Related Party Transactions and the Cost of Debt: Evidence from China [*]

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Abstract

This paper investigates the interrelationship between related party transactions (RPTs), cost of debt, and state ownership in the Chinese setting. Using data from listed Chinese companies during the period 2003 to 2013, we find that total RPTs increase firms' cost of debt financing and that such a result is mainly driven by abnormal RPTs. Hence, the value-destroying argument with respect to the use of RPTs is empirically supported. We further partition our sample on the basis of the nature of ownership and find that state ownership plays a moderating role in the positive association between RPTs and cost of debt. Such a moderating effect remains significant for firms with tunnelling activities. Finally, we document that the adverse effect of RPTs on the cost of debt capital is more pronounced for firms with weak, as opposed to strong, internal control environments. Again, state-owned enterprises (SOEs) with lower internal control quality are found to have a higher cost of debt when they report a higher level of total RPTs. Our research contributes to the inconclusive literature on the influence of state ownership on the cost of debt by documenting a detrimental impact of RPTs on the cost of debt for SOEs; thus, it also has policy implications. We suggest that stricter regulation of SOE bankruptcies may enhance the credibility of SOEs and hence improve lenders' credit risk assessments of those SOEs with reported RPTs. Our study also provides practical implications to corporate boards and senior management teams by highlighting the detrimental effect of opportunistic RPTs on the cost of debt financing.

Keywords: Related Party Transactions, Cost of Debt, Financial Reporting Quality, Internal Control Environment, China

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I. Introduction

We examine the relation between related party transactions (hereinafter RPTs) and the cost of debt in China. An RPT is defined as a transfer of resources, services, or obligations among related parties, regardless of whether or not monetary payment is involved. For the purpose of this study, RPTs refer to the amount of related party transactions *recognised* in the financial statement and not the *disclosure*[4] of such transactions. An empirical examination of the association between RPTs and the cost of debt is important because lenders often have access to more financial and non-financial information than is available in the public disclosures of firms' performance. Typical RPTs include related party sales and purchases of goods and services, as well as related party loans. A related party is a person or entity related to the entity preparing its financial statements (International Auditing Standards 24.9). According to the Chinese Accounting Standards for Business Enterprises (ASBE) 2007, 36, related party relationships are constituted "[w]hen a party controls, jointly controls or exercises significant influence over another party, or when two or more parties are under the control, joint control or significant influence of the same party" (Article 3). These transactions are of great concern as they go against arm's length market-transaction principles. Regulators have considered them damaging to stakeholders' interests (Habib *et al*., 2015). The Financial Accounting Standards Board (FASB) has expressed concerns about the potential negative impact of RPTs on reported financial information in terms of both its faithful representation and the reliable measurement of the reported values (SFAS 57, 15). RPTs have been seen as a mechanism for tunnelling and propping up activities by companies' controlling shareholders which enable them to extract minority shareholders' wealth (Chang and Hong, 2000; Djankov *et al*., 2008; Cheung *et al*., 2009; Shan, 2019).

China offers a natural setting in which to explore this research question because it is a country where RPTs are commonly practised and the associated values are substantial.[5] Cheung *et al*. (2009) find that both tunnelling and propping are common phenomena in China (Cheung *et al*., 2009). The 2015 China Stock Market and Accounting Research (CSMAR) statistics show that (1) the value of RPTs conducted by Chinese listed companies amounted to CNY2.353 trillion (equivalent to US$354 billion) and (2) during the period 2000 to 2015, an average of 86.23% of listed companies had conducted RPTs (CSMAR, 2015). Both the old Chinese accounting standards and the new ASBE, which took effect

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[4] Shan (2019) examines the determinants of the voluntary disclosure of RPTs in China empirically and documents that foreign ownership via qualified foreign institutional investor programs (QFII), independent directors, and disclosure tones affect RPT disclosures positively.

[5] Both stock exchanges in China have been ranked among the top 10 by market capitalisation internationally as of 30 April 2018 (World Federation of Exchanges, 2018). As at 12 November 2018, the total market capitalisation in the Shanghai Stock Exchange was CNY27,827.5 billion (equivalent to US$4,002.15 billion) (Shanghai Stock Exchange, 2018), and the total market capitalisation in the Shenzhen Stock Exchange was CNY17,247.2 billion (equivalent to US$2,480.6 billion) (Shenzhen Stock Exchange, 2018).

from 1 January 2007, require RPTs to be disclosed by Chinese listed companies. The Shenzhen Stock Exchange Listing Rules also specify disclosure requirements for firms conducting RPTs. These regulatory interventions designed to curb tunnelling were found to be effective in the period 2006 to 2007 (Haβ *et al*., 2016). However, the mechanisms through which RPTs are conducted are diverse and complex in the Chinese capital market. There have been many massive RPT scandals in recent years, including the well-known case of Leshi Internet in 2017.[6] Given the prevalent and complex nature of RPTs, examining RPT issues in China offers rich implications.

We explore whether RPTs in China affect the firm-level cost of debt, as debt financing in the form of bank loans is an important source of financing in China in the absence of an active bond market. The development of the corporate bond market in China is hindered by a few institutional factors, including strict government regulations, a lack of institutional investors, and a lack of credit rating agencies for accurate bond pricing (Ayyagari *et al*., 2010). Prior studies on the cost of debt in China also highlight the fact that formal loans are the major source of external financing, accounting for a steady 30% of overall financing, whereas funds raised from bond sales account for only a small portion (Allen *et al*., 2005; Shailer and Wang, 2015).

The effects of RPTs on the cost of debt are theoretically *ex ante* unclear. The *efficiency-enhancing* theory suggests that imperfect markets cause an increase in transaction costs. Therefore, RPTs are often used within corporate groups and affiliated parties as a way of enhancing the utilisation of internal resources, decreasing transaction costs, and optimising return on assets (Khanna and Palepu, 2000). For example, related party sales can be used to prop up a firm's performance when significant negative events are encountered, reducing the default risk and thus the cost of debt (Jian and Wong, 2010). On the other hand, drawing on the *agency theory*, abundant evidence shows that RPTs are commonly used for opportunistic purposes (e.g. tunnelling resources from the parent firm's shareholders). Firms inflate their financial performance using RPTs (e.g. through opportunistic tunnelling and propping) (Kohlbeck and Mayhew, 2010; Jian and Wong, 2010; Chen *et al*., 2011; Zhu and Zhu, 2012; Hwang *et al*., 2013; Chen *et al*., 2019). Earnings management through opportunistic RPTs leads to less persistent earnings, thus increasing the information risk and hence the cost of debt (Francis *et al*., 2004, 2005; Bharath *et al*., 2008; Gray *et al*., 2009; Kim and Sohn, 2013; Carmo *et al*., 2016).

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[6] Leshi Internet (300104, SZ) is the most recent example of an RPT scandal in China. The gross sales revenue of Leshi Internet increased from CNY13 billion to CNY21.9 billion during the period from 2015 to 2016, with the RP sales increasing from CNY1.6 billion to CNY11.7 billion. Accounts receivable generated from RP sales with 68 related parties amounted to CNY3.8 billion. In 2016, Leshi Internet's RP sales were about 54.43% of the reported total sales revenue. The media criticised this as "self-generating revenue" within its own network. Due to the huge cash shortfall created by the RP sales, the firm received a modified audit opinion and its stock ceased listing for a year (Sina Finance, 2017).

Our study is strongly motivated by these competing theoretical arguments on the consequences of RPTs, drawing from efficiency-enhancing theory and value-destroying agency conflicts. Previous empirical studies primarily investigate tunnelling, with limited evidence provided on propping (Bae *et al*., 2002; Cheung *et al*., 2009; Jian and Wong, 2010). The literature on tunnelling and propping in China draws mainly on the principal-agent and principal-principal conflicts in exploring the determinants of RPTs. For instance, incentives to meet earnings targets (Jian and Wong, 2010), co-insurance relationships among business groups (Jia *et al*., 2013), types of shareholder (Hu and Sun, 2019), corporate governance practices (Lo *et al*., 2010), and public enforcement (Haβ *et al*., 2016) have been found to be associated with the incidence of RPTs in China. Among the existing studies that examine the consequences of RPTs, Habib *et al*. (2015) find that audit fees are higher for Chinese firms with related-party loans, guarantees, and capital transfers. In another study, Habib *et al*. (2020) reveal that RPTs (abnormal RPTs, related party loans, tunnelling and propping) increase the risk of future price crash. Furthermore, Fang *et al*. (2018) document a modified audit opinion for firms reporting higher related sales or lending in China. Thus, researching the consequences of RPTs makes an incremental contribution to the existing literature.

Our study is also strongly motivated by the potential tension arising from the role that state ownership has played in the association between RPTs and the cost of debt in China. Competing arguments exist on the relation between state ownership and the cost of debt (Borisova *et al*., 2015). On one hand, the government often bails out state-owned enterprises (SOEs) to maintain social stability (Gong *et al*., 2017). Such implicit government guarantees allow SOEs to enjoy more favourable debt characteristics and, therefore, a lower cost of debt financing (Brandt and Li, 2003; Cull and Xu, 2005; Jiang and Li, 2006). On the other hand, their overly concentrated state ownership enables SOEs to exercise continued monopolistic control as the largest shareholder, a phenomenon known as 'absence of owner'. This results in a higher managerial moral hazard and more arbitrary behaviours (Gong *et al*., 2017). During normal economic conditions, the managerial moral hazard can dominate over the implicit government guarantees effect and thus lead to a higher cost of debt for state-owned firms (Borisova *et al*., 2015). Given these conflicting arguments, we investigate the interrelationship between RPTs, cost of debt, and state ownership in the Chinese setting.

Moreover, we consider whether the strength of the firm-level internal control environment impacts the association between RPTs and the cost of debt. Prior research shows that ineffective internal control increases business risk, exacerbates agency problems, and reduces contracting efficiency (Doyle *et al*. 2007a, b; Ashbaugh-Skaife *et al*., 2008). We therefore predict that a poor internal control environment incentivises managers to engage in RPTs that maximise private benefit (e.g. tunnelling resources): actions that increase both the information risk and the risk premiums demanded by lenders.

Using data from listed Chinese companies during the period 2003 to 2013, we find that

total RPTs increase firms' cost of debt financing and that this result is driven mainly by abnormal RPTs. Hence the value-destroying argument with respect to the use of RPTs is empirically supported. We also use direct proxies for two types of opportunistic RPTs, namely, tunnelling (other receivables as a proportion of total assets) and propping (sum of borrowings from related parties, loans, and other payables to related parties, divided by total assets), and find positive effects of both on the cost of debt. We further partition our sample on the basis of the nature of ownership and find that state ownership plays a moderating role in the positive association between RPTs and the cost of debt. This moderating effect remains significant for firms with tunnelling activities. Finally, we show that the adverse effect of RPTs on the cost of debt is more pronounced in firms with weak as opposed to strong internal control environments. Again, SOEs with lower internal control quality are found to have a higher cost of debt when they report higher levels of total RPTs. Our results are robust to potential endogeneity concerns resulting from firms' deliberate decisions to engage in RPTs.

Our study contributes to the existing literature in several ways. First, our study provides empirical support for the theoretical value-destroying argument in the Chinese setting and thus makes an incremental contribution to the RPT literature in China. Second, prior studies on the consequences of RPTs generally focus on the impacts of RPTs on audit opinion and audit fee, stock price crash risk, firm value, and executive compensation. Our research contributes to the inconclusive literature on the influence of state ownership on the cost of debt by documenting a detrimental impact of RPTs on the cost of debt for SOEs and thus also has policy implications. The high level of state ownership in publicly listed companies has been found to affect listed firms' cost of debt financing adversely. We suggest that stricter regulation of SOE bankruptcies may enhance the credibility of SOEs and hence improve lenders' credit risk assessments of SOEs with reported RPTs. Third, our study contributes to the literature that examines the determinants of cost of debt in emerging markets such as China, where the active bond market is very small and rather restricted. Finally, our study also offers practical implications to boards and senior management teams regarding financing decisions. Although firms could benefit from some types of operating RPTs, decision-makers are reminded that opportunistic RPTs, such as other receivables, other payables, loans, and guarantees, could be detrimental to the debt financing of firms.

The remainder of the paper proceeds as follows. In the following section, we present a brief overview of the institutional background in China in terms of state ownership, RPT-related regulations, and debt financing. Section III reviews the related literature and develops our hypotheses. Section IV explains the research design issues. Sample selection, descriptive statistics and regression results are presented in Section V. Section VI concludes the paper.

II. Institutional Background in China

2.1 State Ownership

China has several unique institutional features. First, unlike other countries, many Chinese firms have dominant blockholders whose share trading is restricted. Most listed firms are spin-offs from large SOEs, in which the original SOEs still own a large percentage of total shares (Liu and Lu, 2007). As a result, the controlling shareholders are rarely challenged by other shareholders on important issues. Owing to limitations in the civil law and the lack of a punishment spectrum under the current securities laws, minority shareholders cannot take listed firms to court (Cheung *et al*., 2009). Listed firms therefore can engage in a series of related transactions for the benefit of controlling shareholders (Liu and Lu, 2007). Further, it is common in China that state owners appoint directors, and consequently, boards of directors in listed firms lack independence and tend to favour the controlling shareholders (Cheung *et al.*, 2009). Having a controlling shareholder in listed firms often results in interference with the operation of such firms, raising an insider control problem. In this case, minority shareholders' interests are not well represented.

2.2 Widely Practised Related Party Transactions

Second, Chinese stock market regulators lack authority to effectively enforce related party regulations (Allen *et al.*, 2005). This is partially because the Chinese regulatory authorities, including the China Securities Regulatory Commission (CSRC), adopt an 'administrative governance' approach to regulating Chinese listed firms. They rely heavily on accounting numbers to assess IPO applications, right issues, and delistings (Liu and Lu, 2007). Such practices motivate Chinese listed companies to engage in RPTs.

The disclosure of RPTs was initially governed by the CSRC's Content and Format Standards of Information Disclosure for Securities Issuing Companies, No. 7: Announcement on Related Party Transactions (CSRC, 1997), which required Chinese listed firms to disclose RPTs and relationships to a limited extent under the accounting regulations for specific industries and types of ownership. These regulations were superseded by the issue of the Chinese Accounting Standards (CAS) in 2007. Importantly, ASBE 36 requires firms to disclose "the related information about all affiliated party relationships and the transactions among them" (Article 2). In addition, according to Information Disclosure by Publicly Traded Companies No. 2 issued by the CSRC, a supplementary ruling on the materiality of RPTs needs to be separately disclosed. To be specific, the listing rule requires that listed firms should make timely disclosure if the amount of a related transaction between a listed firm and its related natural person exceeds RMB300,000 (Shanghai Stock Exchange, 2018). RPTs with a total value greater than RMB30 million or 0.5% of audited net assets must be disclosed in a timely manner and must be considered by shareholders in a general meeting (Shanghai Stock Exchange, 2018). Although regulatory rules have been put

in place to restrict tunnelling behaviour and enhance the disclosure of RPTs, the 2015 CSMAR statistics still show an excessively high proportion of Chinese listed firms (an average of 86.23%) have conducted some form of RPTs (CSMAR, 2015). Thus, China provides a unique and interesting context in which to conduct research on the consequences of RPTs: for instance, the relationship between RPTs and the cost of debt.

2.3 Debt Financing in China

Due to tightly regulated equity and bond markets in China, both state-owned and private-holding companies still rely heavily on debt financing through bank loans (Zou and Adams, 2008; Liu *et al*., 2020).[7] Banking in China has experienced a series of reforms since the open-door policy in 1978. One of the main objectives of these reforms is to develop the banking sector gradually from a wholly state-controlled and policy-driven system into a market-oriented and competitive one by creating incentives for its banks to behave more like commercial, competitive entities (Martin, 2012). Before China's economic reforms in 1978, the central bank (People's Bank of China) had full control over all types of credit and acted in accordance with the government's central plan. Between 1978 and 1994, bank loans for fixed assets investment increased significantly, while the securities market was still in its infancy. The Chinese Commercial Bank Law was promulgated in 1995 to commercialise the operations of the four largest state-owned commercial banks (Big Four banks)[8] (Yang and Shao, 2016). This was a major milestone in the evolution of the Chinese banking sector because the state-owned commercial banks became independent as legal entities and therefore responsible for managing their own risks. To further promote competition in the banking sector, the government approved entry to the market for several joint-equity banks and city commercial banks (Ferri, 2009; Yang and Shao, 2016).

In April 2003, an oversight body called the China Banking Regulatory Commission (CBRC) was founded to oversee the independent state-owned and non-state-owned commercial banks. The CBRC's main functions include, but are not limited to, authorising the establishment and operational scope of banks, auditing all the banks operating in China, formulating and implementing banking regulations, and publishing statistical information about the banking sector. The objective of this landmark reform was to improve the effectiveness and efficiency of bank supervision (Yang and Shao, 2016).

Between 2005 and 2010, the Big Four banks successfully issued IPOs and transformed from state-owned banks to shareholding companies (Liu *et al*., 2020). During this period,

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7   For example, in 2015, the entire country's bank loan data indicated that bank loans made to state-owned listed companies constituted about 49% of total bank loans. The second largest type of loan borrower was private companies, which constituted 37% of total bank loans (CSMAR, 2020). As 65% of our sample companies are state-owned, the above statistics indicate that private-holding listed companies also borrow a significant amount from commercial banks in China.

8   These Big Four banks, in order of asset size, are the Industrial and Commercial Bank of China, the China Construction Bank, the Agricultural Bank of China, and the Bank of China.

China's banking sector witnessed the listing of many state-owned commercial banks and city commercial banks on both domestic and foreign stock exchanges. Through these reforms, commercial banks in China have established modern risk assessment systems to evaluate prospective clients and now strive to follow commercial criteria in their lending practices (Martin, 2012; Chen *et al.*, 2013; Yang and Shao, 2016). In April 2011, the CBRC called for financial institutions to follow strictly the central government's policies on lending for property and commercial loans (Martin, 2012) in order to address the rising concern over the high level of non-performing and overdue loans. As a result, the non-performing loans ratio over the period 2011 to 2013 decreased to 1%, and the average liquidity ratio of commercial banks improved from 42.2% to 44% between 2010 and 2013 (Tan, 2020).

The gradual reforms of China's banking system have resulted in a dynamic, competitive, and diverse financial industry (Chang *et al.*, 2010).[9] The share of state-owned commercial banks in the banking sector decreased to a low point of 43.3% in 2013. In contrast, the joint-stock commercial banks and city commercial banks have continued to grow in size. As at 2013, they held 17.8% and 10% of total banking sector assets, respectively (Tan and Floros, 2018).

The predominance of state ownership among listed Chinese companies has significant implications for their access to bank loans in China. Prior literature has suggested that the Chinese government may be viewed as offering an implicit loan guarantee to SOEs, and therefore commercial banks may consider SOEs as being less likely to default on bank loans, regardless of their financial condition (e.g. Brandt and Li 2003; Cull and Xu, 2005; Cheng and Lei, 2015; Liu *et al.*, 2020). The contrary view, however, considers that SOEs conduct more arbitrary and opportunistic RPTs to expropriate other stakeholders (Jian and Wong, 2010; Gong *et al.*, 2017). Hence, lenders may charge SOEs higher interest rates or provide short-term loans to compensate for the perceived higher credit risk. However, whether this is indeed the case is an open empirical question which we explore in this paper.

III. Literature Review and Hypotheses Development

There are competing arguments as to the role that RPTs play in organisations. *Efficiency-enhancing theory* suggests that RPTs are normal business transactions and that firms engage in such transactions to reduce transaction costs, reassign firms' operations, and overcome difficulties during production (Gordon *et al.*, 2007; Chen *et al.*, 2012). Because group-controlled firms have the resources to allocate capital among member firms

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[9] On the basis of the data collected from the China banking sector in the CSMAR database, as at 2020, of the 2,825 banks in China, there are 86 state-owned commercial banks and 1,303 non-state-owned commercial banks. The rest of the banks consist of 48 policy banks that are centrally controlled for macro policy direction purposes, 214 foreign banks, and 1,172 other smaller farming, village, and agriculture-related financial institutions (CSMAR, 2020).

efficiently through their internal capital markets, they are more likely to show good firm performance and less likely to default (Khanna and Palepu, 2000; Cheung *et al*., 2006; Jian and Wong, 2010; Chen *et al*., 2012). For example, Kim (2004) reveals that compared with unaffiliated firms, group-affiliated firms are less likely to be placed into liquidation by banks. Similarly, La Porta *et al*. (2003) examine lending by Mexican banks and find that borrowers incur lower interest costs for related loans than for arm's length loans. Chen *et al*. (2012) argue for, and find evidence consistent with, the hypothesis that normal RPTs reduce transaction costs and thus mitigate potential bankruptcy risks. Liu and Liu (2007) find that related party sales and purchases of goods and services have been effective in reducing transaction costs. On the basis of these findings, we argue that firms engaging in value-enhancing RPTs will experience lower default risks and hence will incur lower costs of debt capital.

In contrast, agency theory argues that RPTs can be used opportunistically, with the intent of expropriation, by tunnelling resources from listed firms (Chang and Hong, 2000; Gao *et al*., 2020). Specifically, firms that experience losses are more likely to engage in RPTs and to use related sales through which profits are retained on paper in the underlying firms but losses are transferred to the accounts of the related parties (Jiang and Wang, 2008; Yeh *et al*., 2012). In this way, firms can inflate earnings and avoid reporting losses. This incentive is particularly strong in China because reporting consecutive losses will result in heavy government scrutiny, delisting, and, most importantly, failure to generate funds from new equity or rights issues offerings[10] (Jian and Wong, 2010). Abusive use of RPTs has been found to adversely affect future performance and reduce the value of firms (Kohlbeck and Mayhew, 2010; Chen *et al*., 2011; Ryngaert and Thomas, 2012; Zhu and Zhu, 2012; Chen *et al*., 2019). Chen *et al*. (2019) find that a substitutive relationship exists between Chinese firms' real activities management and the extent of their RPTs and that such a relationship is more pronounced in non-SOEs and less-regulated industries. Auditors charge higher audit fees because of increased audit risks emanating from opportunistic RPTs (Habib *et al*., 2015). Beuselinck and Deloof (2014) document that earnings management is frequently conducted through intra-group transactions in Belgium. Gordon and Henry (2005) find that managers engaging in RPTs manage earnings through discretionary accruals. The FASB has long expressed concerns about the possible negative impact of RPTs on financial information in terms of both its representational faithfulness and the reliability of reported values (SFAS 57, 15). RPTs have been portrayed as a mechanism for self-dealing by controlling shareholders and company executives that enables them to expropriate minority shareholders' wealth (Chang and Hong, 2000).

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[10] The CSRC requires that listed firms need to meet certain criteria to be eligible for right issues. One requirement is that firms cannot have less than 10% ROE for the three most recent consecutive years. Thus, such a requirement incentivises listed firms to meet the profitability benchmark by inflating earnings.

Therefore, we conjecture that RPTs could represent an expropriation risk for Chinese listed firms. Prior literature has documented that in emerging markets with weak investor protection, controlling shareholders tend to exploit other investors' interests through conducting RPTs (Cheung *et al*., 2006; Jian and Wong, 2010; Gao *et al*., 2020). Opportunistic use of RPTs would elevate firms' expropriation risk as perceived by lenders, requiring lenders to demand high rates of interest on loans granted to the borrowers in order to 'price-protect' themselves against future risk of potential bankruptcies emanating from value-destroying RPTs.

Nevertheless, the research remains inconclusive regarding the effect of state ownership on the cost of debt. On the one hand, Liu *et al*. (2020) find the relationship between modified audit opinion and cost of debt is less pronounced for SOEs. Prior studies have also highlighted a phenomenon called 'a soft budget constraint' (Gong *et al*., 2017): that is, when SOEs run into financial distress, they often get government bailouts. Such implicit government guarantees on loans may have alleviated lenders' concerns over SOEs' repayment risk. Research also documents that SOEs, in general, have easier access to debt financing than non-SOEs (Brandt and Li, 2003; Cull and Xu, 2005). Jiang and Li (2006) also claim that SOEs receive more long-term loans than non-SOEs. On the basis of the above arguments, it can be concluded that compared with their non-SOE counterparts, SOEs with RPTs may still enjoy a relatively lower debt financing cost. In contrast, privately owned listed companies may not benefit from such an implicit loan guarantee backed by the government (e.g. Poncet *et al*., 2010), and thus opportunistic RPTs could influence banks' assessment of their repayment risks negatively, resulting in a higher cost of debt.

On the other hand, prior studies have documented that opportunistic RPTs, such as related sales and loan guarantees of related parties, are more severe in SOEs than in non-SOEs (Jian and Wong, 2010; Lo *et al*., 2010). In a cross-country study, Borisova *et al*. (2015) find that government ownership is associated with a higher cost of debt during non-crisis years. This is because government ownership of listed firms leads to increasing managerial moral hazard, which dominates over the implicit government guarantees effect during normal economic conditions (Borisova *et al*., 2015; Lim *et al*., 2018; Stigliz, 1993). Further in this vein, Gong *et al*. (2017), in their study of the Chinese bond market, document a more pronounced negative relationship between covenants and bond yields when the borrowers are SOEs. They argue for a severe owner absence in SOEs, which could lead to more arbitrary behaviours in asset sales and guarantees of other parties. Because of SOEs' reputation for irresponsible and arbitrary behaviours, lenders would be more likely to regard the amount of RPTs reported by SOEs as signalling inefficient operation and even as a red flag for expropriation. Liu *et al*. (2020) highlight the information asymmetry faced by banks relative to the managements of Chinese listed firms. They document that a modified audit opinion signals diminished credibility of financial statements and trustworthiness of the

management team. As a result, lenders tend to charge higher interest rates and impose a shorter debt maturity. We therefore argue that RPTs could signal the severity of managerial moral hazard to lenders, and this may affect the cost of debt for SOEs more adversely. Following this line of argument, compared with non-SOEs, SOEs with higher amounts of RPTs could incur higher costs of debt. Given the competing arguments presented above, we develop the following non-directional baseline hypothesis:

H1: There is an association between RPTs and the cost of debt.

As discussed earlier, there has been a long-lasting debate on the efficiency-enhancing versus value-destroying nature of RPTs. On one hand, beneficial RPTs amplify operational efficiency. On the other hand, opportunistic RPTs are detrimental to minority shareholders and debtholders. Previous literature identified two types of RPT, namely, normal RPTs and abnormal RPTs. Normal RPTs are part of the usual business transactions undertaken to minimise transaction costs, and thus they are considered as beneficial RPTs (Coase, 1988; Cook, 1977; Fisman and Khanna, 2004). For example, firms operating in competitive industries are faced with a higher bankruptcy risk than those in non-competitive industries and hence RPTs conducted by firms in competitive industries reduce transaction costs and allocate scarce resources efficiently, which may partially mitigate their bankruptcy risk and therefore decrease their cost of debt (Chen *et al.*, 2012). Abnormal RPTs, on the other hand, reflect managerial opportunism. Jian and Wong (2010) introduce an OLS regression model to define and measure abnormal RPTs by removing any normal components that are related to industry classifications and firm features such as size, leverage, debt ratio, and growth.[11] As is detailed in the development of H1, opportunistic RPTs are value destroying to firms as they are often used to obtain private benefit for controlling shareholders, and they could reflect firms' risks of expropriation. Consequently, we could argue that the lenders perceive firms with abnormal RPTs as being more likely to expropriate other stakeholders and, therefore, as having higher levels of repayment risks, thus resulting in an increase in the cost of debt. Therefore, we develop the following hypothesis:

H2A: Normal (abnormal) RPTs decrease (increase) the cost of debt.

The preceding hypotheses are based on aggregate RPT values. However, RPT components could have different implications for default risk. Depending on the magnitude of an adverse shock and the private benefit of control, controlling shareholders may choose either tunnelling and/or propping[12] for opportunistic reasons. With respect to tunnelling, we

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[11] Section 4.2 below provides a detailed explanation on the measurement of normal and abnormal RPTs.

[12] Different from normal and abnormal RPTs, we are introducing commonly used alternative measures of opportunistic RPTs in this hypothesis. In this study, we use two types of RPTs as direct proxies for tunnelling and propping. Tunnelling (*TUNEL_FIN*) is calculated as the ratio of other receivables to total assets. Other receivables are those non-trade receivables such as interest receivables, loans to company officers, advances to employees, income taxes refundable, and so forth. Propping (*PROP_FIN*) measures the types of RPTs associated with a cash transfer to related parties, which is calculated as the sum of

consider other receivables divided by total assets as our direct proxy for financial tunnelling. Other receivables represent 'non-operating fund occupation' that is irrelevant to daily business and have been found to be used as a vehicle for tunnelling (Berkman *et al*., 2009; Jiang *et al*., 2010). Inter-corporate loans are the major component of other receivables. Jiang *et al*. (2010) state that inter-corporate loans, "[t]ypically reported as part of 'other receivables' (OREC), … are found in the balance sheets of a majority of Chinese firms and, collectively, represent a large portion of their assets and market values" (p. 2). Empirical research also proves that compared with firms with lower levels of inter-company loans, those Chinese listed firms with high levels of inter-company loans exhibit significantly poorer future performance, including a rapid drop in profitability, a higher chance of receiving special treatment (ST) status,[13] and a higher likelihood of becoming financially distressed in the future (Jiang *et al*., 2010; Habib *et al*., 2015).

With respect to propping, we note that in China, a large number of Chinese listed firms have been restructured from existing SOEs through 'carve-outs', and they retain many transactions with members of their business groups. SOEs, as controlling shareholders, have incentives to engage in propping activities (e.g. related lending to transfer cash) to qualify for refinancing (Jian and Wong, 2010; Ying and Wang, 2013). Propping is temporary, and it is used strategically by Chinese listed firms to cover up bad operating performance. Jian and Wong (2010) find that abnormal related party sales are used opportunistically to prop up firms' performance when listed firms experience difficulty in meeting earnings targets set by the CSRC, and this effect is more pronounced in regions with weak economic institutions. Jian and Wong (2010) provide further evidence that there is significant cash transfer via related lending as a form of tunnelling from listed firms back to their related parties after propping. In addition, Cheung *et al*. (2006) fail to find a positive market reaction to propping transactions that are likely to benefit the listed firms. They report that the cash receipts because of propping are associated with value losses of 39 cents. As a result, propping effectively obfuscates the true picture of firms' financial performance and misleads stakeholders.

Both tunnelling and propping activities are scenarios where controlling shareholders attempt to take advantage of other stakeholders through different types of RPTs. As discussed in developing H1, lenders therefore perceive that firms with more opportunistic

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borrowings from related parties, loans, and other payables to related parties, divided by total assets. Thus, these two measures are not necessarily mutually exclusive because we indeed find many firms that have conducted both types of opportunistic RPTs.

[13] To preserve their listing status, listed firms must meet certain requirements. Special treatment (ST) is used as an instrument of delisting procedures. An ST designation could be a result of measurable financial statement issues or of auditor decisions. Once designated as an ST firm by the stock exchange, the firm must place a special designation on its ticker symbol as a warning to investors. The firm is on probationary status for 1 year after the designation. Trading will be suspended in the second year if the firm has not taken steps to rectify the conditions leading to the designation. As a result of continuous ST status, the firm will be delisted.

types of RPTs (e.g. other receivables) have higher risks of expropriation and impose higher interest on loans to compensate for their credit risk. Cost of debt, therefore, increases with an increase in tunnelling and propping activities through RPTs. We therefore hypothesise the following:

H2B: Tunnelling through RPTs increases the cost of debt.

H2C: Propping through RPTs increases the cost of debt.

Our final hypothesis investigates whether the positive association between RPTs and cost of debt is moderated by the strength of the firm-level internal control environment. According to the internal control guidelines for listed firms issued by the Shanghai Stock Exchange, internal control is defined as "the regulations and institutional arrangements of companies to fulfil their strategic mission by controlling their risks throughout business activities". The purpose of internal control is to reduce misappropriation of state-owned assets and decrease fraudulent and corrupt activities (Li *et al*., 2019). Consistent with the Committee of Sponsoring Organizations of the Treadway Commission (COSO) model, internal control systems consist of five components, namely, internal control environment, risk assessments, control activities, information and communication, and monitoring. To achieve efficient and effective internal control, business entities need to have these five components of internal control functioning together.

Since strong internal control reduces opportunities for both earnings management (intentional) and accounting estimation errors (unintentional), it is expected to reduce the probability of material errors and false financial disclosures, leading to high information transparency and high financial reporting quality and resulting in lower costs of capital and better access to financial resources (Bell and Carcello, 2000; Ashbaugh-Skaife *et al*., 2008; Gordon and Wilford, 2012; Chen *et al*., 2017). Prior literature also documents that a good internal governance mechanism (i.e. proportion of independent directors) is a determinant of voluntary RPT disclosure in China (Shan, 2019). However, when internal controls are weak, managers have more discretion over financial reporting owing to the lack of formal policies and procedures, which could lead to low quality financial information and low quality management forecasts (Doyle *et al*., 2007a, b; Ashbaugh-Skaife *et al*., 2008; Hogan and Wilkins, 2008; Feng *et al*., 2009). Moreover, weak internal control could create opportunities for fraudulent and corrupt activities, leading to higher financial, audit, and operational risk (Li *et al*., 2020). Thus, it is expected that an effective internal control environment will help companies to identify corruption-related risk, make business transactions more transparent, and reduce managers' incentives to engage in misconduct. Following this line of argument, we posit that a weak internal control environment accentuates the risk of opportunistic RPTs, with a consequent increase in the cost of debt. Therefore, the following hypothesis is developed:

H3: The adverse effects of opportunistic RPTs for the cost of debt are pronounced for firms with weak internal control environments.

IV. Research Design and Sample Selection

4.1 Dependent Variable

Similar to prior studies (e.g. Francis *et al.* 2005; Gray *et al.*, 2009; Bliss and Gul, 2012; Fonseka *et al.*, 2019), we use interest expenses to proxy for the cost of debt. Consistent with Fonseka *et al.* (2019), we measure cost of debt as the interest expenses of a corporation divided by the sum of short- and long-term debt. Some prior studies employ yield spread as an alternative measure of the cost of debt. However, as mentioned earlier, China has a very small corporate bond market, and private debt through bank loans is the predominant way of debt financing in China (Shailer and Wang, 2015). As a result, it is not possible to adopt yield spread as a measure of the cost of debt in this study. This measure of cost of debt is calculated on the basis of the consolidated group financial accounts, where inter-corporate loans and related party interest receivables have already been consolidated and offset.

4.2 Independent Variables

Our main independent variable is *RPT_TA*, which is the sum of the total RPTs deflated by the total assets of the firm. We adopt Jian and Wong's (2010) method of decomposing total *RPT_TA* into their normal and abnormal components. We regress the *RPT_TA* on *SIZE* (natural log of total assets), *LEVERAGE* (sum of short- and long-term debt over total assets), and *GROWTH* (market value of equity divided by book value of equity). The predicted values from this regression are our proxy for normal RPTs. The residuals, therefore, proxy for abnormal RPTs (Jian and Wong, 2010). We also use alternative measures of opportunistic RPTs, namely, tunnelling and propping. *TUNEL_FIN* is the ratio of other receivables to total assets. Other receivables include non-trade receivables such as interest receivables, loans to company officers, advances to employees, income taxes refundable, and so forth. *PROP_FIN* is the sum of borrowings from related parties, loans, and other payables to related parties, divided by total assets.

4.3 Internal Control Measure

In China, there are two main internal control quality indices: (1) the index constructed by the Internal Control Research Center of Xiamen University and (2) the index constructed by DIB Enterprise Risk Management Technology Co., Ltd. In this research, the DIB internal control index is adopted to measure internal control quality (*IC_INDEX*). The DIB internal control index, published annually since 2008, is a composite index constructed on five dimensions of internal control: internal control strategies, operational efficiency, financial

reporting quality, legal compliance, and asset safety (DIB Internal Control and Risk Management Database, 2017). The internal control deficiencies reported by listed companies are also integrated into the index to improve its rigour (Lin and Yu, 2015; Li *et al*., 2017). It reflects the internal control information based on the listed firm's internal control disclosure reports, internal control assessment reports, and auditing/assurance reports (Li, 2015). The index ranges from 1 to 1000, where a high value represents a strong internal control environment. Our internal control related analyses use data for the period 2008 to 2013.

4.4 Empirical Model

We estimate the following model to test our hypotheses:

$$
\begin{aligned}
COD = \tau_0 &+ \tau_1 RPT + \tau_2 SIZE + \tau_3 LOAN + \tau_4 CAP\_INT + \tau_5 CR + \tau_6 ATO \\
&+ \tau_7 MB + \tau_8 LOSS + \tau_9 ST + \tau_{10} OCF + \tau_{11} AGENCY\_COST \\
&+ \tau_{12} BIG4 + \tau_{13} TOP\_10 + \tau_{14} OPINION + \tau_{15} SOE \\
&+ \tau_{16} BSIZE + \tau_{17} BIND + \tau_{18} CONTROL + \tau_{19} INST \\
&+ \tau_{20} ANALYST + \tau_{21} CAP + IndustryFE + YearFE + \epsilon,
\end{aligned} \tag{1}
$$

where *COD* is cost of debt calculated as total interest expenses divided by the sum of short- and long-term debt. Our main independent variable is *RPT_TA* and variants of *RPT_TA* (e.g. normal and abnormal *RPT*, *TUNEL_FIN*, and *PROP_FIN*). *SIZE* is the natural logarithm of total assets; *LOAN* is total bank loan divided by total assets; *CAP_INT* is gross property, plant, and equipment divided by total assets; *CR* is current ratio measured as current assets divided by current liabilities; *ATO* is asset turnover defined as operating revenue over average total assets; *MB* is market-to-book ratio; *LOSS* is a dummy variable coded 1 if the firm report negative net income in the current year and 0 otherwise; *ST* is a dummy variable coded 1 for firms with negative cumulative earnings for two consecutive years, or companies that had negative earnings for one year and current year shareholders' equities below their registered capital, or companies that received an auditors' going concern opinion; *OCF* is cash flow from operations divided by total assets; and *AGENCY_COST* is administrative expenses over operating revenue. Administrative expenses include expenses pertaining to the board of directors, management, entertainment, accommodation, and travelling expenses. *BIG4* is a dummy variable coded 1 for the top four international audit firms based on audit revenue among all listed companies during sample years and 0 otherwise; *TOP_10* is a dummy variable coded 1 for top 10 local audit firms based on audit revenue among all listed companies during the sample years and 0 otherwise; *OPINION* is a dummy variable coded 1 if the firm received a modified audit opinion and 0 otherwise; *SOE* is an indicator variable coded 1 if the firm is an SOE and 0 otherwise; *BSIZE* is number of board members; *BIND* is the proportion of the total board members who are independent; *CONTROL* is the percentage of outstanding shares held by the controlling shareholders;

INST is the proportion of total outstanding shares that are institutional shareholdings; *ANALYST* is the natural log of the number of analysts following a particular firm; and *CAP* is the access to stock market financing in a region (calculated as the total market capitalisation of all listed companies in a region relative to the regional GDP). We cluster the standard errors by firms in order to control for potential heteroskedasticity and autocorrelation problems and to provide robust standard error estimation with reliable t-statistics.

We now briefly explain the sign of the control variables. The coefficients on *SIZE*, *CR*, and *CAP_INT* are expected to be negative because larger firms and firms with higher current ratios are more likely to meet short-term obligations and firms with more tangible assets are better able to attract external financing for investment needs and provide security on their loans (Harris and Raviv, 1991). The coefficient on *LOAN* is expected to be positive because a higher loan amount increases expected default risk. The sign of *CF* is ambiguous as more cash flows reduce distress risk, and hence *COD*, but firms with excess free cash flows may squander cash. Following Dhaliwal *et al*. (2008), we use market-to-book ratio (*MB*) to control for growth opportunities and expect it to be associated negatively with the cost of debt. Firms with higher asset turnover are more efficient, and this greater efficiency may lead to a lower cost of debt. The coefficients on *LOSS* and *ST* should be positive, as should those on *AGENCY_COST* and *OPINION*. With respect to the governance variables, we expect the coefficients on *BIND*, *BIG4*, *TOP_10*, and *INST* to be negative. The signs of the coefficients on *BSIZE*, *ANALYST*, and *CONTROL* are not predicted.

V. Sample Selection and Descriptive Statistics

5.1 Descriptive Statistics

We collect firms' annual financial information, RPT information, and corporate ownership information from the CSMAR and WIND databases for the sample period 2003 to 2013. Our sample period ends in 2013 because from 2014, the WIND database changed its format for reporting data for calculating financial tunnelling and financial propping from an account-based format to a transaction-based format. The sample is based on all the firms listed on the A-share market in China (i.e. A, AH, AB, and AHB shares).[14] We begin with a large number of RPTs (317,336) identified over the sample period. This is because

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[14] Chinese stocks are traded on segmental markets. A-shares are stocks in mainland China based companies that trade on the Shanghai Stock Exchange and the Shenzhen Stock Exchange. H-share companies are incorporated in mainland China but are listed on the Hong Kong Stock Exchange or other foreign exchanges. H-shares are still under the regulation of Chinese law, but they are denominated in Hong Kong dollars and trade in the same manner as other equities on the Hong Kong exchange. B-share companies are based in mainland China and trade on either the Shanghai or Shenzhen stock exchange. B-Shares are entitled to foreign investment, with trading denominated in foreign currency (Shanghai B-shares trade in US dollars, and Shenzhen B-shares trade in Hong Kong dollars). Some listed companies have A- and/or B- (or H-) shares or all three types of shares (Habib *et al*., 2015).

individual companies report multiple RPTs in the same fiscal year with different parties or even with the same party. We then summarise the value of RPTs happening for the same company in the same year in order to collect firm-year observations. This results in 20,282 firm-year observations for matching with the variables required to estimate the cost of debt values. Missing values for cost of debt and other control variables reduce the final sample size to 11,468 firm-year observations. Among these 11,468 firm-year observations with different types of RPTs, a total of 6,322 and 8,006 firm-year observations are related to *TUNEL_FIN* and *PROP_FIN,* respectively. Panel A in Table 1 explains the sample selection procedure. The industry distribution of sample firms is presented in Table 1, Panel B, which reveals that the machinery, equipment, and instrument industry accounts for 16% of the total sample observations; the petroleum, chemical and rubber industry for 11%; and the metal and non-metal industries for 9%.

Table 1   Descriptive Statistics

Panel A: Sample selection procedure

Selection process	Observations
Initial RPT observations including multiple observations for one firm over the period 2003 to 2013 (Many firms transact with a number of related parties and/or even with the same party in a single year)	317,336
Number of firm-year observations with total RPT values	20,282
Less: Missing data for calculating COD and other control variables	(8,814)
Firm-year observations with total RPTs and complete data for conducting baseline regression of COD on gross RPTs	11,468
Firm-year observations with data on financial tunnelling	6,322
Firm-year observations with data on RPTs related to financial propping	8,006

Panel B: Industry distribution

Industry	Observations	Percentage
A: Farming, Forestry, Animal Husbandry and Fishery	231	2.01%
B: Mining and Quarrying	274	2.39%
C0: Food and Beverage	481	4.19%
C1: Textile, Clothing, Fur	469	4.09%
C3: Papermaking, Printing	217	1.89%
C4: Petroleum, Chemicals, Rubber, Plastics	1,301	11.34%
C5: Electronic	517	4.51%
C6: Metals, Non-metals	1,090	9.50%
C7: Machinery, Equipment, Instruments	1,857	16.19%
C8: Medicine, Biologic Products	684	5.96%
C9: Other manufacturing	66	0.58%
D: Production and Supply of Power, Gas and Water	560	4.88%
E: Construction	253	2.21%
F: Transportation, Storage	455	3.97%
G: Information Technology Industry	626	5.46%
H: Wholesale and Retail Trades	676	5.89%
J: Real Estate	708	6.17%
K: Social Services	363	3.17%
L: Transmitting, Culture Industry	28	0.24%
M: Integrated	612	5.34%
Total	11,468	100.00%

Table 2   Descriptive Statistics

Variable	N	Mean	S.D.	0.25	Mdn	0.75
COD	11,468	0.08	0.08	0.04	0.06	0.08
RPT_TA	11,468	0.41	0.67	0.05	0.17	0.45
TUNEL_FIN	6,322	0.04	0.12	0.00	0.00	0.02
PROP_FIN	8,006	0.03	0.08	0.00	0.00	0.03
SIZE	11,468	21.2	1.51	20.28	21.12	22.03
LOAN (Mln. Yuan)	11,468	5528.73	28132.34	290.00	823.25	2672.47
LOAN	11,468	0.69	0.94	0.13	0.35	0.86
CAP_INT	11,468	0.41	0.46	0.11	0.25	0.52
CR	11,468	1.39	0.95	0.84	1.19	1.65
ATO	11,468	0.91	1.05	0.28	0.57	1.11
MB	11,468	2.93	3.10	1.29	2.00	3.50
LOSS	11,468	0.12	0.33	0.00	0.00	0.00
ST	11,468	0.08	0.26	0.00	0.00	0.00
OCF	11,468	0.05	0.12	0.00	0.04	0.1
AGENCY_COST	11,468	0.10	0.11	0.04	0.07	0.11
BIG4	11,468	0.07	0.26	0.00	0.00	0.00
TOP_10	11,468	0.40	0.49	0.00	0.00	1.00
OPINION	11,468	0.06	0.24	0.00	0.00	0.00
SOE	11,468	0.65	0.48	0.00	1.00	1.00
BSIZE	11,468	9.33	1.96	9.00	9.00	10.00
BIND	11,468	0.36	0.05	0.33	0.33	0.38
CONT	11,468	0.38	0.16	0.25	0.36	0.50
INST	11,468	0.29	0.25	0.04	0.25	0.49
ANALYST	11,468	1.13	1.17	0.00	0.69	2.08
CAP	11,468	0.00	0.00	0.00	0.00	0.00
IC_INDEX	7,740	3.10	0.60	2.83	3.25	3.53

Variable definitions: *COD* is cost of debt, calculated as the total interest expenses divided by the sum of short- and long-term debt. *RPT/TA* is the sum of total RPTs deflated by total assets of the firm. *TUNNEL_FIN* is the ratio of other receivables to total assets. *PROP_FIN* is the sum of borrowings from related parties, loans, and other payables to related parties divided by total assets. *SIZE* is the natural logarithm of total assets; *LOAN* is total bank loan divided by total assets; *CAP_INT* is gross property, plant, and equipment divided by total assets; *CR* is current ratio measured as current assets divided by current liabilities; *ATO* is asset turnover, defined as operating revenue over average total assets; *MB* is market-to-book ratio; *LOSS* is a dummy variable coded 1 if the firm reported negative net income and 0 otherwise; *ST* is a dummy variable coded 1 for firms with negative cumulative earnings for two consecutive years, or companies that had negative earnings for one year but the current year shareholders' equities are below registered capital, or companies that received an auditor's 'going concern opinion'; *OCF* is cash flow from operations divided by total assets. *AGENCY_COST* is administrative expenses over operating revenue. Administrative expenses include expenses pertaining to the board of directors, management, entertainment, accommodation, and travelling expenses; *BIG4* is a dummy variable coded 1 for the top four international audit firms based on audit revenue among all listed companies during sample years and 0 otherwise; *TOP_10* is a dummy variable coded 1 for the top 10 LOCAL audit firms based on audit revenue among all listed companies during sample years and 0 otherwise; *OPINION* is a dummy variable coded 1 if the firm received a modified audit opinion and 0 otherwise; *SOE* is an indicator variable coded 1 if the firm is a state-owned enterprise and 0 otherwise; *BSIZE* is number of board members; *BIND* is the proportion of board members who are independent; *CONTROL* is the percentage of outstanding shares held by the controlling shareholders; *INST* is the proportion of the total outstanding shares that are institutional shareholdings; *ANALYST* is the natural log of the number of analysts following a particular firm; *CAP* is the access to stock market financing in a region, calculated as the total market capitalisation of all listed companies in a region relative to regional GDP. *IC_INDEX* is the natural logarithm of the internal control score.

Table 2 presents the descriptive statistics. The mean (median) COD is 8% (6%). Shailer and Wang (2015) report a COD of 11% for the sample period 2002 to 2008. They define COD as finance expenses divided by the average of short- and long-term debt. We, on the other hand, use the sum of short- and long-term debt as the denominator. Furthermore, our sample period ends in 2013, whereas Shailer and Wang's (2015) sample ends in 2008. The RPT ratio (i.e. *RPT/TA*) is 41%. The means of *TUNEL_FIN* and *PROP_FIN* are 0.04 and 0.03, respectively. Sample firms are larger and have growth opportunities (a mean *MB* ratio of 2.93). Total loan is 69% of total assets, and about 41% of the total assets consists of fixed assets. Institutional owners own 29% of total outstanding shares. Sixty-five percent of the firm-year observations are SOEs. Eight percent of the firm-year observations are ST firms, and 12% report losses.

Table 3 presents the correlation analysis. The correlation between *COD* and *RPT_TA* is positive and significant at $p<0.05$. Although not included in the correlation table because of smaller sample sizes, the correlations between *COD* and both *TUNEL_FIN* and *PROP_FIN* are positive and significant (correlation 0.06 and 0.05, respectively, both significant at $p<0.01$). COD is lower for larger firms and more capital-intensive firms but higher for ST firms and firms reporting losses. With respect to governance variables, the correlation suggests that audit quality reduces COD (the correlations between COD and both *BIG4* and *TOP_10* are negative and significant at $p<0.01$) but modified audit opinions increase it. COD is lower for SOEs than for their private firm counterparts. Overall, our correlation analysis provides univariate support for the hypothesis that RPTs increase the cost of debt.

5.2 RPTs and Cost of Debt: Baseline Regression Results

Table 4, Panel A presents the regression results of the effects of RPTs on the cost of debt. The dependent variable is COD, while the independent variables are different combinations of RPTs. Columns (1) to (5) report the OLS results, and columns (6) to (8) report firm fixed effects (FFE) results. The coefficient on *RPT_TA* is positive and significant in column (1) (coefficient 0.0049, significant at $p<0.01$). In terms of economic significance, the reported coefficient of 0.0049 implies that a one standard deviation increase in *RPT_TA* is associated with a (0.0049*0.67 (SD of *RPT_TA*)) 33 basis points increase in COD. This increase in COD translates into an additional interest cost of CNY18.24 million (the mean LOAN value of CNY5528.73 million*0.0033). In column (2), the coefficient on normal RPTs (*RPT_NORM*) is significantly negative (coefficient -0.24, $p<0.001$), while that on abnormal RPT (*RPT_ABN*) is significantly positive (coefficient 0.004, $p<0.01$). Columns (3) to (5) present the regression results using the direct proxies for tunnelling and propping and provide evidence that both tunnelling (*TUNEL_FIN*) and propping (*PROP_FIN*) increase COD (coefficients 0.016 and 0.042, respectively, both significant at $p<0.05$) (columns 4 and 5). The reported coefficients imply a 19 and a 34 basis point increase in COD for a one standard deviation increase in *TUNEL_FIN* and *PROP_FIN*. One may argue that FFE

Table 3   Correlation Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1) COD	-																				
(2) RPT_TA	0.023	-																			
(3) SIZE	-0.149	0.221	-																		
(4) LOAN	-0.195	0.354	0.214	-																	
(5) CAP_INT	-0.078	0.331	0.212	0.729	-																
(6) CR	-0.048	-0.169	-0.114	-0.243	-0.355	-															
(7) ATO	0.024	0.430	0.528	0.336	0.389	-0.197	-														
(8) MB	0.090	-0.159	-0.150	-0.262	-0.308	0.004	-0.269	-													
(9) LOSS	0.113	0.101	-0.211	0.144	0.150	-0.154	0.013	0.047	-												
(10) ST	0.177	0.048	-0.253	0.012	0.027	-0.140	-0.024	0.093	0.140	-											
(11) OCF	0.016	0.073	0.182	0.159	0.385	-0.165	0.207	-0.142	-0.110	0.000	-										
(12) AGENCY_COST	0.115	-0.070	-0.543	-0.017	-0.042	-0.007	-0.256	0.071	0.366	0.229	-0.136	-									
(13) BIG4	-0.072	0.028	0.317	0.081	0.096	-0.042	0.094	-0.065	-0.042	-0.046	0.104	-0.068	-								
(14) TOP_10	-0.066	0.031	0.274	0.051	-0.019	0.033	0.026	0.035	-0.051	-0.074	-0.018	-0.080	0.346	-							
(15) OPINION	0.151	0.051	-0.209	0.049	0.035	-0.112	-0.028	0.070	0.251	0.296	-0.051	0.307	-0.027	-0.034	-						
(16) SOE	-0.058	0.092	0.205	0.141	0.196	-0.124	0.164	-0.105	-0.002	-0.046	0.107	-0.081	0.107	0.008	-0.028	-					
(17) BSIZE	-0.072	0.050	0.193	0.115	0.163	-0.082	0.090	-0.081	-0.041	-0.059	0.111	-0.063	0.132	0.024	-0.018	0.208	-				
(18) BIND	-0.005	-0.017	0.106	0.003	-0.061	0.029	-0.007	0.048	-0.029	-0.014	-0.050	-0.043	0.047	0.103	-0.020	-0.072	-0.283	-			
(19) CONTROL	-0.102	0.124	0.236	0.064	0.099	0.015	0.133	-0.091	-0.084	-0.067	0.077	-0.142	0.128	0.046	-0.071	0.222	0.021	-0.003	-		
(20) INST	-0.118	-0.012	0.444	-0.007	-0.096	0.053	-0.021	0.132	-0.147	-0.169	-0.016	-0.185	0.159	0.295	-0.108	0.063	0.032	0.140	0.138	-	
(21) ANAL	-0.154	-0.025	0.537	-0.009	-0.054	0.087	0.002	0.057	-0.235	-0.193	0.051	-0.208	0.208	0.262	-0.158	0.014	0.120	0.100	0.105	0.578	-
(22) CAP	-0.022	-0.042	0.135	-0.042	-0.100	0.033	-0.040	0.089	-0.037	-0.033	-0.036	-0.023	0.118	0.080	-0.017	0.081	0.021	0.024	0.076	0.141	0.128

Note: Bold-faced correlations are significant at p<0.05 or better. Variable definitions are provided in the note to Table 2.

estimates are critical to control for unobserved time-invariant firm heterogeneity. Therefore, in columns (6) to (8), we present the FFE regression results. The results are consistent with the OLS results (e.g. the coefficient on *RPT/TA* is 0.004, significant at $p<0.01$). Taken together, we find support for the idea that opportunistic RPTs increase the cost of debt. Among the control variables, we find that the cost of debt is relatively low for large firms, firms with high loan-to-asset ratios, and firms with concentrated ownership, institutional ownership, and a strong analyst following. However, the cost of debt is higher for ST firms, firms reporting losses, firms receiving modified audit opinions, and firms with positive OCFs.

As discussed in the hypothesis section, Jian and Wong (2010) document that Chinese listed firms conduct RPTs for various incentives, such as delisting, equity financing, or right issues offerings. Thus, we include a dummy variable *ST* for firms with measurable financial statement issues or auditor decisions. The coefficients for *ST* are statistically significant across all types of RPTs. Our results confirm and extend Jian and Wong's (2010) findings (sample period: 1998 to 2002) by using the sample period of 2003 to 2013. Finally, the coefficient for the *AGENCY_COST* variable is insignificant for almost all types of RPTs, and this result supports our argument that the association between RPTs and the cost of debt is mainly driven by the agency conflicts between principal and debtholders rather than by principal-agent conflicts.

To further investigate the effect of state ownership on the relationship between RPTs and COD, we partition the sample into SOEs versus non-SOEs, conduct a regression on the subsample, and report the results in Table 4, Panel B. Columns 1 and 2 present the OLS regression results using the total amount of RPTs (*RPT_TA*) as the explanatory variable. The coefficients of *RPT_TA* for both SOEs and non-SOEs are statistically significant and positive: 0.0052 ($p<0.01$) and 0.0057 ($p<0.05$), respectively. The FFE regression results in columns 9 and 10 reveal the coefficient *RPT_TA* for the SOEs to be positive and statistically significant (0.0041, $p<0.01$), whereas the coefficient *RPT_TA* for the non-SOEs becomes insignificant. The empirical results suggest that compared with non-SOEs, SOEs with higher total amounts of RPTs could incur higher costs of debt. Our results provide empirical support for the argument that lenders are inclined to regard the amount of RPTs reported by SOEs as a red flag for expropriation or a signal of inefficiency and thus charge SOEs higher interest rates.

In columns 3 and 4, we conduct an OLS regression using Normal RPTs and Abnormal RPTs as our explanatory variable, respectively. The coefficients of Normal RPTs (*RPT_NORM*) are negative and statistically significant across the two subsample groups: -0.229 ($p<0.01$) and -0.250 ($p<0.01$). This proves the efficiency-enhancing argument for the use of normal RPTs across both SOEs and non-SOEs. It is suggested that firms conducting normal RPTs could benefit from such interrelationships among business groups, and hence they are more likely to benefit through a lower cost of debt. In contrast, the coefficient

Table 4
Panel A: Related party transactions and the cost of debt

Variables	(1) Total RPTs	(2) Normal & Abnormal RPTs	(3) Tunnelling (Other receivables)	(4) Propping	(5) Tunnelling & propping	(6) Total RPTs	(7) Tunnelling (Other receivables)	(8) Propping
	OLS	OLS	OLS	OLS	OLS	FFE	FFE	FFE
RPT_TA	0.0049***	-	-	-	-	0.004***	-	-
	[3.40]					[2.97]		
RPT_NORM	-	-0.238***	-	-	-	-	-	-
		[-20.81]						
RPT_ABN	-	0.004***	-	-	-	-	-	-
		[2.75]						
TUNEL_FIN	-	-	0.016**	-	0.011*	-	0.019**	-
			[2.26]		[1.70]		[2.38]	
PROP_FIN	-	-	-	0.042***	0.042***	-	-	0.044***
				[2.78]	[4.19]			[2.85]
SIZE	-0.003***	-0.004***	-0.003**	-0.002**	-0.003**	-0.005***	-0.006***	-0.004**
	[-2.81]	[-4.16]	[-2.37]	[-2.58]	[-2.10]	[-2.87]	[-2.77]	[-2.56]
LOAN	-0.016***	-0.002	-0.016***	-0.015***	-0.015***	-0.018***	-0.017***	-0.016***
	[-14.01]	[-1.42]	[-14.24]	[-14.31]	[-13.01]	[-10.17]	[-10.47]	[-11.68]
CAP_INT	0.009***	0.004	0.010***	0.006***	0.007***	0.014***	0.012***	0.010***
	[3.35]	[1.46]	[4.33]	[2.71]	[3.26]	[4.12]	[3.52]	[3.26]
CR	-0.002	-0.001	-0.002	-0.002**	-0.002	-0.001	-0.001	-0.001
	[-1.53]	[-1.39]	[-1.46]	[-2.09]	[-1.48]	[-0.65]	[-0.46]	[-0.51]
ATO	0.006***	0.003***	0.007***	0.006***	0.006***	0.005***	0.006***	0.006***
	[6.77]	[4.10]	[6.95]	[7.33]	[6.39]	[4.54]	[3.33]	[5.16]
MB	0.001*	-0.004***	0.001*	0.001*	0.001	0.001*	0.001	0.001*
	[1.72]	[-7.99]	[1.84]	[1.74]	[1.63]	[1.74]	[1.37]	[1.68]
LOSS	0.010***	0.009***	0.009***	0.011***	0.009***	0.007**	0.005	0.005
	[4.81]	[4.48]	[3.11]	[4.28]	[2.84]	[2.56]	[1.34]	[1.50]
ST	0.021***	0.024***	0.019***	0.020***	0.016***	0.018***	0.014***	0.016***
	[5.52]	[6.42]	[4.51]	[5.68]	[3.98]	[4.92]	[2.93]	[4.31]
OCF	0.024***	0.029***	0.024***	0.030***	0.027***	0.028***	0.029***	0.030***
	[4.46]	[5.58]	[4.17]	[5.68]	[4.40]	[5.30]	[4.49]	[5.31]
AGENCY_COST	0.000	0.000	0.000	0.000**	0.000	0.000	-0.000	0.000
	[1.46]	[0.84]	[0.94]	[1.97]	[1.34]	[0.98]	[-0.28]	[0.71]
BIG4	-0.001	0.000	-0.005**	-0.004*	-0.004*	-0.002	-0.003	0.000
	[-0.23]	[0.11]	[-2.11]	[-1.76]	[-1.82]	[-0.39]	[-0.83]	[0.11]
TOP_10	-0.001	-0.001	-0.000	-0.002	-0.001	0.000	-0.001	-0.002
	[-0.44]	[-0.78]	[-0.25]	[-0.88]	[-0.45]	[0.16]	[-0.44]	[-0.65]
OPINION	0.004***	0.004***	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***
	[4.54]	[4.50]	[3.28]	[3.65]	[3.13]	[3.79]	[3.21]	[2.80]
SOE	-0.000	0.000	-0.002	-0.003*	-0.004*	0.004	0.001	0.001
	[-0.19]	[0.31]	[-0.88]	[-1.66]	[-1.86]	[1.20]	[0.26]	[0.25]
BSIZE	-0.001	-0.000	-0.000	-0.000	-0.000	-0.001	-0.001**	-0.001
	[-1.29]	[-1.06]	[-0.42]	[-0.30]	[-0.30]	[-1.45]	[-1.97]	[-1.29]
BIND	0.006	0.008	0.023	0.007	0.025*	0.003	0.034	0.008
	[0.53]	[0.72]	[1.57]	[0.60]	[1.70]	[0.16]	[1.50]	[0.51]
CONTROL	-0.014***	-0.013***	-0.008	-0.013***	-0.007	-0.027**	-0.032***	-0.036***
	[-3.08]	[-3.14]	[-1.54]	[-2.89]	[-1.26]	[-2.52]	[-3.24]	[-4.16]

INST	-0.007**	-0.006*	-0.005	-0.005	-0.007	-0.011**	-0.007	-0.008
	[-2.09]	[-1.79]	[-1.15]	[-1.32]	[-1.36]	[-2.41]	[-1.18]	[-1.58]
ANAL	-0.002***	-0.002***	-0.003***	-0.002***	-0.002**	-0.001	-0.002*	-0.001
	[-3.59]	[-3.71]	[-3.22]	[-3.17]	[-2.48]	[-0.72]	[-1.82]	[-1.27]
CAP	0.433	0.367	0.983	0.353	0.269	-0.116	0.178	-0.328
	[0.92]	[0.81]	[1.40]	[0.80]	[0.52]	[-0.16]	[0.14]	[-0.63]
Constant	0.105***	0.193***	0.095***	0.101***	0.096***	0.141***	0.168***	0.140***
	[5.16]	[9.19]	[4.28]	[5.20]	[3.91]	[4.22]	[3.51]	[3.59]
Industry	Yes	Yes	Yes	Yes	Yes	No	No	No
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,468	11,468	6,322	8,006	5,156	11,468	6,322	8006
Adjusted R^2	0.14	0.18	0.14	0.16	0.15	0.29	0.28	0.30

Note: This table reports results from OLS and FFE regressions relating the related party transactions (RPTs) to the cost of debt, and the control variables, for Chinese stock exchange-listed industrial firms from 2003 to 2013. Continuous variables are winsorised at their 1st and 99th percentiles. Robust t-statistics are presented in brackets. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively (two-tailed test). Variable definitions are provided in the note to Table 2.

Panel B: Related party transactions and the cost of debt for the SOE versus non-SOE subsample

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Total RPTs		**Normal & Abnormal RPTs**		**Tunnelling**		**Propping**		**Total RPTs**	
	SOE OLS	Non-SOE OLS	SOE OLS	Non-SOE OLS	SOE OLS	Non-SOE OLS	SOE OLS	Non-SOE OLS	SOE FFE	Non-SOE FFE
RPT_TA	0.0052***	0.0057**	-		-		-		0.0041***	0.0014
	[2.84]	[2.68]							[2.93]	[0.46]
RPT_NORM	-	-	-0.229***	-0.250***	-		-		-	
			[-16.39]	[-12.16]						
RPT_ABN	-	-	0.005**	0.003	-		-		-	
			[2.54]	[1.35]						
TUNEL_FIN	-	-	-	-	0.013*	0.018	-		-	
					[1.66]	[1.41]				
PROP_FIN	-	-	-	-	-		0.037***	0.059**	-	
							[2.05]	[1.96]		
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.099***	0.110***	0.185***	0.198***	0.068***	0.119**	0.084***	0.109***	0.090**	0.123**
	[4.60]	[4.18]	[8.45]	[6.94]	[2.90]	[2.75]	[4.65]	[3.12]	[2.11]	[2.14]
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,460	4,008	7,460	4,008	4,466	1,856	5,626	2,380	7,460	4,008
Adjusted R^2	0.15	0.15	0.16	0.19	0.15	0.17	0.17	0.17	0.13	0.13

Note: This table reports results from OLS and FFE regressions relating the related party transactions (RPTs) to the cost of debt, and the control variables for a subsample of SOE versus non-SOE firms from 2003 to 2013. Continuous variables are winsorised at their 1st and 99th percentiles. Robust t-statistics are presented in brackets. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively (two-tailed test). Variable definitions are provided in the note to Table 2.

of abnormal RPTs (*RPT_ABN*) is positive and statistically significant for the SOEs (0.005, p<0.01) but insignificant for the non-SOEs. This result confirms the value-destroying argument with respect to the use of abnormal RPTs by SOEs, which has an adverse effect on the cost of debt.

Similar differential effects can also be found in the OLS regression results using tunnelling as the explanatory variable. Tunnelling is considered to be a mechanism that controlling shareholders often utilise to exploit other stakeholders that could result in higher debt financing costs for firms. Columns 5 and 6 present the differential effects of tunnelling (*TUNEL_FIN*). The coefficient of *TUNEL_FIN* for the SOE subsample is 0.013 (p<0.10), whereas the coefficient is insignificant for the non-SOEs. State ownership, however, does not act as a moderating factor on the positive association between propping and the cost of debt.

5.3 Propensity Score Matching (PSM) Analysis

Considering the outcomes of RPTs, firms may non-randomly select the level of RPTs to be conducted. Selection bias arises when the propensity to engage in RPTs is correlated with the error term of the COD model. Such selection bias may break the standard OLS assumptions, and the least squares coefficients of the RPT variables could therefore be biased as well. The propensity score matching (PSM) methodology (Rosenbaum and Rubin, 1983, 1985) is a tool for minimising the potential self-selection problem by matching sample firms with control firms with similar characteristics on the basis of a function of covariates. We identify the optimal match on the basis of the nearest neighbour (NN), the average treatment effect (ATE), and the kernel techniques in the PSM procedure.

In this research context, first, the basic approach to PSM is to model the variation across RPTs on the basis of the underlying firm-specific determinants. We break down our sample into two groups on the basis of the annual median level of *RPT_TA* and identify observations above (below) the annual median as the treated (control) groups. We include *SIZE*, *CAP_INT*, *MB*, *LEV*, *LOSS*, *ST*, *OCF*, *AGENCY_COST*, *SOE*, *CEODUAL*, *BSIZE*, *BIND*, and *CONTROL* as the possible determinants of *RPT_TA*. These control variables are included to ensure a proper balance between treated and untreated subjects in the matched sample; this is a key principle for PSM (Austin, 2011). Examining the distribution of measured baseline covariates between treated and untreated subjects within the propensity score matched sample is a critical aspect of PSM. After conditioning on the propensity score, if there are no systematic differences in baseline covariates between treated and untreated subjects, this shows that the propensity score model has been correctly configured (Austin, 2011).

In Table 5, Panel A, none of the included covariates is significantly different between the treated and the control subgroups. Panel B reports the PSM regression results. Our results remain robust across all three PSM techniques. For example, the coefficients on

RPT_TA are 0.004 (p<0.01), 0.008 (p<0.05), and 0.004 (p<0.01) for the NN, ATE, and kernel methods, respectively (columns 1 to 3). The coefficients on *PROP_FIN* are also all positive and significant. We did not include *TUNEL_FIN* in the model because of a substantial reduction in the sample size.

Table 5   PSM Results

Panel A: Covariates matching

Variables	Treated	Controls	Difference	S.E.	t-stat
SIZE	21.62	21.53	0.08	0.05	1.70
CAP_INT	0.50	0.51	-0.01	0.01	-0.74
MB	2.51	2.57	-0.06	0.09	-0.65
LEV	0.12	0.12	0.00	0.00	-1.08
LOSS	0.14	0.15	-0.01	0.01	-1.07
ST	0.07	0.08	-0.01	0.01	-0.98
OCF	0.05	0.06	0.00	0.00	-1.20
AGENCY_COST	2.36	2.45	-0.08	0.16	-0.53
SOE	0.68	0.68	0.00	0.02	-0.09
BSIZE	9.38	9.35	0.03	0.06	0.54
BIND	0.36	0.36	0.00	0.00	-1.31
CONTROL	0.39	0.38	0.01	0.01	1.63
CEODUAL	1.87	1.87	-0.01	0.01	-0.69

Note: *CEODUAL* is a dummy variable coded 1 if the CEO is also the chairman of the board and 0 otherwise.

Panel B: PSM regression results

	(1)	(2)	(3)	(4)	(5)	(6)
	NN	**ATE**	**Kernel**	**NN**	**ATE**	**Kernel**
Variables	**Total RPTs**	**Total RPTs**	**Total RPTs**	**Propping**	**Propping**	**Propping**
RPT_TA	0.004***	0.008**	0.004***	-	-	-
	[3.06]	[2.27]	[3.61]			
PROP_FIN	-	-	-	0.037***	0.061***	0.038***
				[2.93]	[3.24]	[3.08]
SIZE	-0.004***	-0.002	-0.003***	-0.002*	-0.002	-0.002**
	[-3.74]	[-0.83]	[-3.22]	[-1.95]	[-1.14]	[-2.49]
LOAN	-0.013***	-0.016***	-0.013***	-0.012***	-0.014***	-0.013***
	[-14.02]	[-8.08]	[-17.56]	[-13.84]	[-11.45]	[-15.50]
CAP_INT	0.005	0.006	0.005***	0.006***	0.005	0.008***
	[1.59]	[1.18]	[2.72]	[2.74]	[1.64]	[3.04]
CR	-0.002	-0.005**	-0.003***	-0.004***	-0.004**	-0.003***
	[-0.71]	[-2.35]	[-3.33]	[-4.10]	[-2.34]	[-3.13]
ATO	0.005***	0.003***	0.005***	0.005***	0.005***	0.006***
	[6.51]	[3.03]	[8.72]	[4.96]	[4.22]	[7.51]
MB	0.000	0.001	0.000	0.001**	0.002**	0.001*
	[0.40]	[0.73]	[0.81]	[2.24]	[2.20]	[1.77]
LOSS	0.012***	0.014**	0.009***	0.006	0.003	0.008**
	[2.66]	[2.26]	[3.81]	[1.43]	[0.55]	[2.37]
ST	0.025***	0.029***	0.020***	0.017***	0.017***	0.021***
	[2.65]	[2.84]	[4.92]	[4.33]	[3.05]	[5.34]
OCF	0.020***	0.033	0.018***	0.022***	0.037***	0.025***
	[3.95]	[1.28]	[3.69]	[3.74]	[4.00]	[4.18]

AGENCY_COST	0.000	0.000	0.000*	-0.000	-0.000	0.000
	[0.82]	[1.44]	[1.85]	[-0.19]	[-0.57]	[1.37]
BIG4	0.002	0.003	-0.001	-0.003	-0.007**	-0.002
	[0.88]	[0.42]	[-0.42]	[-1.18]	[-2.42]	[-0.84]
TOP_10	-0.002	-0.002	-0.001	-0.002	-0.000	-0.002
	[-0.83]	[-0.45]	[-0.41]	[-1.12]	[-0.01]	[-1.41]
OPINION	0.002	0.005**	0.004***	0.004***	0.005**	0.004***
	[1.55]	[2.13]	[3.94]	[3.08]	[2.53]	[2.99]
SOE	0.002	0.004	-0.001	-0.000	-0.004	-0.001
	[0.70]	[1.18]	[-0.56]	[-0.14]	[-1.39]	[-0.33]
BSIZE	-0.000	-0.000	-0.000	-0.000	0.001	-0.001
	[-0.42]	[-0.30]	[-0.31]	[-0.25]	[0.74]	[-0.99]
BIND	0.018	-0.001	0.002	0.017	0.012	0.006
	[1.13]	[-0.05]	[0.20]	[0.90]	[0.56]	[0.39]
CONTROL	-0.011***	-0.015*	-0.014***	-0.016***	-0.016***	-0.017***
	[-2.72]	[-1.85]	[-3.66]	[-3.23]	[-2.65]	[-4.24]
INST	-0.009*	-0.012**	-0.005	-0.002	-0.002	-0.003
	[-1.88]	[-1.97]	[-1.59]	[-0.41]	[-0.39]	[-0.80]
ANALYST	-0.002***	-0.002*	-0.002***	-0.003***	-0.004***	-0.002***
	[-2.96]	[-1.89]	[-3.90]	[-2.81]	[-2.85]	[-3.14]
CAP	0.051	-0.102	0.326	0.883	0.904	0.501
	[0.11]	[-0.19]	[1.00]	[1.24]	[1.30]	[1.21]
Constant	0.104***	0.085	0.096***	0.083***	0.079***	0.102***
	[5.28]	[1.56]	[5.74]	[3.48]	[2.71]	[5.03]
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,104	4,456	9,822	4,774	3,320	6,849
Adjusted R^2	0.16	0.20	0.16	0.19	0.18	0.19

Note: This table reports PSM regression results relating related party transactions (RPTs) to the cost of debt, and the control variables, for Chinese stock exchange-listed industrial firms from 2003 to 2013. Continuous variables are winsorised at their 1st and 99th percentiles. Robust t-statistics are presented in brackets. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively (two-tailed test). Variable definitions are provided in the note to Table 2.

5.4 RPTs and Cost of Debt: Does the Internal Control Environment Matter?

Table 6, Panel A presents the regression results for equation (1) for the strong versus weak internal control subsamples. The reported results show that the adverse effects of RPTs on the cost of debt are more pronounced for firms with weak internal control environments than for their counterparts with strong internal control environments. Thus, the results support hypothesis H4. For example, the coefficient on *RPT_TA* is 0.004 (p<0.05) for firms with an IC_INDEX less than the median value. The corresponding coefficient for the IC_INDEX>= median group is insignificant. We find similar evidence for *PROP_FIN* (coefficient 0.089, significant at p<0.05 for firms with IC_INDEX<median values). The coefficient is again insignificant for the strong internal control group. However, the coefficients on *TUNEL_FIN* are insignificant for both groups.

We further partition the sample into SOEs and non-SOEs and conduct an OLS regression to investigate the interaction between internal control, three measures of RPTs, and cost of debt in the context of weak versus strong internal control quality and state

ownership. The results are reported in Panel B of Table 6. Columns 1 to 4 presents the results when *RPT_TA* is the explanatory variable. The coefficient of *RPT_TA* is positively significant only for SOEs with a lower-than-median IC_INDEX (0.0047, p<0.10). This implies that SOEs with lower internal control quality are more likely to incur higher costs of debt when they report higher levels of total RPTs. The tunnelling effect on cost of debt is presented in columns 5 to 8, and the coefficients across four different scenarios remain insignificant. In contrast, state ownership exhibits a differential effect on firms using propping as a tool of expropriation. The coefficient of *PROP_FIN* is positive and statistically significant for SOEs with a lower-than-median IC_INDEX (0.095, p<0.05).

Table 6

Panel A: Internal control environment, RPTs, and the cost of debt

	(1)	(2)	(3)	(4)	(5)	(6)
	IC>=Median	IC<Median	IC>=Median	IC<Median	IC>=Median	IC<Median
Variables	RPT_TA	RPT_TA	TUNEL_FIN	TUNEL_FIN	PROP_FIN	PROP_FIN
RPT_TA	0.001	0.004*	-	-	-	-
	[1.16]	[1.95]				
TUNEL_FIN	-	-	0.001	0.012	-	-
			[0.06]	[0.32]		
PROP_FIN	-	-	-	-	-0.000	0.092***
					[-0.02]	[2.68]
SIZE	-0.002*	-0.003*	-0.001	-0.002	-0.001*	-0.001
	[-1.80]	[-1.66]	[-1.08]	[-0.78]	[-1.66]	[-0.44]
LOAN	-0.010***	-0.020***	-0.010***	-0.017***	-0.008***	-0.020***
	[-10.24]	[-10.32]	[-7.68]	[-8.13]	[-8.29]	[-9.31]
CAP_INT	0.002	0.016***	0.001	0.014**	-0.001	0.014***
	[1.00]	[3.66]	[0.52]	[2.35]	[-0.31]	[2.74]
CR	-0.004***	-0.000	-0.006***	0.000	-0.005***	-0.002
	[-3.84]	[-0.13]	[-4.56]	[0.06]	[-3.83]	[-0.80]
ATO	0.005***	0.007***	0.006***	0.010***	0.005***	0.008***
	[4.36]	[3.89]	[4.29]	[3.67]	[4.37]	[4.57]
MB	0.000	0.001	-0.000	0.001	0.000	0.001
	[0.41]	[1.34]	[-0.12]	[1.53]	[0.93]	[1.41]
LOSS	0.001	0.006*	0.043	0.004	0.003	0.005
	[0.04]	[1.94]	[1.14]	[0.74]	[0.18]	[1.43]
ST	0.042**	0.029***	0.047*	0.025***	0.049**	0.018***
	[2.27]	[4.30]	[1.81]	[2.83]	[2.17]	[3.16]
OCF	0.014***	0.041***	0.009	0.039**	0.015***	0.047***
	[2.82]	[3.35]	[1.24]	[2.18]	[2.79]	[3.24]
AGENCY_COST	-0.005	0.013	0.030	0.057*	0.038	0.044*
	[-0.13]	[0.66]	[0.58]	[1.82]	[0.69]	[1.77]
BIG4	-0.005**	-0.007*	-0.007***	-0.011**	-0.006***	-0.007*
	[-2.49]	[-1.91]	[-2.85]	[-2.37]	[-3.00]	[-1.82]
TOP_10	-0.002	-0.001	-0.003	-0.002	-0.001	-0.004
	[-1.00]	[-0.51]	[-1.13]	[-0.47]	[-0.44]	[-1.21]

OPINION	0.007	0.004***	0.010*	0.003***	0.006	0.003***
	[1.61]	[3.67]	[1.69]	[2.61]	[1.51]	[3.24]
BSIZE	-0.004*	-0.000	-0.003	-0.004	-0.004	-0.004
	[-1.78]	[-0.14]	[-0.96]	[-1.08]	[-1.46]	[-1.31]
SOE	0.001	-0.001**	0.001	-0.002*	0.001**	-0.002**
	[1.13]	[-2.25]	[1.28]	[-1.94]	[2.18]	[-2.24]
BIND	-0.005	0.007	0.025	0.034	0.014	0.007
	[-0.40]	[0.35]	[1.39]	[1.15]	[1.04]	[0.28]
CONTROL	-0.015***	-0.021***	-0.015*	-0.019*	-0.012**	-0.031***
	[-2.83]	[-3.01]	[-1.82]	[-1.95]	[-2.10]	[-3.38]
INST	-0.001	-0.007	0.001	0.003	0.004	-0.007
	[-0.40]	[-1.20]	[0.14]	[0.30]	[0.94]	[-1.04]
ANAL	-0.003***	-0.002**	-0.002**	-0.003*	-0.003***	-0.002
	[-3.70]	[-1.98]	[-2.15]	[-1.68]	[-3.20]	[-1.53]
CAP	0.020	1.411	0.382	2.137	-0.064	0.908
	[0.05]	[1.28]	[0.77]	[1.11]	[-0.14]	[1.06]
Constant	0.089***	0.125***	0.067**	0.105*	0.071***	0.098***
	[4.68]	[3.56]	[2.54]	[1.82]	[3.37]	[2.59]
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,870	3,870	1,963	1,886	2,708	2,678
Adjusted R^2	0.14	0.16	0.14	0.16	0.16	0.18

Note: This table reports results from OLS regressions relating RPTs to the cost of debt and control variables for firm-year observations partitioned on the basis of the strength of the internal control environment for Chinese stock exchange-listed industrial firms from 2003 to 2013. Continuous variables are winsorised at their 1st and 99th percentiles. Robust t-statistics are presented in brackets. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively (two-tailed test). Variable definitions are provided in the note to Table 2.

Panel B: Internal control environment, RPTs, and the cost of debt for the SOE versus non-SOE subsample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	IC>=	IC<	IC>=	IC<	IC>=	IC<	IC>=	IC<	IC>=	IC<	IC>=	IC<
	Median	Median	Median	Median	Median	Median	Median	Median	Median	Median	Median	Median
Variables	SOE=1	SOE=1	SOE=0	SOE=0	SOE=1	SOE=1	SOE=0	SOE=0	SOE=1	SOE=1	SOE=0	SOE=0
RPT_TA	0.001	0.0047*	0.0038	0.0055	-	-	-	-	-	-	-	-
	[0.95]	[1.90]	[1.22]	[1.21]								
TUNEL_FIN	-	-	-	-	-0.009	0.014	0.018	0.022	-	-	-	-
					[-0.48]	[0.27]	[1.25]	[0.56]				
PROP_FIN	-	-	-	-	-	-	-	-	-0.009	0.095**	0.035	0.075
									[-0.95]	[2.30]	[1.42]	[1.42]
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.077***	0.147**	0.118***	0.100**	0.060*	0.119	0.118**	0.120	0.078***	0.118**	0.079	0.079
	[3.19]	[2.70]	[3.37]	[1.98]	[1.84]	[1.51]	[2.64]	[1.20]	[3.60]	[2.48]	[1.52]	[1.10]
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,471	2,275	1,399	1,595	1,417	1,257	546	629	1,963	1,751	745	927
Adjusted R^2	0.16	0.20	0.19	0.16	0.09	0.21	0.29	0.20	0.18	0.23	0.24	0.18

VI. Conclusion

We test the association between RPTs and the cost of debt empirically. Using a reasonably large sample of Chinese listed firms over the period 2003 to 2013, we document a significant and positive association between gross RPTs and the cost of debt, which is driven primarily by abnormal RPTs. State ownership plays a moderating role in the positive association between total RPTs (abnormal RPTs) and the cost of debt: that is, compared with non-SOEs, SOEs with high levels of total RPTs or abnormal RPTs are more likely to incur higher costs of debt. We further test two direct proxies of opportunistic RPTs, namely tunnelling and propping, and find positive effects of both on the cost of debt. Again, we find state ownership makes the positive association between tunnelling and cost of debt more pronounced. Furthermore, we document that the positive association between RPTs and cost of debt is more pronounced in firms with weaker internal control environments. SOEs with lower internal control quality are more likely to incur higher costs of debt when they report higher levels of total RPTs. Thus, our study finds empirical support for the value-destroying argument in the Chinese setting, and the detrimental effect is stronger in SOEs than in non-SOEs. Our results remain robust to PSM analysis.

Our empirical results provide strong support for this theoretical argument and thus make an incremental contribution to the RPT literature in China. Moreover, our results provide empirical evidence on the severity of the detrimental effect of RPTs for SOEs and thus shed light on the need for stricter regulation of SOE bankruptcies. Our study also contributes to the literature that examines the determinants of the cost of debt in emerging markets. Understanding these determinants of the cost of debt is particularly important in China because of the absence of an active bond market. Finally, our study also provides practical implications for corporate boards and senior management teams by highlighting the detrimental effect of opportunistic RPTs on the cost of debt financing.

Our study is subject the following limitations. Potentially, given the nature of RPTs, it would be those RPTs not recognised on the face of financial statements that are of most interest. However, our study could only consider those RPTs recognised and reported by firms. Certainly, it is not possible to observe what is 'hidden' directly. Future research could investigate the degree of compliance with the disclosure or measurement requirements of RPTs in accordance with the relevant accounting standards. Future research might also explore whether the reported results hold for the post-2013 period, which also saw RPT regulation changes. For example, in 2016, China's State Administration of Taxation (SAT) amended the RPT reporting requirements in its Document No. 42, requiring companies to make more detailed RPT disclosures, and this could have implications for the cost of debt.

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