative effect (Columns II and III). It should be borne in mind that *H1a* hypothesized that, in a context of high growth opportunities, both leverage and dividends are expected to be negatively related to firm value. Our results shed some doubt on the moderating influence of growth opportunities on the role played by debt. However, in line with Hypothesis *H1b*, leverage and dividends are positively related to firm value when the firm has fewer profitable investment opportunities (see Panel B, Columns IV, V and VI). These results partially confirm Hypothesis *H1a* but fully support Hypothesis *H1b*. Consistent with previous empirical evidence, firm performance (*ROA*) has a positive effect on firm value, while the size of the firm (*SIZE*) exerts the opposite effect. All the coefficients and the joint model (*F-test*) are statistically significant.

Table 5: Subsample Estimates by Growth Opportunities

	Panel A: High Growth Opportunities			*Panel B: Low Growth Opportunities*		
	(I)	*(II)*	*(III)*	*(IV)*	*(V)*	*(VI)*
LEV	0.945***		0.912***	0.258***		0.209***
	(37.43)		(28.03)	(28.79)		(21.99)
DIV		-0.742***	-0.929***		0.336***	0.268***
		(3.45)	(4.95)		(6.33)	(5.47)
ROA	10.191***	3.392***	7.500***	2.043***	0.290	1.040***
	(22.29)	(4.49)	(11.16)	(10.03)	(1.23)	(4.70)
SIZE	-1.060***	-0.267***	-0.446***	-0.164***	0.026**	-0.063***
	(25.06)	(6.46)	(12.42)	(8.53)	(2.02)	(5.19)
R^2-within	0.527	0.236	0.382	0.298	0.140	0.2455
F-test	318.9***	18.22**	31.58***	76.26***	12.26***	23.26***
N	8,224	2,524	2,524	5,158	2,506	2,506
Hausman test	50.65***	140.00***	184.23***	214.86***	61.35***	53.34***

Estimates of Equation 1 when the sample is divided by growth opportunities (*OPORT* variable). ***, **, and * are confidence levels at 99%, 95% and 90%, respectively.

In order to extend the previous results and corroborate the moderating role of growth opportunities (Hypotheses *H1a* and *H1b*), we also run our model (Equation 1) for the whole sample (for the sake of brevity, results are not reported but are available upon request). Thus, as an alternative way to control for the effect of growth opportunities, we extend the model with the interacted variables *LEVxOPORT* and *DIVxOPORT*. The results are consistent with those previously reported, thus confirming the dual effect of dividends and the positive effect of leverage regardless of growth opportunities.

Next, we check the extent to which our results might be driven by financial constraints, an effect which has been widely documented in the literature (Guariglia *et al.* 2011; Ding *et al.* 2013; Chong *et al.* 2013). We thus test the

moderating effect of financial constraints on firm value (that is, Hypotheses *H2a* and *H2b*). In Table 6, we report the results of the estimations for the subsamples of constrained firms (Columns I and III) and unconstrained firms (Columns II and IV), divided according to the criteria of age and firm size. Consistent with Hypothesis *H2a* (constrained firms), Columns I and III show a positive and significant relationship between leverage and firm value. The results in Column I lend additional support to *H2a* as dividends are negatively related to firm value in the youngest firms. The results concerning Hypothesis *H2b* (unconstrained), reported in Columns II and IV, are somewhat mixed. As hypothesized, financial leverage has a positive relationship with firm value, which suggests that the market appreciates firms' ability to raise debt. Nevertheless, the estimated coefficients of dividends turn out to be not significant, meaning that they do not show a consistent relationship with firm value. The goodness-of-fit of the model (R^2-*within*) is acceptable and the joint model (*F-test*) is statistically significant.

Table 6: Subsample Estimates by Financial Constraints

	Younger firms (I)	Older firms (II)	Smaller firms (III)	Larger firms (IV)
LEV	0.614***	0.314***	0.679***	0.484***
	(23.77)	(7.319)	(12.52)	(14.75)
DIV	-0.629***	-0.157	-0.085	-0.167
	(-4.009)	(-0.819)	(-0.280)	(-1.04)
ROA	8.064***	6.801***	1.280***	6.858***
	(12.01)	(10.11)	(2.84)	(11.78)
SIZE	-0.853***	-0.631***	-1.150***	-0.748***
	(-23.20)	(-8.392)	(-9.96)	(-9.66)
R^2-within	0.452	0.269	0.319	0.383
F-test	58.00***	27.30***	37.95***	80.73***
N	2,374	2,656	2,349	2,681
Hausman test	64.92***	82.93***	50.35***	134.68***

Estimation results of Equation 1 for the subsamples of constrained firms (Columns I and III) and unconstrained firms (Columns II and IV), according to the criteria of age and firm size. ***, **, and * are confidence levels at 99%, 95% and 90%, respectively.

As with growth opportunities above, we once again extend our previous results in order to corroborate the moderating effect of financial constraints on firm value (Hypotheses *H2a* and *H2b*). Thus, we run our model for the whole sample and add the corresponding interacted variables of leverage and dividends with the variables *SIZEDUMMY* and *OLD*, respectively. Results (not reported) remain qualitatively unchanged.

As in the pooled estimations above (Table 4), results for both moderating effects of growth opportunities and financial constraints (that is, Tables 5 and 6) include time and industry effects. Furthermore, results remain unchanged when we use alternative measures for leverage (total debt to total assets) and

dividend policy (dividends paid to total sales). Overall, our results suggest that the financial policy of Chinese firms is significantly influenced by growth opportunities and financial constraints, although the influence of these two scenarios differs. Whereas growth opportunities clearly moderate the impact of dividends, financial constraints offer a relatively better explanation of the relationship between leverage and firm value.

5. Robustness analysis

To check the consistency of our results, we now perform some robustness analyses. First, we use different measures of growth opportunities and financial constraints to divide the sample. For the former, we use the asset growth ratio (*ASSGROWTH*)— defined as the rate of asset growth relative to the previous year—to divide the sample, and then test Hypotheses *H1a* and *H1b*.[4] Results are displayed below in Table 7. Columns I and II, respectively, refer to the high (above the median value) and low (below the median value) growth opportunities. The results confirm our previous estimations (see Table 5). Regarding financial constraints, we use access to foreign capital as a new criterion to split the sample, and then test Hypotheses *H2a* and *H2b*. Prior research has documented that foreign-owned firms in China are less constrained than domestic firms (Guariglia *et al.* 2011). In light of this evidence, we split the sample into financially-constrained (non-foreign-owned) and financially-unconstrained (foreign-owned) subsamples and estimate Equation 1 once again.[5] As can be seen in Table 7 (Columns III and IV), financial leverage has a positive effect on firm value, irrespective of the tightening of financial

Table 7: Estimation Results Using Different Criteria to Split the Sample

	High Growth Opport.	Low Growth Opport.	Financially Constrained	Financially Unconstrained
	I	II	III	IV
LEV	0.408***	0.546***	0.618***	0.330***
	(6.892)	(9.378)	(17.57)	(9.97)
DIV	-0.629**	-0.281	-0.628***	0.279*
	(-2.372)	(-0.688)	(2.98)	(1.68)
ROA	4.170***	2.097***	8.911***	5.423***
	(5.061)	(3.345)	(10.35)	(9.87)
SIZE	-0.558***	-0.512***	-1.016***	-0.277***
	(-7.218)	(-4.713)	(14.76)	(8.67)
R^2-*within*	0.135	0.128	0.511	0.266
F-test	35.16***	27.45***	60.84***	85.96***
N	2,304	1,601	2,755	2,275
Hausman test	16.27***	15.25***	110.63***	104.86***

The sample is divided by *ASSGROWTH* (Columns I and II) and by *FOREIGN* (Columns III and IV); *ASSGROWTH* is defined as the rate of asset growth relative to the previous year and *FOREIGN* is the proportion of shares held by foreign investors. ***, **, and * are confidence levels at 99%, 95% and 90%, respectively.

constraints, thus confirming our previous results. Regarding the dividend policy, the variable *DIV* yields significant results, as predicted, both for constrained and unconstrained firms (negative and positive, respectively).

Secondly, we address the possible reverse causality between our dependent variable, *MBE*, and the explanatory variables, which could result in endogeneity problems. We check for this possibility in both growth opportunities and financial constraints scenarios. Arellano and Bond (1991), Flannery and Hankins (2013), and Arif Khan *et al.* (2019) among many others, advocate the use of the Generalized Method of Moments (GMM) to address this issue. Table 8 contains the GMM estimates, which generally corroborate the previous results in all scenarios. The estimated models fulfil the general conditions for statistical validity in terms of joint significance (*Wald test*), the second-order autocorrelation of residuals (AR2) and the over-identifying restrictions test for valid instruments (*Hansen test*). With respect to the subsample regressions by growth opportunities (Columns I and II), we confirm the dual role of dividends, which have a negative relationship with the value of firms with high growth opportunities, and a positive one when firms lack such opportunities. Once again, corporate debt appears positively related to firm value, irrespective of growth opportunities.

As for the financial constraints setting, GMM estimates are in line with previous results, as shown in Table 8. Columns III and IV display the results by age, and Columns V and VI the results by size. Leverage has a positive relationship with firm value in all cases except in the oldest firms, where it is non-significant, as expected. With respect to dividends, they can be seen to play a dual role, as predicted. That is, they are negatively related to firm value

Table 8: GMM Estimation Results

	High G. Opport..	Low G. Opport.	Younger firms	Older firms	Smaller firms	Larger firms
	I	II	III	IV	V	VI
LEV	0.641***	0.912***	0.4739***	0.0304	0.7013***	0.5418***
	(6.092)	(2.655)	(8.5014)	(0.4440)	(6.8728)	(5.9533)
DIV	-2.734***	3.559***	-0.7405***	0.3222*	-0.9597**	0.7002
	(-3.730)	(3.054)	(-3.5243)	(1.6816)	(-2.3848)	(1.3774)
ROA	13.125***	6.556**	12.3998***	11.3103***	10.4460***	10.5878***
	(5.989)	(2.266)	(5.0969)	(3.4520)	(6.5141)	(9.2639)
SIZE	-0.670***	-0.345*	-0.6073***	-0.1858***	-0.0659	-0.4765***
	(-2.916)	(-1.721)	(-10.8058)	(-4.6868)	(-1.2534)	(-9.4307)
Wald test	874.6***	97.62***	599.52***	2585.9***	3011.5***	2426.2***
AR2	-0.39	-0.87	-0.66	-0.83	-1.07	-0.81
N	2,080	2,287	2,470	2,033	2,344	2,604
Hansen test	49.19	7.37	54.89*	23.16*	75.01	30.84

The sample is divided by growth opportunities (*OPORT* variable) and by financial constraints (*AGE* and *SIZE* variables). ***, **, and * are confidence levels at 99%, 95% and 90%, respectively.

for constrained firms (younger and smaller) but positively -or non-significantly- related for unconstrained firms (older and larger).

6.   Concluding comments

This paper analyses how firms' leverage and corporate dividend policies affect the market value of Chinese listed firms depending on the availability of growth opportunities and the tightness of financial constraints. The theoretical foundations underpinning each of these scenarios are presented, in order to explain the impact of financial leverage and dividends on firm value. The proposed hypotheses are tested by applying panel data methodology and performing different robustness tests, and the findings largely confirm our expectations.

First, consistent with our hypotheses, we find that dividends play a dual role with respect to both growth opportunities and financial constraints: (i) while they are positively related to the value of the firms with low growth opportunities, they have a negative effect on the value of the firms with high growth opportunities; and (ii) while they are positively (or non-significantly) related to the value of financially-unconstrained firms, they exert a negative impact on the value of their financially-constrained counterparts.

Second, our findings show that leverage positively affects the value of firms regardless of their growth opportunities or their level of financial constraints. This result is consistent with our hypothesis on financial constraints, but partially contradicts our prediction regarding growth opportunities.

Our research has interesting implications for academia, practitioners and policymakers alike. For academia, we provide additional evidence on what McConnell and Servaes (1995) refer to as "the two faces of debt". Moreover, we do so in an institutional setting as unique as that of China. In such a framework—with concentrated ownership structure, many state-controlled corporations, relatively illiquid capital markets and firms having limited access to equity and debt—we suggest alternative ways of identifying constrained firms. For practitioners, our paper suggests how firms can choose to implement certain corporate financial policies depending on the availability of profitable investments or the limitations on raising external funds. Our results are also of interest to policymakers given the critical effect that financial constraints can have on the economic growth of the whole country. Thus, loosening these constraints by stimulating equity and debt issuance and bank credits should be a priority for the relevant authorities.

Some possible directions for future research are worth highlighting. First, a more in-depth analysis of the ownership structure could shed more light on how Chinese firms can exploit growth opportunities (Wang 2018). In this paper, we have merely studied whether the presence of foreign shareholders alleviates financial constraints; analysing different types of investors (e.g., family

shareholders, institutional investors, etc.) and the ownership concentration is an area that deserves further attention. Second, new research could address the side-effects of the semi-mandatory dividends. This rule is aimed at ensuring payouts to minority shareholders but can have unintended negative consequences in terms of firms being unable to take advantage of profitable investments due to the lack of internal financial resources. Finally, another interesting field of research is the influence of the board of directors and the extent to which the connections, advice and oversight they contribute could interact with the moderating factors related to corporate finance.

Author contributions: All authors have contributed in every stage of the research process. We hold meetings regularly and splits tasks to so that all of us are involved and agree in all stage.

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Notes

1. This regulation became even stricter in 2008, when the CRSC set a minimum payment of 30% of net profits, and only cash dividends were allowed. This rule changed again in 2013 and since then every listed firm has had to deliver dividends regardless of their access to an SEO.

2. As a matter of fact, after the split-share reform in 2005-2006, which abolished trading restrictions on non-tradable shares, the interests of government and minority shareholders became more closely aligned as a result of curtailing firms' incentives to seek equity financing and increasing their appetite for debt financing.

3. Although the firms listed on these different markets differ from each other in terms of investor types, regulations, and investors' degree of protection, we deem it appropriate to build a joint sample in order to have a representative depiction of the Chinese market. In any case, we control for different specific features of the stock exchanges. Some studies underline the relevant role played by all three stock markets in China's economic development, suggesting strong competition for the status of national and even international financial centres (Wang *et al.* 2012; Wu *et al.* 2017).

4. We have 13,571 firm-year observations for the variable *ASSGROWTH* with an average value of 15.04%.

5. We have 3,423 firm-year observations (only 2,275 with full information) that report information on foreign shareholders, with a mean value of 0.064 (i.e., 6.4% of shares are held by foreigners).

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