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Abstract Why do private firms grow vibrantly in transition economies despite their limited access to formal financing? This study underscores the importance of informal financing in facilitating the growth of private firms in China. Drawing from the institutional economics argument, we posit that informal financing, in the form of underground financing and trade credit, substitutes formal financing in providing financial assistance and capital to private firms in China. We further posit that the effects of two kinds of informal financing vary across provinces with different levels of institutional development, and complement each other by supporting firms in different industries. We test our arguments with a sample of 284 private firms in 19 cities in China. The results generally support the value-added effects of alternative financing and its coexistence with formal financing. Our study contributes to the literature by highlighting informal financing as a void-filling institution in the capital markets in China.

Keywords Alternative financing · Capital access · Private firms · China

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Entrepreneurship is regarded as an engine that sustains the economic development of a country (Baumol, 2002; Peng, 2001). In transition economies, entrepreneurial growth is largely contributed by the private sector. The growth of the private sector has been a significant aspect in the economic transition of transition economies such as China. During the 11th 5-year plan of the Chinese government, the number of private firms increased from 52,920 in 2005 to 102,354 in 2009, accounting for half of the total number of industrial firms in China. Also, the private sector contributed about 18.7% of China's industrial value in 2009, which increased by 6.5% as compared to the amount in 2005 (National Bureau of Statistics of China, 2011). As such, private firms have been serving as the main driving force of China's economic development and economic growth (Boisot & Meyer, 2008). Throughout the world, countries have adopted all sorts of policies and mechanisms to support the development of the private sector. For example, the United States facilitated the growth of the private sector by a series of tax incentives and a venture capital network that supports the founding and growth of start-ups (Audretsch, 2003).

Compared with developed countries, the institutional environment of transition economies like China is characterized by the presence of institutional voids (Khanna & Palepu, 2000). Paradoxically, given such a large number of private firms, only RMB1,849 billion (i.e., 3.52% of total) loans extended by the state-owned commercial banks went to private firms in 2009 (People's Bank of China, 2010). In the *Survey System of China's Enterprisers* conducted by the State Council in 2009, 78.3% of private enterprise managers expressed that it is difficult to get loans from banks, and only 21.7% regarded it as not too difficult to secure loans from banks (The Survey System of China's Enterprisers, 2009). Moreover, the complex procedurals and high costs of the state bank loans make it difficult for private firms to obtain loans in time, especially when the financial needs of private firms are usually seasonal (Guo & Liu, 2002). Consequently, state bank loans can only satisfy 10% of private firms' total financing needs, and private firms have to rely heavily on other financial channels (close to 90% of total financing) (Allen, Qian, & Qian, 2005). Given the institutional constraints how do private firms in China mitigate the challenge of funding shortage while sustaining their vibrant growth? How firms are financed is one of the most important topics in private firm research (Cassar, 2004); our study aims to explore if there are alternative ways of financing for private firms to sustain their growth in China.

We propose that alternative financing substitutes formal financing to provide financial assistance and capital to private firms in China. Formal financing refers to financing through market institutions that rely on formal contracts enforced through the state legal system (Ayyagari, Demirgüç-Kunt, & Maksimovic, 2010). It mainly includes bank financing and capital market financing. In contrast, informal or alternative financing refers to all other financing channels that are based on reputation and relationships rather than on formal contracts (Allen et al., 2005). In China, raising capital through the stock market is dominated by large enterprises and business groups. These firms have gradually migrated from bank credit to capital market direct financing. Private firms, on the other hand, suffer from the lack of credit history while information opaqueness further limits their opportunities to obtain credits from the banks. They then turn to alternative financing channels such as retained earnings, interpersonal and family lending, internal financing, underground

finance, and trade credit. This study focuses on examining the performance effects of these latter two alternative informal financing means, namely underground finance and trade credit, as they are representatives of informal financing and seldom studied in the literature. *Underground finance* refers to financing through "back-alley banks" such as *dixiaqianzhuang* (underground bank). *Trade credit* refers to mutual credit derived from product transactions such as through accounts payable, accounts receivable, prepayment, and so on. While trade credit is legal, underground finance is quasi-legal[1] in the sense that underground banks are registered by a bureaucracy outside the financial hierarchy in China (Tsai, 2002). However, both underground finance and trade credit rely heavily on informal institutions such as relational ties, trust, and reciprocity.

We highlight that alternative financing in the form of informal transactions and relational contracting not only mitigates the liability of smallness and newness of private firms but also effectively governs private firms by means of repeated transactions and long-term relationships. In addition, alternative financing is advantageous to formal financing because it is not regulated by the government, thus having no interest rate regulation and no liquidity requirements (Montiel, Agenor, & Haque, 1993). Therefore, alternative financing provides private firms accessible financing when formal financing means such as bank loans are not accessible. Our study focuses on three main research questions: (1) What are the effects of underground finance and trade credit on private firm performance in China? (2) Will the value-added effects of these two types of alternative financing vary across provinces with different levels of institutional development? (3) Will the value-added effects of these two types of alternative financing be contingent on different industry types such that firms in different industries face different institutional constraints and have different financing needs? We will test our hypotheses by using a sample of 569 small and medium-sized private firms from 19 cities in China.

By addressing the above research questions, this study aims to contribute to the literature on private firms by highlighting alternative financing as an important source of financing for private firms in transition economies like China. Past studies have examined formal, external financing such as venture capital and informal, internal financing such as family funds, and have mostly focused on developed markets (e.g., Cassar, 2004; Thorne, 1989; Van Auken & Holman, 1995). This study explores the role of underground finance and trade credit as alternative financing in transition

[1] The official definition of informal financing indicates that lending relationships can exist between individuals, between individuals and legal persons, and between individuals and other types of organizations stipulated in the Contract Law in China. Therefore, it is legal to borrow money from individuals to individuals or from organizations and companies to individuals. Having said that, it is illegal to borrow from companies to companies, that is, from non-bank institutions that do not have finance licenses granted by the government. China Banking Regulatory Commission (CBRC hereafter) is pushing the drafting of Informal Finance Provisions with other governmental divisions. Non-banking institutions in rural areas with certifications are allowed to provide loans to companies so far, while the lending practice is still illegal for enterprises to borrow from other non-certified and non-bank institutions. The informal lending from non-bank institutions to SMEs is used to be acquiesced as long as the lending interest rate is in the legal range which is lower than four times the official interest rate by local government for its convenience albeit illegal. The current chaos caused by usury is pushing the Chinese government to regulate the informal finance institutions to shun the speculative risk embedded.

economies. Besides, the institutional economics perspective has been a dominant theory in the studies of emerging and transition economies (Hoskisson, Eden, Lau, & Wright, 2000). Researchers have been advocating the focus on informal institutions when formal institutions are weak (North, 1990; Su & He, 2010). The informal institutions that have been studied are about *guanxi* or personal relationships (Xin & Pearce, 1996), ties with government officials (Peng & Luo, 2000; Wang, Jiang, Yuan, & Yi, 2011), and relational norms and trust (Dyer & Singh, 1998; Kwon, 2011; Poppo & Zenger, 2002). However, alternative financing as an informal, void-filling institution in capital markets has not been studied. This study aims to fill this gap. Moreover, China can be an important counter-example to the past literature's focus on formal systems as the fast growing Chinese private firms shown in this study rely on alternative financing rather than formal external financing. The findings of this study can also provide insightful implications to managers of private firms and policy makers in China.

Theoretical background

How firms are financed is one of the fundamental questions raised in the private firm literature because financial capital serves as one of the necessary resources for firms to operate and capital decisions have important implications for firm performance and the risks of failure (Cassar, 2004). The financing options of a firm can be generally classified into two types: internal and external. Internal financing refers to the use of retained earnings or insider finance (Berger & Udell, 1998). External sources of finance commonly include financing from stock markets, financial institutions, and venture capital firms.

It has been argued that the financing alternatives available to a firm vary throughout the life cycle of the firm's business (Timmons, 1993). Unlike large public corporations, private firms suffer from limited access to external equity markets due to their relatively small scale and opaque information (Cassar, 2004). At the same time, private firms also suffer from their inability to finance growth from internal sources of capital as well as due to high start-up costs and the reliance on debt rather than equity financing (Carter & Van Auken, 1990; Van Auken & Holman, 1995). Therefore, private firms may rely primarily on bank financing, personal equity (Berger & Udell, 1998; Van Auken & Holman, 1995), and venture capital (Lu, Tan, & Huang, 2012; Tyebjee & Bruno, 1984). A survey of over 30 countries found that private start-ups rely heavily on informal investors of which 42% come from family members (Bygrave, 2005). Thorne (1989) proposed some alternative financing means for private entrepreneurial ventures including borrowing from suppliers and service providers, early payments by customers, developing relationships with institutions and universities, and so on. In sum, private firms may rely on informal and relational financing strategies that enable them to manage their inaccessibility to formal capital markets (Carter & Van Auken, 1990).

In addition to firm characteristics, a firm's financing options also depend heavily on the country's institutional environment. Institutional theory highlights that the institutional environment in which a firm is embedded constrains the choices available (Peng, 2002; Peng, Sun, Pinkham, & Chen, 2009). It is well established that

access to external formal financing is shaped by a country's legal and financial environment (La Porta, Lopez-De-Silanes, & Shleifer, 1997; La Porta, Lopez-De-Silanes, Shleifer, & Vishny, 1998; Rajan & Zingales, 1998). Demirgüç-Kunt and Maksimovic (1999) highlighted that differences in financing patterns are mostly due to differences in the development of stock markets and the underlying legal infrastructure. This is echoed by Fan, Titman, and Twite (2003) who found that institutional differences between countries, as compared to other factors such as industry affiliation, are much more important in determining a firm's capital structure choices.

In transition economies, the development of external and venture capital markets are at a nascent stage. One of the significant formal sources of external financing is bank loans. However, the absence of property rights, legal enforcement, and market transparency constrains banks to effectively emulate lending policies as applicable in developed markets. Thus, banks in emerging markets have to adjust their lending policies (O'Connor, 2000), and it has been found that access to formal bank financing depends heavily on network ties (Le & Nguyen, 2009). At the same time, informal and unofficial bank financing emerges to fill the institutional voids of capital markets in such a context, thus providing a niche to serve private firms. However, the role of underground finance has not been examined. Also, as suggested by Thorne (1989), alternative financing strategies include developing relationships with suppliers and customers. The use of trade credit by private firms in transition economies, an institutional context that relies heavily on relationships (Peng & Luo, 2000), has also not been studied. Our study aims to extend the literature by examining if alternative financing provided by underground finance and trade credit adds value to private firm performance in transition economies.

Hypotheses

In this study, we focus on examining the effects of alternative financing on the performance of private firms in transition economies. In particular, we focus on private firms that are small and medium-sized (with firm size under 1,000 employees). For alternative financing, we focus on both financing from non-bank underground financial institutions and trade credit. Figure 1 summarizes the theoretical framework.

Underground finance and trade credit on private firm performance

The institutional economics perspective posits that informal institutions come into place when formal institutions are weak (North, 1990). In transition economies such as China, markets for venture capital are underdeveloped and lacking formal institutions that venture capitalists expect (Ahlstrom & Bruton, 2006). Moreover, the banking sector in transition economies is still under state control. Private start-ups and SMEs are difficult to finance through formal market channels. In the absence of formal institutions, researchers have advocated the emergence and significance of informal institutions (e.g., Estrin & Prevezer, 2011; Peng, 2002; Peng & Heath, 1996; Roth & Kostova, 2003). Past studies have found that informal institutions such as

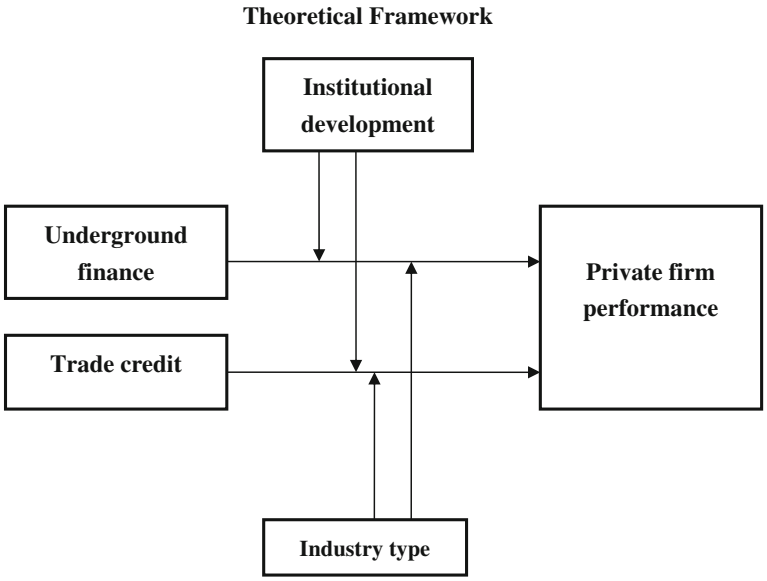

Figure 1 Theoretical framework

guanxi or personal relationships, personal ties with government officials, and relational norms and trust substitute formal contracts and add value to firm performance (Dyer & Singh, 1998; Peng & Luo, 2000; Poppo & Zenger, 2002; Wang et al., 2011; Xin & Pearce, 1996). In a similar vein, we argue that alternative financing in the form of relational contracting that is founded on informal institutions not only mitigates the liability of smallness and newness of private firms in transition economies but also effectively governs them by means of repeated transactions and long-term relationships (Allen et al., 2005).

Underground finance and trade credit add value to private firms in transition economies. First, from the view of relational contracting, underground finance often takes the form of repeated and ongoing relations. Private firms do not have credit history. However, they can develop their trustworthiness through repeated and long-term transactions with non-bank financial institutions that are local, small credit rotation associations. Any misdeeds will ruin firm reputation in the local area. Alternatively, private firms can obtain trade credit from their suppliers who know that they have an incentive to repay in order to maintain their relationships with the suppliers. The suppliers are willing to offer trade credit because they have advantages over banks in selecting, monitoring, and enforcing credit contracts (McMillan & Woodruff, 1999). Therefore, these types of alternative financing in the form of relational contracting provide an alternative financing means to private firms in transition economies that do not yet have a formal legal system to fall back on. Second, alternative financing is indeed advantageous to formal financing for private firms since it is not regulated by the government, thus having no interest rate regulation and no liquidity requirements (Montiel et al., 1993). Viewed in this way, alternative financing can add value to private firm performance. In addition, financial capital by itself is not a productive resource (Florin, Lubatkin, & Schulze, 2003).

However, with its relational nature, alternative financing not only provides private firms with financial capital but also relational capital that provides private firms with information exchange and access to other resources. Taken together, we hypothesize that:

Hypothesis 1 Alternative financing in the form of underground finance and trade credit is positively related to private firm performance.

Contingent effects: Provincial institutional development

The institutional economics perspective supports a close relationship between access to external financing and the institutional environment of a country (La Porta et al., 1997, 1998; Rajan & Zingales, 1998). A weak legal system results in weak financial systems, and firms suffer from high costs of financing. This is when alternative financing plays a key role that substitutes formal financing. For example, Allen et al. (2005) posited that in China where legal institutions are underdeveloped, formal financing through the large but inefficient banking system plays only a limited role in the development of the private sector. They further highlighted that China's fast growth of the private sector is significantly contributed by the alternative financing channels based on alternative institutions such as relationships and reputation, which are good substitutes for formal institutions and financing channels. Therefore, the effect of alternative financing is highly correlated with the levels of institutional development. Past studies found that the value creation of institutional substitutes such as business groups would be diminishing when the institutional development of the country advances (Khanna & Palepu, 2000). Given its substitutive role, we expect the effects of alternative financing to be contingent upon the levels of institutional development in a region.

Take China as an example. Although China is undergoing economic transition from a planned economy to a market-based economy, its administrative decentralization policy has resulted in variation in the institutional development across different local provinces (Qian & Weingast, 1995). For instance, the Chinese government gives more support to marketization in some provinces but other provinces are still restrictive in terms of bringing in market-based institutions. Fan, Wang, and Zhu (2007) formulated an index of the institutional development of provinces in China and found that Chinese provinces and cities vary in the degree of governmental support, non-state economic development, credit distribution marketization, and financial market competition intensity. As such, we further investigate if the effects of alternative financing vary across different provinces in China. In particular, we predict that the role of alternative financing is much more important in provinces that are less developed while it is less costly for firms to finance through formal financial channels in provinces which provide supporting market institutions for formal financing.

Hypothesis 2 The levels of institutional development moderate the relationship between alternative financing and private firm performance such that private firms with alternative financing have higher firm performance in the less developed provinces than those in the more developed provinces.

Contingent effects: Industry type

In addition to differences in institutional development across provinces in China, we also posit that differences in financing channels exist between manufacturing firms and trading companies, due to the different institutional constraints they are facing in China.

First, the weak legal protection of creditors' rights in China (Allen et al., 2005; Estrin & Prevezer, 2010) has resulted in many loan disputes between lenders and borrowers in the formal bank system. This makes lenders quite cautious especially when borrowers need longer-term and larger-amount capital, as is the case of manufacturing firms, when compared to trading firms that usually have frequent, small-amount and short-term capital needs. However, underground banking fills this institutional gap by providing high-interest loans to private manufacturing firms. Relative to formal banking, underground banks can easily gather more information about local borrowers through their established local networks. Thus, they have stronger monitoring abilities to ensure the repayment of loans by the private manufacturing firms and are more likely to make large and long-term loans to private manufacturing firms (Guo & Liu, 2002).

Second, in China where formal institutions are weak and ineffective, informal institutions like trust, *guanxi*, or social networks are quite important for firms (Peng & Luo, 2000; Wang et al., 2011). In such an institutional context where uncertainty is quite high for creditors, experience-based trust can be developed based on previous successful transactions, and once established, it facilitates reciprocal and enduring relations among trusted partners (Glückler & Armbrüster, 2003). These unique institutional features give rise to opportunities for trade credit to fit the needs of borrowers with frequent transactions but in smaller amounts, as in the case of trading firms that have fewer tangible assets and higher sales-to-asset ratios (Demirgüç-Kunt & Maksimovic, 1999), making it difficult to get loans from the formal banking system (Firth, Chen, Liu, & Wong, 2009). Thus, trade credit can help trading firms gain financing at lower costs, but it also helps to facilitate trust and network building between trading firms and their partners. Based on the above arguments, we further argue that trade credit suits the financing needs of trading companies, while underground finance should be adopted more by manufacturing firms in the unique institutional environment of China.

Hypothesis 3 Manufacturing firms are more likely to use underground finance, while trading firms are more likely to use trade credit.

Methodology

Data and sample

We chose China as the empirical context because it is the largest transition economy and its findings would have important implications to other countries undergoing economic transition. According to the State Administration for Industry and Commerce of China, the population of the private firms is 4.98 million as of 2006. Among all the

private firms, 3.3 million are located in urban areas. Our survey thus sampled urban private firms in 19 cities including Beijing, Shanghai, Tianjin, Anshan, Dalian, Jinan, Qingdao, Hangzhou, Ningbao, Nanjing, Wenzhou, Guangzhou, Shenzhen, Foshan, Zhuhai, Chengdu, Chongqing, Kunming, and Haikou in eastern China because eastern China is the most booming private economical area.

We collected data from a random-sample survey conducted by the provincial branches of three listed shareholding banks in China in 2007. The banks sent out 1,650 questionnaires in the first week of July in 2007. The questionnaires were emailed to private firms requiring general managers and CFOs to fill the questionnaires. After filling the questionnaires, the firms mailed the questionnaires back to the branch office officers who then mailed them back to the bank headquarters. As of the end of 2007, 569 survey responses were received. The private firms surveyed are either clients of the banks receiving services such as deposits and credits or those intending to be the banks' clients.[2] Ayyagari et al. (2010) adopted the same sampling method. The advantage of such a sampling approach allows us to examine alternative financing in addition to formal banking credit. In addition, it can ensure a relatively higher reliability of the sample data in terms of financial data and other subjective questions responses as the surveyed firms are existing or potential clients of the banks and so they are likely to supply reliable information and data to the banks.

Private firms are those firms that are neither listed nor state-owned. The National Bureau of Statistics of China defines enterprise scale according to employee number. The sample firms are medium-sized firms under 1,000 employees. The financial data of the survey was from the end of 2004 to the end of 2006. We received a total of 569 returned questionnaires with a response rate of 34.5%; 284 out of 569 questionnaires were usable and used in the analysis. The final sample covers 19 cities mentioned above. Besides, in terms of industry classification, the sample firms are evenly distributed between the manufacturing sector and the trading industry. We refined the industry classification by using the 18 industrial classifications used by the National Bureau of Statistics of China[3] and the results remained the same. So, we used the binary industry classification as it is close to the reality that manufacturing and trading firms are very different in their financing needs and structures including duration, quantity and collateral type. Table 1 provides the age distribution of the sample firms. As shown, the sample firms' ages vary mostly between 5 to 10 years, which are at the mature stage of the firms.

Measures

Dependent variable

Firm performance We measured firm performance by two indicators—accounting-based performance indicator as measured by return on assets (*ROA*) and net income reinvestment rate (*NI reinvestment rate*). ROA is calculated as net income divided by total assets, which is a conventional performance measure. Net income reinvestment

[2] To test selection bias, we ran Heckman two-step analyses and the results showed that selection bias is not significant in our sample.

[3] Refer to http://www.stats.gov.cn/tjbz/

Table 1 Sample age distribution.

Age	Number of private firms	Percentage
Over 10 years	113	19.9%
Below 10 years	202	35.6%
Below 5 years	165	29.1%
Below 3 years	75	13.2%
No more than 1 year	12	2.1%
Total	567	100.0%

rate is calculated as the percentage of firm net income used in financing the coming year projects. The firm's reinvestment rate shows whether the firm's owners/managers are committing the firm's resources to finance growth, which is used as performance measure also in the literature (Ayyagari et al., 2010; Cull & Xu, 2005).

Independent variables

Underground finance Underground finance is measured by a dummy variable with a value of "1" indicating that the firm finances through "back-alley banks" and a value of "0" otherwise.

Trade credit Trade credit is measured by a dummy variable with a value of "1" indicating that the firm obtains mutual credit derived from product transactions such as through account payables, account receivables and prepayment, and a value of "0" otherwise.

Moderators

Levels of institutional development We use market indices developed by Fan et al. (2007) to measure institutional heterogeneity across regions in China. Among the indices, there are: (1) government index measuring the degree of governmental support of provincial marketization, (2) private index measuring the non-state economic development, (3) credit index measuring the credit distribution marketization, and (4) competition index measuring provincial financial market competition intensity.

Industry type Industry type is measured by a dummy variable with "1" indicating the firm belongs to the manufacturing industry and "0" indicating the firm belongs to the trading industry.

Control variables[4]

Leverage A firm's leverage is directly associated with its financing needs. Thus, we control for a firm's leverage that is calculated as the ratio of long term debt and total asset as of 2006.

[4] Our model has already controlled for major factors that may affect firm's financing need and firm performance such as firm size, firm leverage, firm age, and industry fixed effect along with operating cash flow which are also the best available controls we have from survey data.

Firm size Firm size is measured by taking the natural logarithm of total asset as of 2006.

Firm age Firm age is measured by the number of years since the founding year of the firm as of 2006.

Operating cash flow Operating cash flow is measured by the operating cash flow scaled by the sales of the year.

Analysis

OLS regressions are used to test our hypotheses. By including bank loan in the equation, we can also test if alternative financing coexists with formal finance. The basic model is as follows:

$$Performance = \beta_0 + \beta_1 * AF + \beta_2 * BL + \beta_3 * AF * MI + \beta_4 * (control) + \varepsilon$$

where

Alternative financing (AF)	= 1 with alternative financing (underground finance and trade credit), 0 unless
Bank loan (BL)	= 1 with bank loan, 0 unless
MI	= Provincial marketization index
Leverage (control)	= Ratio of long term debt and total asset
Size (control)	= Natural logarithm of total asset
Age (control)	= Number of years since founding
Industry (control)	= 1 if manufacturing industry, 0 otherwise
Operating cash flow (control)	= Operating cash flow scaled by sales of the year

Results

Descriptive statistics and correlations among the variables used in the empirical model are presented in Table 2.

Effects of underground finance and trade credit on firm performance

Hypothesis 1 predicts that underground finance and trade credit are positively related to firm performance. Given that we use two performance indicators, ROA and net income reinvestment rate, we conducted regression analyses on the two performance indicators separately and the results are presented in Table 3. Models 1–3 present results on ROA and Models 4–6 present results on reinvestment rate. In regard to the effects on ROA, Model 1 shows that underground finance is significantly positively related to private firm performance ($p < .05$). Model 2 shows that trade credit is also significantly positively related to private firm performance ($p < .10$). Model 3 shows the effects of both underground finance and trade credit on ROA of private firms and the results remained the same. The results show that both alternative financing and trade credit have positive effects on a firm's ROA, with underground finance improves ROA by 6% and trade credit by 2%.

Table 2 Descriptive statistics and correlations.

Variables	Obs	Mean	SD	ROA	Net reinvestment rate	Underground finance	Trade credit	Leverage	Size	Age	Industry
ROA	441	.11	.13								
NI reinvestment rate	441	41.30	44.50	.1408**							
Underground finance	441	.12	.33	.1056*	.1042*						
Trade credit	441	.58	.49	.0677	.167***	.1456**					
Leverage	319	.05	.15	−.0396	−.0593	.0598	−.0049				
Size	438	9.11	1.45	−.3049***	−.102*	−.1334	−.0091	.0795			
Age	438	6.81	3.40	−.1555***	−.0509	−.0513	.031	.0258	.3106***		
Industry	427	.52	.50	.0354	.046	.0589	−.0047	.0775	.0991**	.1581***	
Bank loan	406	.82	.39	−.0704	.0205	−.2075***	−.046	−.0771	.2546***	.1653***	.1234**

***$p < .01$, **$p < .05$,*$p < .10$.

Table 3 Effects of underground finance and trade credit on private firms' ROA and net income reinvestment rate.

Variables	Model 1 ROA	Model 2 ROA	Model 3 ROA	Model 4 NI reinvestment rate	Model 5 NI reinvestment rate	Model 6 NI reinvestment rate
Underground finance	.06** (2.46)		.06** (2.32)	22.04** (2.44)		20.13** (2.21)
Trade credit		.02* (2.36)	.01* (2.02)		11.86*** (3.46)	9.6** (3.09)
Leverage	−.03 (−0.47)	−.02 (−.25)	−.03 (−0.44)	−22.51 (−.99)	−17.2 (−.75)	−21.26 (−.94)
Size	−.02*** (−3.07)	−.03*** (−3.21)	−.02*** (−2.99)	−4.90* (−1.71)	−5.20* (−1.80)	−4.56 (−1.59)
Age	−.01*** (−2.66)	−.01*** (−2.72)	−.01*** (−2.68)	−.98 (−.96)	−1.08 (−1.06)	−1.01 (−1.01)
Industry	.04* (1.96)	.04** (2.38)	.04* (1.97)	−2.05 (−.32)	.57 (.09)	−1.89 (−.29)
Operating cash flow	0 (−.12)	−.01 (−.28)	−.01 (−0.17)	8.21 (.76)	5.98 (.55)	7.12 (0.66)
Bank loan	.04* (1.79)	.03 (1.36)	.05* (1.88)	−5.69 (−.65)	−8.27 (−.95)	−3.64 (−.41)
MI	0 (−.16)	0 (−.45)	0 (−.14)	2.55 (.82)	1.74 (.56)	2.66 (.86)
R-squared	.175	.154	.177	.098	.084	.107
N	284	284	284	284	284	284

The dependent variables of regressions (1) to (3) are ROA, that is the ROA at the end of 2006. The dependent variable of regressions (4) to (6) is the average reinvestment rate from 2003 to 2006. *t*-statistics in parentheses; ***$p < .01$, **$p < .05$, *$p < .10$.

In regard to net income reinvestment rate as the performance indicator, Model 4 in Table 3 illustrates that underground finance is significantly positively related to private firm performance ($p < .05$). Model 5 indicates that trade credit is also significantly positively related to private firm performance ($p < .01$). When both underground finance and trade credit are inserted together in Model 6, the results remain positive and significant. Taking the results on ROA and reinvestment rate together, we conclude that Hypothesis 1 is supported.

Contingent effects: Provincial institutional development

Hypothesis 2 predicts that the levels of institutional development moderate the positive relationship between alternative financing and private firm performance. To test this relationship, we interacted the two types of alternative financing, underground finance and trade credit, with four indices of provincial marketization developed by Fan et al. (2007). The results of underground finance trade credit are presented in Table 4. As shown in Table 4(A), underground finance is more important in less governmental supportive provinces (the interaction term is negative and significant at .05 level in Model 1), in less non-state economic development provinces (the interaction term is negative and significant at .05 level in Model 2), in less credit marketization provinces (the interaction term is negative and significant at .05 level in Model 3), though may not be so in less financing competitive provinces (the interaction term is positive but not significant in Model 4). As for the interaction effects between trade credit and levels of institutional development, the results in Models 1 to 4 of Table 4(B) show that all the interaction terms are not significant. In sum, the results here provide mixed support to Hypothesis 2.

Contingent effects: Industry type

Hypothesis 3 predicts that underground finance and trade credit are complementary with each other, such that manufacturing firms are more likely to use underground finance while trade credits are more likely to be used by trading firms. We test this hypothesis by sub-dividing the sample into two sets, one contains only manufacturing firms and the other only contains trading firms. We perform separate regressions and the results are presented in Table 5. Results of manufacturing firms are summarized in Models 1–3 while those of trading firms are presented in Models 4–6. As shown in Table 5, underground finance is found to be positively and significantly related to ROA in the manufacturing industry ($p < .05$), while its effects are not significant in the trading industry. In contrast, trade credit is positively related to ROA in the trading industry ($p < .01$) but it is not statistically significant in the sub-sample of manufacturing firms. Thus, Hypothesis 3 is strongly supported.

Robustness tests

We performed robustness tests using two substitutes of underground finance and trade credit, and the results are presented in Table 6. Regression (1) used the ratio of underground finance to total debt as the main variable of interest and Regression (2) used the number of trade finance partners of a firm as the main variable of interest.

Table 4 Moderating effects of levels of institutional development.

Variables	Model 1 ROA	Model 2 ROA	Model 3 ROA	Model 4 ROA
(A)				
Underground finance	.44** (2.12)	.25** (2.41)	.26** (2.35)	−.12 (−1.08)
Leverage	−.02 (−.37)	−.02 (−.32)	−.02 (−0.27)	0 (−.06)
Size	−.02*** (−3.22)	−.02*** (−3.92)	−.02*** (−3.70)	−.02*** (−3.97)
Age	−.01*** (−2.95)	−.01*** (−2.80)	−.01*** (−2.75)	−.01*** (−2.86)
Industry	.02* (1.80)	.02 (1.50)	.02 (1.41)	.03** (2.04)
Operating cash flow	−0.01 (−.38)	−.01 (−.34)	−.01 (−.47)	−.01 (−.45)
Bank loan	.02 (1.27)	.02 (1.44)	.02 (1.32)	.03 (1.53)
Government	.01 (1.58)			
Underground finance×Government	−.04** (−1.98)			
Private		.01* (1.91)		
Underground finance×Private		−.02** (−2.11)		
Credit			0 (1.31)	
Underground finance×Credit			−.02** (−2.09)	
Fcompetition				0 (−.69)
Underground finance×Fcompetition				.02 (1.36)
R-squared	.21	.214	.212	.199
N	284	284	284	284
(B)				
Trade credit	.22 (1.35)	.15 (1.26)	.09 (1.40)	−.04 (−.38)
Leverage	−0.01 (−0.12)	−.01 (−0.12)	−.01 (−0.10)	0 (−0.08)
Size	−0.02*** (−3.45)	−.02*** (−3.78)	−.02*** (−3.74)	−.02*** (−3.95)
Age	−0.01*** (−3.09)	−.01*** (−3.10)	−.01*** (−3.10)	−.01*** (−2.89)
Industry	.03** (2.06)	.02* (1.74)	.02* (1.84)	.03** (2.20)
Operating cash flow	−.01 (−0.52)	−.01 (−0.46)	−.01 (−.54)	−.01 (−.36)
Bank loan	.02 (1.36)	.02 (1.38)	.02 (1.37)	.02 (1.33)
Government	.02 (1.40)			
Trade credit×Government	−.02 (−1.24)			
Private		.01 (1.33)		
Trade credit×Private		−.01 (−1.09)		
Credit			.01 (1.29)	
Trade credit×Credit			−.01 (−1.14)	
Fcompetition				−.01 (−.56)
Trade credit×Fcompetition				.01 (.57)
R-squared	.195	.194	.194	.188
N	284	284	284	284

The following indices are from Fan et al. (2007): *Government* Index measuring the degree of governmental support of provincial marketization; *Private* Non-state economic development index; *Credit* Credit distribution marketization index; *Fcompetition* Index measuring provincial financial market competition intensity. *t*-statistics in parentheses; ***$p < .01$, **$p < .05$, *$p < .10$.

Table 5 OLS regressions by industry type.

Variables	Model 1 ROA	Model 2 ROA	Model 3 ROA	Model 4 ROA	Model 5 ROA	Model 6 ROA
	Manufacturing Industry			Trading Industry		
Underground finance	.05** (2.06)		.05** (2.00)	.01 (.44)		0 (.05)
Trade credit		.01 (.44)	0 (.05)		.05*** (2.82)	.05*** (2.76)
Leverage	−.01 (−.08)	.03 (−.34)	−.01 (−.08)	−.05 (−.55)	−.03 (−.35)	−.03 (−.35)
Size	−.03*** (−3.35)	−.03*** (−3.82)	−.03*** (−3.33)	−.01 (−1.28)	−.01 (−1.04)	−.01 (−1.03)
Age	−.00* (−1.86)	−.01** (−2.28)	−.00* (−1.85)	−.01*** (−2.80)	−.01*** (−2.73)	−.01*** (−2.69)
Operating cash flow	−.02 (−.68)	−.03 (−.75)	−.02 (−.67)	.01 (.16)	0 (−.03)	0 (−.03)
Bank loan	.03 (1.27)	.01 (.59)	.03 (1.26)	.01 (0.35)	.02 (.81)	.02 (.80)
MI	.01 (.88)	.01 (.71)	.01 (.88)	0 (.14)	0 (−.13)	0 (−.12)
R-squared	.238	.209	.238	.163	.233	.233
N	153	153	153	143	143	143

t-statistics in parentheses; ***$p < .01$, **$p < .05$, *$p < .10$.

Table 6 Robustness tests- the effects of the substitute measures of underground finance and trade credit on private firms' ROA.

Variables	Model 1	Model 2
Substitute	.153* (2.36)	.117* (2.16)
Leverage	−.04 (−.48)	−.03 (−.35)
Size	−.01 (−1.35)	−.01 (−1.37)
Age	−.01** (−2.33)	−.01** (−2.30)
Industry	.014 (1.46)	.02* (1.96)
Operating cash flow	.01 (.26)	.01 (.18)
Bank loan	.01 (.47)	.01 (.41)
MI	0 (0.02)	0 (−.17)
R-squared	0.152	.152
N	284	284

The dependent variable of regression (1) and (2) are both ROA of 2005. Substitute of (1) is the informal finance percentage as of total debt and substitute of (2) is the number of trade finance partners of a firm. ***$p < .01$, **$p < .05$, *$p < .10$.

We regressed these two variables on ROA. As illustrated in Table 6, the results of (1) and (2) are similar to the base results in Table 3. Both the substitute measures of underground finance and trade credit are found to be positively related to firm performance. The robustness test of the positive effect of underground finance and trade credit on net income reinvestment rate is carried out by excluding state-owned enterprises, listed firms and joint venture firms because these firms are fundamentally different from private firms in financing methods. The results remain robust.[5]

The private firms surveyed are either clients of the banks receiving services such as deposits and credits or those intend to be the banks' clients. There may be a concern that these private firms may not be representative enough because they are likely firms that have a higher chance to obtain loans and those firms that rely more on informal financing are less likely to apply for bank loan. In other words, there may be selection bias issue in our sample.

To cope with the selection issue empirically, we conducted the Heckman test (Heckman, 1976). The first stage selection model includes variables related to if the firm has bank loan. The results show that the selection of bank loan does not affect the promoting role of underground finance and trade credit on the firm's performance with both the inverse mills ratios not significant in the two models (see Table 7).

In addition, there are no formal channels to get access to reliable information of private firms that only rely on informal financing. The only way we can get the reliable data of those firms only relying on informal channels is through survey. The survey through channels other than banks would produce incredible responses. To pass the credit check of banks, private firms do not want to risk cheating. Small banks such as shareholding banks are the main banks that offer loans to private firms, so we conduct the survey through shareholding banks. We believe that our results are

[5] There are 39 state-owned, listed, and joint venture firms in total which consist of 6.84% of the whole sample.

Table 7 Heckman tests- the effects of the bank credit selection on private firms' ROA.

Variables	Model 1		Model 2	
	2nd stage ROA	Select model Bank loan	2nd stage ROA	Select model Bank loan
Underground finance	.05*** (2.70)			
Trade credit			.02** (2.05)	
Leverage	−.06 (−.51)	−1.47* (−1.68)	−.01 (−0.09)	−1.47* (−1.68)
Size	−.02 (−.73)	.29*** (3.64)	−.02 (−1.14)	.29*** (3.64)
Age	−.00* (−1.79)	.02 (.59)	−.00** (−2.09)	.02 (.59)
Industry	.03 (1.15)	.33* (1.76)	.02 (.94)	.33* (1.76)
Underground finance afterwards		−.32* (−1.72)		−0.54* (−1.96)
MI	0 (.02)		0 (−0.13)	
Lambda		.02 (0.14)		.04 (.22)
N	284	284	284	284

Z-statistics in parentheses; ***$p < .01$, **$p < .05$, *$p < .1$.

conducive to the understanding of alternative financing roles on the performance of private firms controlling for access to bank loan.

In our tests, the main variables of underground dummy and trade credit dummy can be endogenously determined. To cope with the issue, we conduct 2SLS tests on the endogeneity of the underground finance dummy. We choose the variable *underground finance afterwards* (i.e., whether the firm will borrow from underground channels in the future, which takes 1 if the firm would borrow from underground finance in the future, otherwise equals to 0) as the instrumental variable in that this variable is highly correlated with the underground finance dummy while not correlated with the ROA of the year. The result, as shown in Table 8, indicates that underground finance does explain the performance of the private firm. As for trade credit dummy, we cannot find the appropriate instrument, so we skip the test.

Discussion and conclusion

In this study, we empirically tested the relationship between alternative financing given by underground finance and trade credit and the performance of private firms as measured by ROA and net income reinvestment rate. The results show that underground finance and trade credit have positive effects on private firms' performance, indicating that they are useful informal financing channels for private firms in China and transition economies in general. Our results also have strong robustness, as shown by using other measures such as the ratio of alternative financing to total debt and the number of trade finance partners, as well as excluding state-owned, listed firms, and joint venture firms as the sub-sample.

Table 8 2SLS tests on the endogenous variable of underground finance dummy.

Variables	1st stage Underground finance	2nd stage ROA	2nd stage NI reinvestment rate
Underground finance (projected value)		.08* (1.75)	73.64*** (3.17)
Trade credit	1.53*** (2.61)		
Leverage	2.05 (0.97)	−.03 (−0.42)	−100.74*** (−2.86)
Size	−.49** (−2.35)	−.03*** (−3.73)	−1.74 (−.48)
Age	.01 (.08)	−.00* (−1.82)	.11 (.10)
Industry	.87* (1.86)	.01 (0.46)	−6.41 (−.82)
Bank loan	−.67 (−1.40)	.04** (2.27)	11.97 (1.32)
MI	−.19 (−.93)	−.01 (−0.97)	1.28 (.39)
Underground finance afterwards	1.32*** (2.98)		
N	166	166	166
R-squared		.22	.13

Underground finance (projected value) is the projected value of underground finance used in 2SLS regression. *Z*-statistics in parentheses; ***$p < .01$, **$p < .05$, *$p < .1$.

More interestingly, we included bank loans as a control variable in our analyses. In this way, we can compare the effects of both formal bank financing and informal alternative financing. Our results show that bank loans do not a have significant effect on firm performance, whether it is measured by ROA or net income reinvestment rate of private firms, while both the effects of underground finance and trade credit on firm performance are found to be positive and significant. This strongly supports the substitutive roles of underground finance and trade credit for private firms in transition economies. The reason may be that alternative financing is better than formal bank financing in terms of flexibility and timing of supplying cash needed in a short period of time. However, the financing scale given by formal financing may not be so relevant for private firms. Our results here point exactly to the necessity of alternative financing channels to private firms in transition economies. More importantly, alternative financing helps to increase the credit allocation efficiency of credit markets in transition economies (Lin & Sun, 2005).

Our findings also highlight that the value creation of alternative financing varies across provinces with different levels of institutional development in terms of the degree of marketization. This echoes previous studies on the path dependence between informal institutions such as business groups and market development (Khanna & Palepu, 2000). It also supports the substitutability of formal and informal institutions (Poppo & Zenger, 2002). The results on the four institutional development indices also show that underground finance is more important in provinces with less governmental support, less non-state economic development, and less credit marketization. However, the result is not significant in more financing competitive provinces. This may imply that underground finance is useful for private firms regardless of the intensity of competition for formal financing. In addition, the interaction effects between trade credit and levels of institutional development are

not significant. This may be because underground finance is more sensitive to the institutional environment as it is an illegal finance channel while trade credit is formal and may be less affected by institutional development.

Our findings further illustrate that there are industry preferences in the use of underground finance and trade credit. A possible explanation of the results is that, first, manufacturing firms normally need more capital expenditure than trading companies, whereas the large amounts of capital needs can easily be met by underground financing but not by suppliers or customers, who either have limited slack funds or lack trust in the borrowers due to the weak institutional protection of creditors in China. Second, trading companies normally have more frequent transactions and trading partners than manufacturing firms. This provides more opportunities to use trade credit as the channel to establish trust and social networks with their suppliers and customers.

Our study takes a first step to examine alternative financing means for private firms in the context of China. Given that private firms are regarded as the main growth engines in many Asian countries, more research efforts are called for to further enrich our understanding of the private sector. Here are some avenues for future research. First, our study focuses on two specific types of alternative financing—underground finance and trade credit. Future studies may examine other types of alternative financing such as retained earnings, interpersonal and family lending, internal capital market, and so forth, and see if the use of these informal financing channels varies across institutional environments in different Asian countries. Besides, researchers may explore if private firms prefer one type of informal financing over another. In this regard, future studies may analyze how the pecking order theory can be applied to private firms in transition economies. Second, future research may examine the link between the value of informal financing and institutional development. The empirical background of our study is from when the macro economy of China was at a rapid expansion stage. As indicated by the recent Wenzhou private entrepreneurial incidents[6] in which owners of some private firms were escaping due to the insolvency arising from informal financing and usury, these incidents indicate that informal financing may backfire when market liquidity is tight. Therefore, future studies may also explore the boundary conditions for the effects of alternative financing on private firms in transition economies. Finally, as the formal financing sectors of Asian economies continue to grow and be regulated over time, it will be interesting to explore the interactions between formal and informal financing. In a study of private firms' financing in Vietnam, Le, Venkatesh, and Nguyen (2006) found that networking plays an important role in facilitating private firms' accessibility to formal bank financing, particularly during the growth stage of the private firms. Our study also suggests that bank financing may be substituted by informal financing in China. To complete the picture, future studies may take a more complementary approach to examine the choice of formal and informal financing for private firms across different life stages of the firms.

Our study also provides important implications to policy makers in transition economies. The policy implication is that governments in transition economies should provide more support to alternative financing channels to private firms. Careful steps are needed to regulate alternative financing sources to promote the

[6] http://house.people.com.cn/GB/16944017.html

positive facet and to avoid the destabilizing role of alternative financing. Governments may also set up multi-faceted funding resources for private firms beyond experimental micro-credit institutions[7] to better meet their financing needs. While it is a long process for the development of capital markets to be mature, venture capital and private equity have been developing rapidly in transition economies such as China in the past several years. However, these developments mostly concentrate on high-tech or mature pre-IPO firms while financial support for private firms is negligible. Bank-led financing markets still play a major financing role for state-owned enterprises in these economies. In the long run, private firms may seek bank credit in the first place while alternative financing may only supplement immediate cash needs. Governments in transition economies should create a multi-faceted financing system for private firms such as accelerating private firms' access to capital markets, encouraging private sector credit in small banks, prudently regulating alternative financing channels, and setting up SME credit guarantee systems to support private firms' long-term development. Having said that, alternative financing also has downsides such as delayed payments and defaults that are not supported by current legal systems. A series of carefully designed alternative financing mechanisms by governments would help further growth and development of the private sector in transition economies.

To conclude, our study contributes to the private firm literature in several ways. First, our study adds to the received knowledge about the difficulty of private firms to access financial resources in transition economies by highlighting that alternative financing is in place and functions as a useful substitutive financing channel for private firms when formal financing is not accessible or too costly for private firms in transition economies. This, to a certain extent, solves the mystery of the vibrant growth of the private sector despite the financing barrier faced by private firms in such an institutional context. Second, our study departs from past studies on informal institutions, such as *guanxi* and government ties (e.g., Peng & Luo, 2000; Xin & Pearce, 1996), in transition economies and highlights the under-studied informal financing as a useful informal institution in such a context. In addition, recent studies (e.g., Estrin & Prevezer, 2011; Lu et al., 2012; Tzeng, Beamish, & Chen, 2011) have highlighted that the decision to finance entrepreneurs and private firms in transition economies are exposed to not only market risks and agency problems but also institutional constraints and uncertainties. Our study extends this line of research and demonstrates how informal financing emerges as an alternative means for private firms to mitigate institutional constraints in the transition economy of China.

[7] The Chinese government has realized the importance of huge amounts of capital that are not saved in the formal financial institutions, and has decided to liberalize the non-bank lending institutions in the rural areas since CBRC promulgated the Guidance on Experimental Small Credit Companies in 2008 (http://www.cbrc.gov.cn/). As of the end of March 2009, 583 small credit companies were established and 573 were prepared to set up. In the same year, CBRC promulgated new guidance that small credit companies with certain qualifications can be incorporated into Rural Banks. The experiment of rural banks is regarded as a pilot of small loan liberalization all over the country. Our research mainly focuses on the informal lending in urban areas that is on the other side of the same pie, together with the liberalized small credit companies and rural banks. It will be interesting to find out the outcome of the small credit companies in relieving the financing obstacles in the rural areas of China.

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