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Trust and corporate debt maturity mismatch: Evidence from China

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Abstract

This study explores the relationship between social trust and firm debt maturity mismatch in the Chinese context. Additionally, we investigate the economic mechanisms through which social trust affects debt maturity mismatch, and the differential roles played by social trust among firms with different characteristics. We employ enterprise trustworthiness scores and provincial blood donation rates as our measures of regional social trust level and find a negative relationship between local trust and firm debt maturity mismatch, suggesting that social trust which promotes ethical norms acts as a restraint on firms' propensity for excessive risk. An alternative but consistent explanation is higher social trust increases debtors' willingness to lend, hence it reduces firms' funding costs and consequently the potential cost-saving motivation behind such a mismatch. We further document evidence that social trust improves the firm information environment and consequently risk-taking and/or the ability to reduce funding costs. The study also reveals variations in the role of social trust based on firm characteristics, such as leverage and profitability, and the ownership structure (state-owned enterprises vs. non-state-owned enterprises). The findings contribute to the literature by highlighting the increasing importance of social capital for policy and governance.

KEYWORDS

corporate risk-taking, maturity mismatching, social trust

JEL CLASSIFICATION

G32, G33, G41

1 | INTRODUCTION

Studies on social trust, or more generally social capital, are not new. Trust or social capital has been found to be stronger in countries with higher and more equal income, with formal institutions that effectively protect property and contract rights, and with better educated and ethnically homogeneous people (Knack & Keefer, 1997). Social trust impacts various economic performance measures (La Porta et al., 1996), for example at the institutional level venture capital firms' investment decisions (Bottazzi et al., 2016), and at the micro level individuals' stock market participation (Guiso et al., 2008). People in countries with a high level of trust tend to invest less in cash and more in stock, have greater access to credit (Guiso et al., 2004); borrowers with a more trustworthy appearance have easier access to loans and lower default rates (Duarte et al., 2012); and firms with greater social capital can perform better during financial crisis periods (Lins et al., 2017).

In the Chinese context, studies have documented that trust affects stock price crash risk (Cao et al., 2016; Li et al., 2017), stock price synchronicity (Qiu et al., 2020), business contracting (Ang et al., 2015), trade credit provision (Wu et al., 2014), firm tax avoidance (Xia et al., 2017), corporate misconduct (Dong et al., 2018), IPO underpricing (Li et al., 2019) and investment efficiency (Fonseka et al., 2021). Despite the substantial amount of literature studying social trust and corporate behaviours, whether, and how, social trust affects Chinese firms' debt maturity mismatch remains unexplored.[1] In this paper, we aim to shed light on this issue by providing a formal empirical investigation focusing on Chinese firms.

China provides a rich and relevant setting for us to examine our research question. Firstly, there is a great diversity in geography, culture, ethnicity, history, religion and language across Chinese provinces, enabling local trust to have substantial heterogeneity across provinces and variation over time for our further analyses (Ang et al., 2015; Wu et al., 2014). Secondly, the development of institutions and the regulatory environment in China are still relatively weak (Ang et al., 2015); studying social trust, an informal governance channel, and its influential role on corporate risk behaviours will provide viable policy implications to alleviate these problems.

Our main dependent variable of interest, firm debt maturity mismatch, deserves special attention as it relates to both firm risk-taking behaviour and firm investing-financing decisions.

The debt maturity mismatch problem refers to firms' substantial use of short-term debt to finance long-term investments, resulting in a mismatch between the debt maturity and asset life. The maturity mismatch problem originates in the banking industry and has largely been neglected among non-financial firms (Wang et al., 2021). Recently, however, this problem has drawn significant attention from researchers and has been found to be particularly prevalent among firms in China compared with firms in other countries. Maturity mismatch is an active choice (rather than a passive choice) among Chinese listed firms (Wang et al., 2021). It induces financial risk such as liquidity risk, credit risk and loan rollover risk (Chen et al., 2019; Kahl et al., 2015). Although such a mismatch may come with a benefit, for instance a lower cost of funding as pointed out by Wang et al. (2021), it is at the expense of significant financial uncertainty (i.e., whether firms are able to rollover the short-term debt) for firm investment continuity and long-term growth.

Based on the premise that social trust improves general norms and ethical standards (Coleman, 1988; Knack & Keefer, 1997; Pastoriza et al., 2008), and can serve as an alternative

[1]Su et al. (2019) examine the relation between board size and corporate risk taking in investment and include social trust as a moderating factor. In this paper, we focus on firms' risk-taking behaviours in their financing decisions measured by firms' maturity mismatch. Our risk-taking measure reflects firms' active choices in using short-term debt to fund long-term investment, which better captures firms' propensity in risk taking.

monitoring mechanism (Chami & Fullenkamp, 2002), we postulate that social trust can restrain firms' risk-taking behaviours, such that firms located in environments with higher levels of social trust are therefore associated with less risky decisions. Furthermore, Qiu et al. (2021) argue that higher social trust reduces financing violations, hence reducing the cost of funding for firms. Meng and Yin (2019) supply evidence that social trust in a country is negatively related to the cost of debt financing. Therefore, an additional but consistent channel in our context is: higher social trust could reduce firms' cost of funding and, hence, their motivation to save costs through maturity mismatch. In this paper, motivated by the above, we specifically investigate three issues: (1) the impact of social trust on firms' debt maturity mismatch; (2) the economic mechanism through which social trust affects corporate maturity mismatch; and (3) the differential roles played by social trust among firms with heterogenous characteristics.

Measuring social trust is not straightforward. We follow the previous literature by employing province-level enterprise trustworthiness scores and voluntary blood donation rates as measures of local trust (Ang et al., 2015; Li et al., 2017; Wu et al., 2014). Inspired by Chen et al. (2019) and following Wang et al. (2021) and Hu et al. (2023), we construct a continuous maturity mismatch index (*MMI*) as our main dependent variables. We propose that *MMI* reflects firms' active propensity to engage in risky decisions, as well as their ability to secure lower funding costs. Firms located in provinces with a higher level of trust are subject to a higher level of social norms; such norms help restrain firms' behaviours in taking excessive risk. Moreover, high social capital (i.e., trust) helps increase investors' confidence and willingness to lend (Chen et al., 2016), hence effectively reducing (long-term) funding costs and, thus, firms' need/motivation to engage in debt maturity mismatch.

Based on a sample of Chinese A-share listed firms from 2004 to 2019, we find supportive evidence for this proposition. We document a negative relation between local trust and *MMI*, with this finding remaining robust after implementing a series of methodologies addressing endogeneity concerns. In the mechanism analysis, we reason that local trust influences firms' debt maturity mismatch through improving their information environment. Trust-induced social norms and ethical standards promote information sharing and transmission among firm stakeholders (La Porta et al., 1996). With a more transparent information environment, firms are more closely monitored, hence excessive risk-taking behaviours are limited accordingly. Additionally, in a high social trust environment, firms are able to enjoy a lower cost of funding because lower information asymmetry increases investor confidence. Hence, there is a reduced need to carry out maturity mismatch. Employing accounting information transparency (*ATran*) and analyst coverage (*NoAnalyst*) as the proxies for information environment, our two-stage mechanism tests show that firms located in more trustworthy provinces exhibit a greater level of information transparency, which in turn reduces firms' *MMI*.

Our further analyses suggest that the behaviour-restraining role played by social trust varies across firms with heterogeneous firm characteristics. Social trust plays a more prominent role in reducing *MMI* among firms with high leverage, high past stock return volatility, high profitability and high cash flow from operation, behaviours which, in other words, are characteristics consistent with greater inherent risk-taking propensity, and typically attracting regulatory and governance scrutiny. The relation between social trust and *MMI* also differs between state-owned enterprises (SOEs) and non-SOEs. Our results show that the relation between social trust and *MMI* is, in fact, significant only among SOEs. Given that SOEs are inherently more prone to information asymmetry (Hou et al., 2012) and corruption due to their government connections (Allen et al., 2005; Ayyagari et al., 2010), our results highlight the effective role of trust in restraining the risky and unethical behaviours and increasing the information transparency of such firms. The role of social trust on *MMI* also varies over time. Interestingly, our sub-period analysis reveals that the negative relation between social trust and *MMI* is actually statistically significant only in the more recent period (i.e., 2012–2019). On the one hand, the enhanced marketisation in Chinese markets during the more recent period

means firms have more active choices among investment opportunities. On the other hand, our results suggest that social trust has become an even more effective tool to mitigate risky borrowing behaviours under such an environment. The results reflect the rising importance of understanding social trust.

We contribute to the existing literature in the following ways. Firstly, we extend the literature on social trust and its impact on corporate risk-taking behaviours by providing additional evidence from China. Using a maturity mismatch index as the main measure of risk-taking, our findings provide meaningful implications for policy makers, especially when there still exists under-development in the institutions and enforcement of laws and regulations in the current Chinese markets. Our findings indicate that local trust performs as an alternative monitoring mechanism in China and can shape and restrain firms' excessive risky behaviours, leading to more healthy financial structures. Secondly, our results also add to the strand of literature on firm investing-financing decisions. Our results support the importance of social capital in enhancing investor confidence through reducing information asymmetry. Firms consequently benefit from being able to borrow long term, hence there is less need to mismatch. This benefits both investors and firms in achieving long-term growth and returns. Thirdly, we add timely new evidence on debt maturity mismatch – an emerging new measure that captures unique perspectives of both firm risk-taking and investing-financing behaviours in China particularly. In terms of this relatively less investigated new angle, we find a more profound mediating effect of social trust among firms that are more likely to suffer from information asymmetry and engage in risk-taking. As an example, China has a unique firm state ownership structure and a large number of Chinese listed firms are SOEs, which are more prone to information asymmetry and corruption (Allen et al., 2005; Ayyagari et al., 2010; Hou et al., 2012). Studying the heterogeneous roles of social trust on *MMI* between SOEs and non-SOEs, we find that the influential role of social trust is only prevalent among SOEs. This result has the more profound implication that the social norms promoted by local trust can be effective in restraining firms' unethical behaviours. It can also potentially alleviate corruption problems and reduce information disparity. In addition, SOEs are less likely to be forced to mismatch their maturities due to government backing. In this regard, our results complement Wang (2023) and suggest that maturity mismatch is indeed an active choice among Chinese firms.

2 | EMPIRICAL STRATEGY

2.1 | Sample and main model

Our sample consists of all Chinese A-share listed firms traded on both the Shanghai and Shenzhen stock exchanges. We exclude firms in the financial industry and firms with missing information for the control variables. Our final sample includes 16,234 firm-year observations representing 2657 individual firms covering the period 2004–2019. All financial data are obtained from the China Stock Market and Accounting Research (CSMAR) database.

To establish the relation between social trust and *MMI*, we estimate the following model:

$$MMI_{i,t+1} = \alpha + \beta SocialTrust_{i,t} + \gamma Controls_{i,t} + IndustryDummies + YearDummies + \varepsilon_t \quad (1)$$

2.2 | Measuring key variables

MMI is a ratio reflecting the extent of a firm's use of short-term debt to support its long-term investments (Chen et al., 2019). A higher mismatch ratio reflects a greater long-term financing gap between long-term investment expenditure and long-term financing relative to the long-term assets (i.e., a higher degree of debt-asset maturity mismatch) and indicates a higher

risk-taking propensity, or a higher incentive/need to reduce the cost of funding. A firm's *MMI* in each year *t* is calculated as follows:

$$Maturity\ Mismatch\ Index\ (MMI) = \frac{Long-term\ financing\ gap}{Long-term\ assets} \tag{2}$$

We follow Wang (2023) and Hu et al. (2023) to calculate the *Long-term financing gap* as:

$$\begin{aligned} &Long-term\ financing\ gap = Long-term\ investment\ expenditures - Long-term\ financing = \\ &cash\ expenditure\ on\ purchase\ and\ construction\ of\ fixed\ assets \\ &-(increase\ of\ long-term\ debts\ in\ the\ current\ period + increase\ of\ equity\ in\ the\ current\ period \\ &+net\ operating\ cash\ flows\ in\ the\ current\ period + cash\ flow\ from\ the\ sale\ of\ fixed\ assets) \end{aligned} \tag{3}$$

For social trust, we employ two measures. First, we measure social trust using the province-level enterprise trustworthiness scores, collected from the survey by Zhang and Ke (2002) via the Chinese Enterprise Survey System (CESS) conducted in 2000. The same trust measure has been widely adopted in the existing literature (e.g., Ang et al., 2015; Li et al., 2017; Wu et al., 2014). The CESS survey aims to collect information about the provincial trustworthiness of Chinese firms located in 31 provinces. CESS sent out questionaries to about 15,000 managers of firms across 31 provinces and received back more than 5000 valid responses. In the questionnaire, managers were asked 'According to your experience, which five provinces have the most trustworthy enterprises? Please list them in order'. For each response received, a raw score of 5 is assigned to the most trustworthy province, followed by a raw score of 4 being assigned to the second most trustworthy province, and so on.

The trust score for each province is then calculated as the weighted average of the rankings. For example, Beijing is ranked as the most trustworthy by 16.6% of managers, ranked as number two by 11.3% of managers, ranked as number three by 8.3% of managers, ranked as number four by 5.5% of managers, and ranked as number five by 4.9% of managers. The overall social trust score of Beijing is therefore calculated as $16.6\% \times 5 + 11.3\% \times 4 + 8.3\% \times 3 + 5.5\% \times 2 + 4.9\% \times 1 = 16.9$ (Ang et al., 2015; Li et al., 2017). Since the survey was only conducted once, in 2000, our trust measure is only available for that year. However, based on the premise that regional social trust has minimum time series variation (Bjørnskov, 2006; Putnam et al., 1993; Uslaner, 2002), it is reasonable to assume that the social trust score is constant over time for each province during our sample period. In our analysis, firms located in a province with a higher trust score are considered to be more trustworthy enterprises.

Our second social trust measure utilises the province-level voluntary blood donation rate following Wu et al. (2014), Li et al. (2017) and Ang et al. (2015). Based on the premise that people's willingness to make a blood donation is driven by their social values, cooperation, altruism and reciprocity, which are considered to be the foundations of social trust (Ang et al., 2015; Li et al., 2017), the province-level blood donation rate is considered to be another reasonable measure of province-level social trust. The blood donation data are collected from National Health Commission of China (http://www.nhc.gov.cn) for 2011 and 2017, and for each province. In our empirical analyses, we use the blood donation rate of 2011 for years 2004–2011, and use the blood donation rate of 2017 for years 2012–2019.

2.3 | Control variables and summary statistics

We include a list of control variables which have a potential impact on *MMI* according to the previous literature. State ownership (*StateOwner*) and ownership concentration

(*OwnerConcen*) are found to be negatively related to corporate risk-taking (Boubakri et al., 2013; Paligorova, 2010). In addition, similar to Huang and Wang (2015), standard deviation of monthly stock returns (*StdRet*) is included to control for past volatility experienced by the firm, and the natural logarithm of the net cash flow from operating activity to total assets (*NCFL*) is employed to control for the amount of internal funds available to the firm. Moreover, following Chen et al. (2019) and Jiang et al. (2015), we include common firm-level characteristics like the debt-to-asset ratio (*Leverage*) as a proxy for firm leverage, the return on assets (*ROA*) as a measure of firm profitability, the natural logarithm of the book value of total assets (*Size*) to measure firm size, and the natural logarithm of capital expenditure (*CapEx*) and firm age (*FirmAge*). Further, previous literature extensively documents that managerial characteristics can influence firm risk-taking and financing decisions. Following Jiang et al. (2015), we control for CEO age (*Age*) and gender (*Gender*) in our regression model. We winsorise each continuous variable used in the model at 1% and 99% to minimise the effect of extreme values. More information on the variable construction is detailed in Appendix 1.

Table 1 presents our summary statistics. An average firm in our sample has an *MMI* score of −0.3, indicating a negative long-term financing gap which accounts for 30% of its long-term assets. This shows that *MMI* captures a significant aspect of firm risk-taking and financing decisions. Moreover, the average *Trust1* and *Trust2* scores are 3.89 and 15.29, and their ranges are 0.99–5.39 and 0.36–25.9, respectively. This indicates a great variation across firms, allowing a rigorous analysis. Table 2 presents the correlation matrix for key variables. Preliminarily, we find *Trust1* and *Trust2* are both negatively correlated with *MMI*, supporting our key hypothesis. Moreover, *Trust1* and *Trust2* are positively correlated (correlation = 0.4306), as inherently very different variables by construct. Such a high correlation points to the major social trust component captured mutually by *Trust1* and *Trust2*, hence their suitability as our key measures for social trust.

TABLE 1 Summary statistics.

Variable	*N*	Mean	Std	Min	p25	p50	p75	Max
MMI	16,234	−0.3	0.57	−3.84	−0.39	−0.16	−0.03	1.49
Trust1	16,234	3.89	1.13	0.99	2.69	4.35	4.78	5.39
Trust2	16,234	15.29	5.51	0.36	10.92	14.85	19.3	25.9
StateOwner	16,234	11.02	20.11	0	0	0	12.58	92.19
OwnerConcen	16,234	58.26	15.84	1.32	46.98	59.21	70.05	101.16
NCFL	16,234	−2.91	0.97	−6.46	−3.35	−2.72	−2.24	−1.28
Size	16,234	22.16	1.3	19.26	21.25	21.99	22.9	26.18
Leverage	16,234	0.45	0.19	0.05	0.31	0.46	0.6	0.94
ROA	16,234	0.05	0.04	−0.01	0.02	0.04	0.07	0.21
CapEx	16,234	18.83	1.83	8.55	17.79	18.83	19.9	26.52
StdRet	16,234	0.14	0.06	0	0.09	0.12	0.17	1.3
FirmAge	16,234	15.17	5.75	1	11	15	19	51
Age	16,234	48.82	6.6	24	44	49	53	80
Gender	16,234	0.06	0.23	0	0	0	0	1
EthnicMajor	15,964	4.61	9.98	0.27	0.63	1.42	4.3	94.1
NGO	13,451	9.36	0.92	2.2	8.79	9.46	10.03	10.92

Note: This table reports the summary statistics of main variables used in the regression analyses. Full definitions of variables are presented in Appendix 1.

TABLE 2 Pairwise correlation.

	MMI	*Trust1*	*Trust2*	*StateOwner*	*OwnerConcen*	*NCFL*	*Size*	*Leverage*	*ROA*	*CapEx*	*StdRet*	*FirmAge*	*Age*	*Gender*	*EthnicMajor*	*NGO*
MMI	1															
Trust1	−0.0580*	1														
Trust2	−0.0341*	0.4306*	1													
StateOwner	0.0173*	−0.0737*	−0.2755*	1												
OwnerConcen	−0.1209*	0.0791*	0.0757*	0.2118*	1											
NCFL	−0.2135*	−0.0009	−0.0444*	0.0659*	0.1177*	1										
Size	−0.0358*	0.0809*	0.2252*	0.012	0.2194*	−0.0069	1									
Leverage	0.0477*	−0.0635*	−0.0974*	0.0870*	−0.0883*	−0.1055*	0.3795*	1								
ROA	−0.2897*	0.0481*	−0.0042	−0.0266*	0.2210*	0.3503*	−0.0604*	−0.4196*	1							
CapEx	0.1939*	0.0287*	0.1110*	0.0582*	0.2415*	0.0776*	0.7212*	0.2008*	0.0390*	1						
StdRet	−0.0778*	−0.0238*	−0.0969*	0.0450*	−0.0400*	−0.0102	−0.1733*	−0.0025	0.0109	−0.1282*	1					
FirmAge	−0.0238*	0.0230*	0.3021*	−0.2775*	−0.1977*	−0.0226*	0.2150*	0.1042*	−0.0748*	0.0019	−0.1225*	1				
Age	0.0305*	0.0320*	0.1566*	−0.0513*	0.0381*	0.0174*	0.1778*	0.0033	0.0136	0.1240*	−0.0856*	0.1577*	1			
Gender	−0.0342*	0.0151	0.0253*	−0.0598*	0.0065	0.0157*	−0.0422*	−0.015	0.0195*	−0.0436*	0.011	0.0378*	−0.0144	1		
EthnicMajor	0.0164*	−0.4545*	−0.3592*	0.0481*	−0.0217*	0.0052	−0.0379*	0.0354*	−0.0204*	−0.0190*	0.0089	−0.0296*	−0.0005	0.0031	1	
NGO	0.0115	0.4413*	0.5796*	−0.1584*	0.0371*	−0.0270*	0.0079	−0.1004*	0.0181*	0.0089	−0.0383*	0.1555*	0.0322*	0.0017	−0.6021*	1

Note: This table reports the correlation matrix of the main variables used in the regression analyses.
*At least 5% significance level.

2.4 | Endogeneity concerns

2.4.1 | Continuous difference-in-differences analysis

Like other accounting and finance studies, our empirical analysis also experiences an endogeneity problem. The endogeneity problem could arise from reverse causality, omitted variables and measurement errors, causing biased and inconsistent estimators. To address the potential concern of reverse causality in our empirical analysis, we use a difference-in-differences (DID) specification to assess the relation between social trust and *MMI*. To fully incorporate the changes in social trust levels, we employ the continuous DID specification to capture the various degrees of 'shocks' in *MMI* due to exogenous firms' relocation decisions.[2] The DID analysis is performed in the following framework from Gao et al. (2023):

$$MMI_{i,t+1} = \alpha + \beta_1 Relocation_{i,t} + \beta_2 Relocation_{i,t} * TrustChange_{i,t} + \gamma Controls_{i,t} + FirmDummies + YearDummies + \varepsilon_{i,t} \quad (4)$$

where *Relocation* is a dummy variable equal to 1 if firm *i* changes its firm address from one province to another province, and 0 otherwise. We identify 351 relocated sample firms during our sample period. *TrustChange* is a continuous variable that measures the difference in the firm trust score after a firm's relocation. A greater value of *TrustChange* indicates a greater increase in the trustworthiness environment surrounding a firm after relocation. A negative and significant β_2 coefficient suggests that a firm's *MMI* is alleviated by better social trust after relocation. *Controls* refer to the set of control variables included in the baseline regression model. We also include firm fixed effects to control for the unobservable time-invariant firm-level characteristics, strictly following Gao et al. (2023). Year fixed effects are also considered in this specification.

2.4.2 | Two-stage least squares approach

To further reduce endogeneity issues as a result of other possible problems, such as omitted variable bias or measurement error, we employ a two-stage least squares (2SLS) regression with instrumental variables. Our first instrumental variable for social trust is the number of non-government organisations (NGOs). NGOs are non-profit organisations that function independently of government. They are developed by private individuals aiming to meet social needs or address social problems, and represent regional social capital (Putnam et al., 1993). The number of NGOs has been well established in the literature as having a strong positive relation with social trust (see, e.g., Li et al., 2019; Wu et al., 2014). We collect yearly NGO numbers data from the National Bureau of Statistics of China (NBS) for each province, and scale it by the population of the province over the period 2008–2019. Our second instrumental variable for social trust is the percentage of the ethnic majority over the total population. Ethnic diversity has been found to induce social fragmentation and conflicts, hence reducing the level of trust (Ang et al., 2015; Easterly & Levine, 1997; Guiso et al., 2009). Relatedly, we estimate the ethnic majority (Han) population percentage (instead of ethnic diversity) for each province for ease of comparison and interpretation. The higher the ethnic majority population percentage (i.e., the higher proportion of the ethnic majority in the provincial population), the lower the ethnic diversity and, hence, the higher the level of social trust.

[2]We acknowledge that firms' relocation of headquarters may not be random (Chen et al., 2020), hence our continuous DID approach may not fully address the endogeneity problem. In the next section, we adopt the 2SLS with IV approach to further alleviate this concern.

A valid instrument for social trust should satisfy both the relevance condition and exclusion restriction. Our instrumental variables, as discussed above, are both correlated with our main social trust measure, satisfying the relevance criterion. In addition, although the exclusion restriction cannot be directly tested, we argue our two instrumental variables should also satisfy the condition. Firstly, NGOs and ethnic diversity are not correlated with the residuals in the 2SLS regression, suggesting a low likelihood that the two instruments correlate with debt maturity mismatch through other unobserved channels. Secondly, from a theoretical perspective, the establishment of NGOs in each province is unlikely to be correlated to each individual firm's financing or investment decisions, unless through influencing regional trust. Thirdly, one third of the provinces in China have more than two major ethnic groups (Ang et al., 2015), hence it is also unlikely that ethnic diversity itself is directly related to individual firm-level maturity mismatch decisions, unless through its impact on social trust. Overall, we contend the two instrumental variables should only affect the maturity mismatch through affecting the social trust environment surrounding the firm. We employ several tests to justify the strength of our instrumental variables. The results are discussed in detail in Section 3.2.

3 | EMPIRICAL RESULTS

3.1 | Baseline regression results

We present our baseline regression results using Equation (1) in Table 3. To allow transparency, column (1) contains our results without controlling for fixed effects. Columns (2) and (3) are the results with year fixed effects only, and both year and industry fixed effects, respectively. Moreover, Panels A and B report results for our two main trust measures, accordingly. We use robust standard errors throughout. Consistent with our main hypothesis, we find social trust is negatively associated with *MMI* in all specifications and using two different trust measures. In terms of economic significance, we find each unit increase in the social trust score as measured by enterprise trustworthiness and blood donation rate reduces a firm's *MMI* by −0.0083 and −0.0294 as shown in column (3) of Panels A and B, respectively. Given the mean value of *MMI* is −0.3, the decreases are sizeable.

For the control variables, the results are largely consistent with our expectation. *MMI* is negatively associated with ownership concentration, confirming the argument that shareholders have more power in monitoring firms' risk-taking and financing behaviour in less widely held firms, as concentrating much of their wealth in a single firm may force shareholders to act more conservatively (Paligorova, 2010). Moreover, *MMI* increases (more likely to use short-term financing options) when there is less availability of internal funds, and when firm leverage is low. It is probably an important incentive that firms opt for short-term financing as firms could enjoy lower leverage and, thus, have a lower cost of debt, which is consistent with the finding of Chen et al. (2019). We also find smaller and less profitable firms, and firms that require more capital expenditures, engage more in *MMI*. Besides these factors, male CEOs carry out more *MMI*. Additionally, the signs and magnitudes of the control variables are highly consistent across all specifications, which confirms the stability of our model.

3.2 | DID and 2SLS results

We then operationalise the methodology discussed in Section 2.4 to check whether endogeneity concerns drive the main finding. Our results for DID analysis using model (4) are presented in Panel A of Table 4 for both trust measures. As captured by the coefficients of *Relocation* × *TrustChange*, the results show *MMI* reduces significantly after firms relocate to a

TABLE 3 Baseline regression results.

	Panel A: Trust = *Trust1*			Panel B: Trust = *Trust2*		
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	*MMI*	*MMI*	*MMI*	*MMI*	*MMI*	*MMI*
Trust	−0.0121***	−0.0128***	−0.0083**	−0.0602***	−0.0382***	−0.0294**
	(0.004)	(0.003)	(0.046)	(0.000)	(0.007)	(0.040)
StateOwner	0.0010***	0.0003	0.0001	0.0008***	0.0003	0.0001
	(0.000)	(0.259)	(0.646)	(0.000)	(0.166)	(0.543)
OwnerConcen	−0.0015***	−0.0013***	−0.0013***	−0.0013***	−0.0013***	−0.0014***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NCFL	−0.0255***	−0.0252***	−0.0272***	−0.0261***	−0.0252***	−0.0272***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	−0.0653***	−0.0568***	−0.0422***	−0.0622***	−0.0580***	−0.0427***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	−0.3120***	−0.3610***	−0.3504***	−0.3328***	−0.3574***	−0.3476***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	−3.4587***	−3.5965***	−3.5137***	−3.5109***	−3.6030***	−3.5176***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CapEx	0.0918***	0.0913***	0.0768***	0.0917***	0.0919***	0.0769***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
StdRet	−0.3518***	−0.1698**	−0.0789	−0.3566***	−0.1721**	−0.0802
	(0.000)	(0.031)	(0.310)	(0.000)	(0.029)	(0.303)
FirmAge	0.0011	0.0028***	0.0021**	0.0020**	0.0028***	0.0021**
	(0.201)	(0.004)	(0.029)	(0.021)	(0.005)	(0.031)
Age	0.0002	0.0007	0.0001	0.0004	0.0006	0.0001
	(0.778)	(0.327)	(0.846)	(0.519)	(0.329)	(0.849)
Gender	−0.0513**	−0.0486*	−0.0483*	−0.0508*	−0.0488*	−0.0484*
	(0.048)	(0.063)	(0.067)	(0.053)	(0.063)	(0.067)
Year FE	No	Yes	Yes	No	Yes	Yes
Industry FE	No	No	Yes	No	No	Yes
Robust SE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16,234	16,234	16,234	16,234	16,234	16,234
R-squared	0.131	0.144	0.155	0.133	0.144	0.155

Note: This table reports the impact of social trust on a firm's maturity mismatch index (*MMI*). Two measures of social trust are employed: *Trust1* is measured by the provincial-level enterprise trustworthiness scores (models 1–3) and *Trust2* is measured by provincial-level voluntary blood donation rate (models 4–6). Details of control variables are specified in Appendix 1. To establish the baseline results for comparison, fixed effects are not controlled in models 1 and 4. In models 2 and 5, only year fixed effects are controlled. In models 3 and 6, both industry and year fixed effects are controlled. We employ robust standard errors in all regressions and report the regression coefficients with *p*-values in parentheses. *, ** and ***Statistical significance at 10%, 5% and 1%, respectively.

province with a higher social trust score. Such results support our main finding after controlling for reverse causality.

Further, to address endogeneity issues as a result of other possible problems like omitted variable bias or measurement error, we employ 2SLS and report the full results in Panel B of Table 4. Columns (1) and (2) report the first-stage results. We find *EthnicMajor* and *NGO* both significantly correlate with both social trust measures. In unreported results, our instrumental

TABLE 4 Endogeneity concerns.

Panel A: Difference-in-differences

	Trust1	*Trust2*
Variables	***MMI***	***MMI***
Relocation	−0.1769**	0.0291
	(0.036)	(0.725)
Relocation × *TrustChange*	−0.0109*	−0.0066*
	(0.085)	(0.099)
StateOwner	−0.0005	0.0000
	(0.198)	(0.976)
OwnerConcen	−0.0013*	−0.0013
	(0.081)	(0.173)
NCFL	−0.0191***	−0.0096
	(0.005)	(0.256)
Size	0.1249***	0.1746***
	(0.000)	(0.000)
Leverage	−0.3933***	−0.5621***
	(0.000)	(0.000)
ROA	−1.6396***	−1.8966***
	(0.000)	(0.000)
CapEx	0.0379***	0.0311***
	(0.000)	(0.001)
StdRet	−0.0989	−0.2230*
	(0.366)	(0.066)
FirmAge	0.3696***	0.4830*
	(0.010)	(0.090)
Age	0.0001	−0.0004
	(0.924)	(0.765)
Gender	0.0014	−0.0558
	(0.976)	(0.249)
Year FE	Yes	Yes
Firm FE	Yes	Yes
Robust SE	Yes	Yes
Observations	15,702	15,702
R-squared	0.407	0.493

Panel B: 2SLS with instrumental variables

	Trust = *Trust1*		**Trust = *Trust2***	
	(1)	**(2)**	**(3)**	**(4)**
	Stage 1	**Stage 2**	**Stage 1**	**Stage 2**
Variables	***Trust1***	***MMI***	***Trust2***	***MMI***
EthnicMajor	0.0286***		0.0032***	
	(0.000)		(0.000)	

(Continues)

TABLE 4 (Continued)

Panel B: 2SLS with instrumental variables

	Trust = *Trust1*		Trust = *Trust2*	
	(1)	(2)	(3)	(4)
	Stage 1	Stage 2	Stage 1	Stage 2
Variables	***Trust1***	***MMI***	***Trust2***	***MMI***
NGO	0.3685***		0.1664***	
	(0.000)		(0.000)	
TrustIV		−0.0151**		−0.0474*
		(0.049)		(0.063)
StateOwner	−0.0028***	0.0001	0.0003	0.0002
	(0.004)	(0.671)	(0.184)	(0.520)
OwnerConcen	0.0039***	−0.0012***	0.0003	−0.0013***
	(0.002)	(0.000)	(0.187)	(0.000)
NCFL	−0.0045	−0.0283***	−0.0042	−0.0284***
	(0.726)	(0.000)	(0.141)	(0.000)
Size	0.0296	−0.0500***	0.0123***	−0.0511***
	(0.191)	(0.000)	(0.006)	(0.000)
Leverage	−0.5594***	−0.3584***	−0.0576**	−0.3517***
	(0.000)	(0.000)	(0.014)	(0.000)
ROA	0.1416	−3.5692***	−0.0976	−3.5729***
	(0.732)	(0.000)	(0.296)	(0.000)
CapEx	0.0000***	0.0827***	0.0000***	0.0831***
	(0.000)	(0.000)	(0.004)	(0.000)
StdRet	−0.0879	−0.1422*	−0.0840*	−0.1455*
	(0.607)	(0.070)	(0.053)	(0.064)
FirmAge	−0.0029	0.0020**	−0.0012	0.0020**
	(0.469)	(0.022)	(0.151)	(0.023)
Age	0.0029	−0.0001	0.0012**	−0.0001
	(0.259)	(0.915)	(0.021)	(0.908)
Gender	0.0957	−0.0580***	0.0108	−0.0588***
	(0.160)	(0.001)	(0.457)	(0.001)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes
Observations	14,497	13,250	14,497	13,250
R-squared	0.306	0.161	0.633	0.161

Note: We address endogeneity concerns by conducting difference-in-differences (DID) regression analysis in Panel A and 2SLS regression analysis in Panel B. In Panel A, DID specification is used to assess the relation between social trust and firms' MMI. *Relocation* is a dummy variable equal to 1 if firm *i* changes its firm address from one province to another province, and 0 otherwise. *TrustChange* is a continuous variable that captures the changes in firm's trust level after relocation. In Panel B, we employ two-stage least squares (2SLS) regression with two instrumental variables: the percentage of ethnic majority over the total population (*EthnicMajor*) and the number of non-government organisations (*NGOs*). In both panels, *Trust1* is measured by the provincial-level enterprise trustworthiness scores and *Trust2* is measured by provincial-level voluntary blood donation rate. Details of control variables are specified in Appendix 1. *, ** and ***Statistical significance at 10%, 5% and 1%, respectively.

variables pass the Sargan over-identification test, confirming the instruments are well identified and strong. Next, in columns (3) and (4), where we present the second-stage results, we find social trust still consistently shows a negative relation to *MMI*, by employing instrumental variables, regardless of which trust measure is used. Our results in this section support the core finding using alternative methodologies to address possible endogeneity from different sources. We choose our instruments carefully by following theory and previous literature, and support the choice with statistical tests. Nevertheless, just like vast empirical studies, we acknowledge that endogeneity can never be fully resolved. Hence, we should bear this limitation in mind when interpreting the main results.

3.3 | Economic mechanism

Having established the causal relation between social trust and *MMI*, we then formally investigate the economic mechanism through which the two variables are connected. We propose that social trust negatively affects *MMI* through improved information transparency. As pointed out by earlier studies (e.g., Guiso et al., 2008; Li et al., 2019), social trust plays an extremely important role in reducing information asymmetry between firms and outsiders like regulators and investors. For firms located in regions with higher social trust, firms/managers are more likely to disclose higher quality and quantity information because they are influenced by the norms, ethics and standards of the societal environment. With such improved information disclosure, firm outsiders such as analysts, regulators and investors can better monitor firm practices in taking excessive risks. Consistently, lenders and investors are more confident to finance at a lower cost in such an environment. Risky projects are screened out and investors are then more willing to finance viable long-term projects (e.g., Dutta & Nezlobin, 2017; Lambert et al., 2007). Consequently, overall *MMI* is reduced.

To capture a firm's information transparency, we employ two measures: accounting information transparency (*ATran*) and analyst coverage (*NoAnalyst*). The first measure proxies the firm's earnings transparency and reflects the willingness of managers to maintain a transparent accounting information environment. The second measure reflects the level of attention that firms attract from outsiders (analysts). Intuitively, firm information quality and analyst coverage are positively correlated (e.g., He et al., 2019; Yu, 2008).

We follow Liu et al. (2018), Bhattacharya et al. (2003) and Francis et al. (2004) to measure *Atran* by assigning decile rankings to each firm based on its estimated earnings aggressiveness and earnings smoothing. First, we estimate earnings aggressiveness (*EA*) and earnings smoothing (*ES*) using:

$$EA_{i,t} = ACC_{i,t} = \left(\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta CASH_{i,t} + \Delta STD_{i,t} - DEP_{i,t} + \Delta TP_{i,t}\right) / TA_{i,t} \quad (5)$$

where $ACC_{i,t}$ represents the items accrued for firm i at year t, and is calculated from the same period changes in the current assets ($\Delta CA_{i,t}$), current liabilities ($\Delta CL_{i,t}$), cash holdings ($\Delta CASH_{i,t}$), current portion of long-term debt included in total current liabilities ($\Delta STD_{i,t}$), income taxes payable ($\Delta TP_{i,t}$) and amortisation and depreciation for the firm $DEP_{i,t}$, and scaled by total assets ($TA_{i,t}$).

$$ES_{i,t} = \sigma\left(CFO_{i,t}\right) / \sigma\left(NI_{i,t}\right) \quad (6)$$

where $\sigma\left(CFO_{i,t}\right)$ is the standard deviation of net cash flows from operating activities for firm i within $t-2$ and t, and $\sigma\left(NI_{i,t}\right)$ is the standard deviation of net profits within $t-2$ and t.

Next, we multiply earnings aggressiveness estimates and earnings smoothing estimates by −1 to convert them into direct indicators of information transparency. Then, within each year, we assign each firm into two deciles based on its earnings aggressiveness and earnings

smoothing estimates, respectively. *Atran* is the average of each firm's earnings aggressiveness decile and earnings smoothing decile. By construction, a higher value of *Atran* indicates a greater level of accounting information transparency.

Our second measure of information transparency, analyst coverage (*NoAnalyst*), is estimated by counting the number of analysts issuing forecasts for a given firm in a given year. Since analyst coverage is highly correlated with firm size, we also follow Patton and Verardo (2012) to estimate *ResidAnalyst* by purging the size effect from analyst coverage. Specifically, we estimate *ResidAnalyst* as the residual from regressing *NoAnalyst* on firm size. Using the alternative measures *ATran* and *NoAnalyst*, we present the results of the two-step mechanism tests in Panels A and B of Table 5, respectively.

In Panel A, we first regress each trust measure against *Atran* and a set of control variables to examine the relationship between social trust and accounting information transparency. The control variables we include are *Size*, *BM* (book-to-market ratio), *Leverage*, *ROA* (return on assets), *CapEx* (capital expenditure), *StdRet* (standard deviation of returns), *FirmAge* and *SOE* (a dummy for state-owned enterprises/non-state-owned enterprises). Additionally, firm and industry fixed effects are controlled for, and robust standard errors are employed.

Consistent with our hypothesis, we find firms located in regions with higher trust exhibit more accounting information transparency for both trust measures we employ. For the control variables, we find accounting information transparency is significantly higher for smaller firms, probably because they have simpler business structures than their bigger counterparts (consistent with Liu et al., 2018). Value firms (i.e., those with higher book-to-market ratios), more profitable and older firms tend to have less incentive to manipulate earnings information, as do leveraged firms, which may be forced to disclose more information to obtain financing.

In the second step of the mechanism test, we regress *Atran* against *MMI*. The results show a significant negative relationship between the two variables. The results of the control variables are also largely consistent with those in the main analysis. Taking the two step results together, the findings strongly support our conjecture that higher social trust facilitates better accounting information quality and, hence, reduces *MMI*.

To add further strength to our results, in Panel B we use a similar two-step mechanism test, but with *NoAnalyst* and *ResidAnalyst* as the alternative measures for accounting information transparency. We find the results for our key variables largely corroborate the same finding. Higher social trust is positively correlated with higher analyst coverage and, hence, higher information transparency. This in turn reduces *MMI*, as found in the second step of the mechanism test. Notably, analyst coverage tends to be higher for bigger firms, firms with lower book-to-market ratios (i.e., glamour firms) and younger firms, as these firms tend to attract more attention. The results of other control variables are similar to those from Panel A.

4 | FURTHER ANALYSIS

4.1 | Firm and time period subsamples

We carry out subsample analysis in this section to further study how the relationship between social trust and *MMI* varies with heterogeneous firm characteristics and over time. Motivated by the idea that certain firms can be inherently riskier and find it harder to get financing, we sort our sample countries into high versus low groups according to their median values of firm leverage, standard deviation of returns, profitability and cash flow within each year, and then replicate our baseline analysis per Equation (1). We present the results in Panels A–D of Table 6, respectively.

TABLE 5 Economic mechanism: Accounting information transparency and analyst coverage.

Panel A: Accounting information transparency

	Step 1			Step 2
	(1)	(2)		(3)
Variables	***ATran***	***ATran***	**Variables**	***MMI***
Trust1	0.0485**		*ATran*	−0.0125***
	(0.018)			(0.000)
			StateOwner	0.0004
				(0.157)
Trust2		0.1711**	*OwnerConcen*	−0.0017***
		(0.024)		(0.000)
Size	−0.1470***	−0.1425***	*NCFL*	−0.0322***
	(0.000)	(0.000)		(0.000)
BM	0.1653*	0.1635*	*Size*	−0.0383***
	(0.054)	(0.056)		(0.000)
Leverage	3.2275***	3.2092***	*Leverage*	−0.2555***
	(0.000)	(0.000)		(0.000)
ROA	11.2644***	11.3092***	*ROA*	−3.0968***
	(0.000)	(0.000)		(0.000)
CapEx	0.0258	0.0244	*CapEx*	0.0716***
	(0.153)	(0.176)		(0.000)
StdRet	0.4248	0.4389	*StdDev*	−0.0188
	(0.137)	(0.123)		(0.842)
FirmAge	0.0108**	0.0112**	*FirmAge*	0.0026**
	(0.025)	(0.021)		(0.022)

(Continues)

TABLE 5 (Continued)

Panel A: Accounting information transparency

	Step 1			Step 2
	(1)	(2)		(3)
Variables	***ATran***	***ATran***	**Variables**	***MMI***
SOE	−0.0250	−0.0292	*Age*	−0.0001
	(0.609)	(0.549)		(0.891)
			Gender	−0.0512*
				(0.078)
Year FE	Yes	Yes	Year FE	Yes
Industry FE	Yes	Yes	Industry FE	Yes
Robust SE	Yes	Yes	Robust SE	Yes
Observations	16,776	16,776	Observations	12,158
R-squared	0.177	0.177	*R*-squared	0.150

Panel B: Analyst coverage

	Step 1					Step 2	
	(1)	(2)	(3)	(4)		(5)	(6)
Variables	***NoAnalyst***	***NoAnalyst***	***ResidAnalyst***	***ResidAnalyst***	**Variables**	***MMI***	***MMI***
Trust1	0.0242**		0.0242**		*NoAnalyst*	−0.0373***	
	(0.032)		(0.032)			(0.000)	
Trust2		0.1833***		0.1833***	*ResidAnalyst*		−0.0373***
		(0.000)		(0.000)			(0.000)
					StateOwner	0.0001	0.0001
						(0.713)	(0.713)

TABLE 5 (Continued)

Panel B: Analyst coverage

	Step 1					Step 2	
	(1)	(2)	(3)	(4)		(5)	(6)
Variables	***NoAnalyst***	***NoAnalyst***	***ResidAnalyst***	***ResidAnalyst***	**Variables**	***MMI***	***MMI***
Size	0.2978***	0.2972***	−0.0030	−0.0035	*OwnerConcen*	−0.0011***	−0.0011***
	(0.000)	(0.000)	(0.847)	(0.816)		(0.001)	(0.001)
BM	−0.0303***	−0.0313***	−0.0303***	−0.0313***	*NCFL*	−0.0288***	−0.0288***
	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)
Leverage	−0.3901***	−0.3872***	−0.3901***	−0.3872***	*Size*	−0.0371***	−0.0483***
	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)
ROA	6.9111***	6.9498***	6.9111***	6.9498***	*Leverage*	−0.3991***	−0.3991***
	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)
CapEx	0.1119***	0.1113***	0.1119***	0.1113***	*ROA*	−3.4455***	−3.4455***
	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)
StdRet	−0.1555	−0.1465	−0.1555	−0.1465	*CapEx*	0.0881***	0.0881***
	(0.225)	(0.254)	(0.225)	(0.254)		(0.000)	(0.000)
FirmAge	−0.0197***	−0.0194***	−0.0197***	−0.0194***	*StdRet*	−0.1346*	−0.1346*
	(0.000)	(0.000)	(0.000)	(0.000)		(0.094)	(0.094)
SOE	−0.1866***	−0.1874***	−0.1866***	−0.1874***	*FirmAge*	0.0016	0.0016
	(0.000)	(0.000)	(0.000)	(0.000)		(0.118)	(0.118)
					Age	−0.0003	−0.0003
						(0.710)	(0.710)
					Gender	−0.0472	−0.0472
						(0.102)	(0.102)
Year FE	Yes	Yes	Yes	Yes	Year FE	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Industry FE	Yes	Yes

(Continues)

TABLE 5 (Continued)

Panel B: Analyst coverage

	Step 1					Step 2	
	(1)	(2)	(3)	(4)		(5)	(6)
Variables	***NoAnalyst***	***NoAnalyst***	***ResidAnalyst***	***ResidAnalyst***	**Variables**	***MMI***	***MMI***
Robust SE	Yes	Yes	Yes	Yes	Robust SE	Yes	Yes
Observations	19,040	19,040	19,040	19,040	Observations		
R-squared	0.407	0.409	0.314	0.317	*R*-squared		

Note: This table reports the results of the information transparency channel through which social trust impacts MMI. Our mechanism test includes two steps. In step 1, we test how social trust affects information transparency. In step 2, we test how information transparency affects firm's MMI. We employ two information transparency measures: accounting information transparency (*ATran*) in Panel A; and analyst coverage (*NoAnalyst* and *ResidAnalyst*) in Panel B. In both panels, *Trust1* is measured by the provincial-level enterprise trustworthiness scores and *Trust2* is measured by provincial-level voluntary blood donation rate. Details of control variables are specified in Appendix 1. Industry and year fixed effects are controlled in all regressions. We employ robust standard errors and report the regression coefficients with *p*-values in parentheses. *, ** and ***Statistical significance at 10%, 5% and 1%, respectively.

TABLE 6 Subsample tests.

Panel A: Leverage subsamples

	Trust = *Trust1*		Trust = *Trust2*	
	MMI	*MMI*	*MMI*	*MMI*
Variables	**High leverage**	**Low leverage**	**High leverage**	**Low leverage**
Trust	−0.0127**	−0.0050	−0.0425**	−0.0181
	(0.033)	(0.370)	(0.033)	(0.349)
All controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes
Observations	7636	8598	7636	8598
R-squared	0.143	0.175	0.143	0.175

Panel B: Volatility subsamples

	Trust = *Trust1*		Trust = *Trust2*	
	MMI	*MMI*	*MMI*	*MMI*
Variables	**High volatility**	**Low volatility**	**High volatility**	**Low volatility**
Trust	−0.0125**	−0.0028	−0.0457**	−0.0111
	(0.016)	(0.627)	(0.029)	(0.526)
All controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes
Observations	7794	8440	7794	8440
R-squared	0.164	0.151	0.164	0.151

Panel C: Profitability subsamples

	Trust = *Trust1*		Trust = *Trust2*	
	MMI	*MMI*	*MMI*	*MMI*
Variables	**High profitability**	**Low profitability**	**High profitability**	**Low profitability**
Trust	−0.0109*	−0.0067	−0.0462**	−0.0105
	(0.073)	(0.174)	(0.019)	(0.575)
All controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes
Observations	9221	7013	9221	7013
R-squared	0.166	0.103	0.166	0.103

(Continues)

TABLE 6 (Continued)

Panel D: Cash flow subsamples

	Trust = *Trust1*		Trust = *Trust2*	
	MMI	*MMI*	*MMI*	*MMI*
Variables	**High cash flow**	**Low cash flow**	**High cash flow**	**Low cash flow**
Trust	−0.0117*	−0.0058	−0.0321*	−0.0302
	(0.052)	(0.227)	(0.087)	(0.118)
All controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes
Observations	8305	7929	8305	7929
R-squared	0.178	0.117	0.178	0.118

Panel E: SOE subsamples

	Trust = *Trust1*		Trust = *Trust2*	
	MMI	*MMI*	*MMI*	*MMI*
Variables	**SOE**	**Non-SOE**	**SOE**	**Non-SOE**
Trust	−0.0103**	−0.0088	−0.0370**	−0.0163
	(0.015)	(0.112)	(0.021)	(0.389)
All controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes
Observations	8542	7692	8542	7692
R-squared	0.160	0.131	0.160	0.157

Panel F: Time period subsamples

	Trust = *Trust1*		Trust = *Trust2*	
	MMI	*MMI*	*MMI*	*MMI*
Variables	**2004–2011**	**2012–2019**	**2004–2011**	**2012–2019**
Trust	−0.0016	−0.0119**	−0.0166	−0.0350*
	(0.794)	(0.013)	(0.420)	(0.086)
All controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes
Observations	6729	9505	6729	9505

TABLE 6 (Continued)

Panel F: Time period subsamples

	Trust = *Trust1*		Trust = *Trust2*	
	MMI	*MMI*	*MMI*	*MMI*
Variables	**2004–2011**	**2012–2019**	**2004–2011**	**2012–2019**
R-squared	0.146	0.165	0.146	0.165

Note: This table reports the results for subsample tests. Each year, sample stocks are sorted into high vs. low groups according to their median values of firm leverage (Panel A), volatility (Panel B), profitability (Panel C) and cash flow (Panel D). In Panel E, the subsample analysis is conducted based on whether firms are SOEs or non-SOEs. In Panel F, we partition our full sample into two subperiods; 2004–2011 and 2012–2019. Baseline regressions are repeated in each subsample for comparisons. In all panels, *Trust1* is measured by the provincial-level enterprise trustworthiness scores and *Trust2* is measured by provincial-level voluntary blood donation rate. Industry and year fixed effects are controlled in all regressions. We employ robust standard errors and report the regression coefficients with *p*-values in parentheses. *, ** and ***Statistical significance at 10%, 5% and 1%, respectively.

Our results show the negative relationship between social trust and *MMI* is more prevalent in firms with high leverage, high past stock return volatility, high profitability and high cash flow from operations. Since these firms tend to be more incentivised to take risk, it is intuitive that the mitigating role of social trust in reducing *MMI* is more effective in firms with these attributes.

Furthermore, the subsample analysis based on whether or not firms are SOEs, which are presented in Panel E of Table 6, reveal particularly interesting insights from at least two angles. Firstly, as identified above, social trust influences firm maturity mismatch through reducing information asymmetry. The literature widely documents that compared to non-SOEs, SOEs lack information transparency (Hou et al., 2012). Therefore, it is intuitive to expect a stronger impact of trust in SOEs through improving their informativeness. Secondly, previous literature suggests that short-term cost-saving is the main motive for firms' debt-asset mismatch behaviours, i.e., borrowing short-term debts to finance long-term investments, despite the long-term rollover risk. However, it is reasonable to argue that some firms may be forced to mismatch their debt and assets because they are unable to secure long-term debt to meet their financing needs for various reasons (e.g., due to macroeconomic conditions). Although Wang et al. (2021) have documented evidence to support the notion that maturity mismatch is an active choice rather than a passive choice for Chinese listed firms, to further alleviate such concern, we divide our sample into SOE vs non-SOE firms to replicate our main analysis. The rationale is simple, SOEs should have relatively low concerns regarding access to long-term financing due to their government backing; therefore there is little likelihood that SOEs are forced to mismatch. In other words, if we find our results hold for SOEs, we can rule out the explanation that access to long-term financing may explain our results.

We present our results in Panel E of Table 6. We find the relationship between social trust and *MMI* is, in fact, significant only in SOEs. The results echo our mechanism test findings; trust has an enhanced role in reducing mismatched maturity in SOEs where information asymmetry is typically higher. This also indicates access to long-term financing is unlikely to alter our results, because social trust is more influential in shaping the behaviour of SOEs that are less subject to such a constraint.

Next, we perform similar subsample analysis in two time periods: 2004–2011 and 2012–2019. The results are presented in Panel F of Table 6. Importantly, we find the role of social trust has strengthened in the later subsample. Although social trust has a negative relationship with *MMI* in both subsamples, such a relationship is only statistically significant in the 2012–2019 subsample. The result highlights the salience of studying our topic, especially with the increased marketisation in China over recent years (i.e., greater opportunities and tendenncy for

firms to take risky projects and seek financing), social trust has become a more effective tool in reducing excessive firm risk-taking and encouraging investors' long-term financing. In addition, we also use a subsample exclusive of the financial crisis period 2008–2009 to check the robustness of our finding. In unreported results (available upon request), our main conclusion remains consistent.

TABLE 7 Robustness check: Industry * year fixed effects.

	Trust = *Trust 1*	Trust = *Trust 2*
	(1)	(2)
Variables	***MMI***	***MMI***
Trust	−0.0072*	−0.0268*
	(0.085)	(0.060)
StateOwner	0.0001	0.0001
	(0.733)	(0.633)
OwnerConcern	−0.0013***	−0.0013***
	(0.000)	(0.000)
NCFL	−0.0278***	−0.0278***
	(0.000)	(0.000)
Size	−0.0438***	−0.0441***
	(0.000)	(0.000)
Leverage	−0.3555***	−0.3532***
	(0.000)	(0.000)
ROA	−3.5448***	−3.5480***
	(0.000)	(0.000)
CapEx	0.0772***	0.0773***
	(0.000)	(0.000)
StdRet	−0.0866	−0.0876
	(0.267)	(0.262)
FirmAge	0.0022**	0.0022**
	(0.022)	(0.023)
Age	0.0000	0.0000
	(0.960)	(0.961)
Gender	−0.0488*	−0.0489*
	(0.065)	(0.064)
Industry × Year FE	YES	YES
Robust SE	YES	YES
Observations	16,234	16,234
R-squared	0.180	0.180

Note: This table reports the impact of social trust on a firm's maturity mismatch index (*MMI*) by including industry * year fixed effects in the baseline regression to control for industry dynamics that vary over time. Two measures of social trust are employed: *Trust1* is measured by the provincial-level enterprise trustworthiness scores and *Trust2* is measured by provincial-level voluntary blood donation rate. Details of control variables are specified in Appendix 1. We employ robust standard errors in all regressions and report the regression coefficients with *p*-values in parentheses. *, ** and ***Statistical significance at 10%, 5% and 1%, respectively.

4.2 | Robustness checks

In addition, to ensure our results are not affected by the time-varying industry dynamics, we include industry * year fixed effects in our baseline regression models. Our results are reported in Table 7. The regression results are consistent with the previous findings and demonstrate the robustness of our results and findings.

5 | CONCLUSION

Social trust has been documented to influence various firm behaviours, such as stock price crash risk (Cao et al., 2016; Li et al., 2017), stock price synchronicity (Qiu et al., 2020), business contracting (Ang et al., 2015), corporate misconduct (Dong et al., 2018), bank loan financing (Chen et al., 2016), firm tax avoidance (Xia et al., 2017), IPO underpricing (Li et al., 2019) and foreign ownership (Jin et al., 2016), to name just a few. The vast literature supports the importance of fully understanding the impact of social trust in influencing firm decision making, especially in developing economies like China where the institutional environment and law enforcement is still undergoing significant development. In the Chinese context, social trust could play an even more important role in mediating information asymmetry between firms and outsiders.

We add to the literature with new evidence on how social trust reduces corporate debt maturity mismatch, which relates to both firm risk-taking and investing-financing decisions. Moreover, we find social trust reduces *MMI* through improving firm information transparency. In addition, such an impact is more prevalent for riskier firms, and in more recent time periods. Our results are proven to be robust to alternative measures of trust, and different methods of addressing endogeneity. Together with the above-mentioned literature, we call for further research in studying the role of social trust in shaping firm behaviour.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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APPENDIX 1

Variable	Definition	Source
Maturity mismatch ratio (*MMI*)	Firm's maturity mismatch ratio (*MMI*) is calculated following Chen et al. (2019): $MMI = \frac{Long-term\ financing\ gap}{Long-term\ assets}$ *Long-term financing gap = Long-term investment expenditures – Long-term financing = cash expenditure on purchase and construction of fixed assets – (increase of long-term debts in the current period + increase of equity in the current period + net operating cash flows in the current period + cash flow from the sale of fixed assets)*	CSMAR Database
Trust1	Regional trust is measured using the province-level enterprise trustworthiness scores obtained from the survey conducted by the Chinese Enterprise Survey System (CESS) in 2000. A higher value indicates a more trustworthy enterprise business in the province. We take the natural logarithm of trust score values	Chinese Enterprise Survey System (CESS)
Trust2	Province-level blood donation rate per thousand population. Blood donation rates are only available for years 2011 and 2017 for each province. We use the blood donation rate in 2011 for years 2004–2011, and the blood donation rate in 2017 for years 2012–2019	National Health Commission of China

APPENDIX 1 (Continued)

Variable	Definition	Source
StateOwner	Percentage of state-owned shares	CSMAR Database
OwnerConcen	Sum of shareholding ratios of top 10 shareholders	CSMAR Database
Cash Flow (*NCFL*)	The natural logarithm of the net cash flow from operating activity to total assets	CSMAR Database
Size	The natural logarithm of the book value of total assets	CSMAR Database
Leverage	Total debt divided by total assets	CSMAR Database
Profitability (*ROA*)	Net profit divided by the balance of total assets	CSMAR Database
Capital expenditure (*CapEx*)	The natural logarithm of the capital expenditure, where *capital expenditure = cash paid to acquire fixed assets, intangible assets and other long-term assets – net cash received from disposal of fixed assets, intangible assets and other long-term assets*	CSMAR Database
Volatility (*StdRet*)	Standard deviation of monthly stock returns	CSMAR Database
FirmAge	Firm age is the number of years since the firm was established	CSMAR Database
Age	CEO's age	CSMAR Database
Gender	CEO's gender is a dummy variable with a value of 1 if CEO is female and 0 if CEO is male	CSMAR Database
EthnicMajor	Ethnic majority is a percentage of the majority (Han) population in each province. The higher the percentage, the higher the proportion of ethnic majority in the provincial population	The Sixth National Population Census of China (2010)
NGO	Natural logarithm of the number of non-government organisations in a province scaled by the province residential population. Data are from 2008 to 2019	National Bureau of Statistics of China
Accounting transparency (*Atran*)	See details of variable construction in Liu et al. (2018) appendix A.1	CSMAR Database
Analyst coverage (*NoAnalyst*)	Natural logarithm of the number of analysts issuing forecasts for each firm in a given year	CSMAR Database
SOE	SOE firms are identified based on equity nature	CSMAR Database