

Lim, Kian-Ping; Liu, Wei; Chia, Yee-Ee

## Article

# Firm location, investor recognition, and the liquidity of Chinese publicly listed SMEs

Borsa İstanbul Review

## Provided in Cooperation with:

Borsa İstanbul Anonim Şirketi, İstanbul

*Suggested Citation:* Lim, Kian-Ping; Liu, Wei; Chia, Yee-Ee (2023) : Firm location, investor recognition, and the liquidity of Chinese publicly listed SMEs, Borsa İstanbul Review, ISSN 2214-8469, Elsevier, Amsterdam, Vol. 23, Iss. 2, pp. 334-349,  
<https://doi.org/10.1016/j.bir.2022.11.002>

This Version is available at:

<https://hdl.handle.net/10419/340368>

### Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

### Terms of use:

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<https://creativecommons.org/licenses/by-nc-nd/4.0/>

## Firm location, investor recognition, and the liquidity of Chinese publicly listed SMEs

Kian-Ping Lim <sup>a,\*</sup>, Wei Liu <sup>b</sup>, Yee-Ee Chia <sup>c</sup>

<sup>a</sup> Faculty of Business & Economics, University of Malaya, Malaysia

<sup>b</sup> Department of Economics, Graduate School of Humanities and Social Sciences, Hiroshima University, Japan

<sup>c</sup> Labuan Faculty of International Finance, Universiti Malaysia Sabah, Malaysia

Received 29 December 2021; revised 1 November 2022; accepted 1 November 2022

Available online 6 November 2022

### Abstract

We assemble data of non-financial stocks on the Shenzhen small and medium-sized enterprise (SME) board over the 2005–2019 sample period to explore the liquidity drivers of listed SMEs. With the complete dominance of retail investors, two competing hypotheses are derived from familiarity. The empirical results reveal the insignificant role of firm location, whereas investor recognition exerts the largest effect on the liquidity of Chinese listed SMEs. This finding implies that having a large pool of potential investors with local bias does not give SMEs headquartered in megacities the home advantage in their quest for higher liquidity. Instead, liquidity improves because considerable shareholders hold stocks that they are familiar with or have knowledge about. The nonlinear relationship, however, highlights the costs of an expanded shareholder base because diffuse ownership exacerbates agency conflicts between the controlling shareholders and small individual investors.

Copyright © 2022 Borsa İstanbul Anonim Şirketi. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

*JEL classification:* G10; G11; G41; L11

*Keywords:* SME exchanges; Familiarity; Stock liquidity

### 1. Introduction

Small and medium-sized enterprises (SMEs) are widely acknowledged as the backbone of almost every economy in the world because of their contributions to job creation, productivity, innovation, and economic growth. The Alliance for Financial Inclusion (AFI) estimates that SMEs represent more than 95% of registered firms worldwide, providing more than 50% of jobs and accounting for 35% of the gross domestic product (GDP) in emerging economies alone. From another aspect, their contribution to GDP in developed countries exceeds 50% (AFI, 2019). The academic literature also provides cross-country empirical evidence of SMEs being the engine of private sector-led growth (Ayyagari et al., 2007, 2011; Beck et al., 2005), promoting SMEs as a high priority in the global development agenda. The recent

coronavirus disease 2019 (COVID-19) pandemic further underscores the importance of SMEs to the world economy, with the enforcement of mandatory quarantines and lockdowns halting economic activities across the entire sector. As a result, global growth plunges into severe contraction because of negative supply and demand shocks. Although saving lives is a top national priority, exceptional policy measures have been urgently deployed to prevent widespread bankruptcies of SMEs greatly affected by the prolonged shutdowns, thereby saving jobs and livelihoods.<sup>1</sup>

<sup>1</sup> Organisation for Economic Co-operation and Development (OECD) provides survey evidence on the economic impacts of COVID-19 pandemic on SMEs and the list of policy responses across member countries at <http://www.oecd.org/coronavirus/policy-responses/coronavirus-covid-19-sme-policy-responses-04440101/>. See also the World Bank SME-Support Measures Dashboard at <https://www.worldbank.org/en/data/interactive/2020/04/14/map-of-sme-support-measures-in-response-to-covid-19> (retrieved on 30 June 2020).

\* Corresponding author.

Peer review under responsibility of Borsa İstanbul Anonim Şirketi.

Despite their economic importance, one of the critical barriers to the growth of SMEs is the lack of access to external finance. Their financing needs rely heavily on conventional bank lending, which can be a great financial burden during economic recessions or financial crises, particularly after the introduction of regulatory reforms under the Basel III framework. Many countries have taken a series of measures to expand non-bank sources of long-term financing for SMEs to ensure sustainable growth. One of the options widely explored by policymakers globally is access to equity markets, with valuable inputs provided through the extensive policy reports by international organizations, such as the Asian Development Bank (Shinozaki, 2014), International Council of Securities Associations (ICSA, 2013), International Organization of Securities Commissions (IOSCO, 2015), World Bank (Harwood & Konidaris, 2015), and World Federation of Exchanges (WFE, 2016, 2017, 2018). Owing to these concerted global efforts, there are 37 dedicated SME exchanges across the WFE membership as of December 2018. These exchanges provide financially constrained SMEs an alternative avenue to raise capital when listing and additional capital injection post-listing. Although there are only 13 SME exchanges in Asia-Pacific, the region has the largest number of listed SMEs and the highest amount of market capitalization and capital raised (WFE, 2018).

Notably, in the survey conducted by the WFE (2017), all entities—listed companies, investors, and market intermediaries—expressed their grave concern about the low liquidity of publicly traded SME stocks. This feedback is understandable because existing theoretical models predict a higher cost of equity capital for illiquid stocks, which might deter SMEs from seeking equity financing and dampen investors' interest in SME shares. The responding entities reached a consensus that exchange operators and securities regulators should actively pursue liquidity-enhancing mechanisms to attract more participating SMEs in the equity markets. The recommendations outlined in the report are as follows: (1) enhance research coverage and the quality of research information; (2) introduce a market-making system; (3) utilize alternative trading platforms; (4) showcase listed SMEs; and (5) expand and diversify shareholder base.

Motivated by the above concern, this study examines the liquidity drivers of listed SME stocks, which will provide regulators and operators of SME exchanges valuable inputs in designing their liquidity-enhancing strategies. The Shenzhen SME board is selected on three empirical grounds. First, since the state-owned enterprises' reforms in 1978, SMEs in China have witnessed rapid growth, with the number of registered enterprises exceeding 20 million, accounting for 66% of the global formal SMEs.<sup>2</sup> Hence, there are still significant unmet and unserved financing needs that the equity markets can potentially fulfill. This alternative source is crucial because most Chinese banks are state-owned. Hence, state-owned enterprises have an advantage over SMEs in securing bank loans. Second, although

most SME exchanges are struggling to attract new issuers, the Shenzhen SME board continues to expand to be one of the largest in terms of the number of listed stocks and market capitalization in the Asia-Pacific region (Abraham et al., 2021). From 38 new listings in its inaugural year of 2004, the number of stocks listed on the SME board has grown 25-fold to 943 in just 16 years. Given the dominance of large state-owned enterprises on the Main Board, the success stories of SMEs through an additional capital injection from public listings augur well for the growth of equity financing in China (Wang & Yang, 2013). Third, enhancing the liquidity of stocks traded on SME exchanges should be a policy objective for regulators to attract the large pool of unlisted SMEs. If the urban population size (Loughran & Schultz, 2005) or the size of the shareholder base (Chia et al., 2020) is a key predictor of liquidity, then China stands out as an ideal testing ground. With a 1.43 billion population in 2019, China is the largest of all countries in the world, accounting for approximately 18% of the total world population, with nearly 60% living in cities. Brookings Metro's Global Metro Monitor reports that China accounts for one-third of the world's 300 largest metropolitan economies based on the 2016 GDP and employment data.<sup>3</sup> The high annual per capita disposable income of urban households is a promising booster for liquidity because individual investors hold 99% of total shareholder accounts at the Shenzhen Stock Exchange.<sup>4</sup>

The Shenzhen SME board is also appealing from a theoretical perspective. Although the literature has identified a long list of liquidity determinants, they are drawn from stocks listed on the Main Board with stricter listing requirements than SME platforms. Whether these findings are generalizable to listed SME stocks has not hitherto been explored. For an exchange dominated by unsophisticated retail investors and listed firms that are not large enough to have national visibility, familiarity emerges as the key consideration in their investment decisions. There are two competing hypotheses that are grounded on familiarity. First, the literature on geographic proximity provides overwhelming evidence that individual investors exhibit local bias where their portfolios are deliberately tilted toward stocks of locally headquartered firms (Grinblatt & Keloharju, 2001; Huberman, 2001; Ivković & Weisbenner, 2005). Although the debate is still ongoing on its sources, the local bias documented for Chinese stock markets is largely driven by behavioral-induced familiarity rather than rational asymmetric information (Huang et al., 2016; Liao et al., 2012; Shao & Wang,

<sup>3</sup> <https://www.brookings.edu/research/global-metro-monitor-2018/> and <https://www.brookings.edu/blog/the-avenue/2018/06/19/meet-the-five-urban-chinas/> (retrieved on 15 July 2020).

<sup>4</sup> Since their inceptions in 1990, the Shanghai and Shenzhen Stock Exchanges have one of the largest retail investor populations in the world, where approximately 99% of total shareholder accounts belong to individuals. In 2019, the total number of A-share accounts in Shanghai Stock Exchange (Shenzhen Stock Exchange) is 234,319,000 (220,123,500), with 233,590,000 (219,552,100) accounts belong to individual investors. The data are extracted from Shanghai Stock Exchange Statistics Annual 2020 (<http://www.sse.com.cn/aboutus/publication/yearly/>) and Shenzhen Stock Exchange Fact Book 2020 (<http://investor.szse.cn/market/periodical/year/index.html>), respectively (retrieved on 15 August 2022).

<sup>2</sup> The statistics are retrieved from SME Finance Forum, an initiative launched by International Finance Corporation, at <https://www.smefinanceforum.org/data-sites/msme-finance-gap> (retrieved on 15 July 2020).

2021), which can be rationalized by the theoretical models of Cao et al. (2011) and Boyle et al. (2012). The key implication of local bias to firm location is that urban firms are likely to have a larger pool of prospective investors who prefer familiar local stocks to rural firms because of their large population size. This hypothesis is supported by the pioneering work of Loughran and Schultz (2005), who find that firms in the top 10 largest U.S. cities have higher stock liquidity than their rural counterparts. Second, the investor recognition hypothesis of Merton (1987) argues that incomplete information compels investors to buy only a subset of stocks they are familiar with. Hence, expected returns and firm value are a function of the size of the shareholder base. Chia et al. (2020) extend the framework and provide empirical evidence of a nonlinear relationship between the shareholder base and liquidity. Although more shareholders are associated with higher liquidity because of investor recognition, diffuse ownership exacerbates agency conflicts that reduce liquidity. Yung and Jian (2017) document the costs of a larger shareholder base and provide evidence of a negative relationship between the shareholder base and the market valuation of Chinese firms. They ascribe this negative relationship to the elevated agency conflicts between the controlling shareholders and a large number of individual investors.

The key difference between the above two hypotheses lies in the predictors of liquidity. In the first hypothesis, liquidity is determined by the size of prospective investors, in which firms headquartered in megacities have an advantage over those in non-megacities, given their larger population size and higher per capita disposable income. The second hypothesis, however, specifies liquidity as a function of the number of investors holding the stocks. This implies that the liquidity benefits can only be attained when the large pool of prospective investors become shareholders who own stocks of the listed firms. The hypothesized nonlinear relationship further implies a maximum threshold level for the number of shareholders (*NSH*), given that diffuse ownership increases agency conflicts. To test the above familiarity-based explanations of liquidity, we collect two empirical proxies following Loughran and Schultz (2005) for firm location and Chia et al. (2020) for investor recognition. First, a megacity dummy is constructed where SMEs headquartered in one of the top 30 cities based on the ranking of the Warton Economic Institute take a value of 1 and 0 if otherwise. This “China Top 100 Cities” ranking is based on a composite index that considers GDP, household savings, environment, science, education, culture, and health. Using population size as in Loughran and Schultz (2005) might be inappropriate in the context of China because it is possible to find a city in the country with millions of residents but is economically underdeveloped. Second, we follow Chia et al. (2020) in using the *NSH* as a proxy for the size of the shareholder base, which is a standard measure in the literature on investor recognition.

We assemble data for all non-financial stocks listed on the Shenzhen SME board over the 2005–2019 sample period. The megacity dummy is always statistically insignificant in the baseline analysis and robustness checks. This result suggests that the choice of location in large metropolitan areas does not

translate into higher liquidity for SME stocks. Instead, the coefficient for the *NSH* is highly significant in all estimations, but its relationship with liquidity is nonlinear. Our findings thus imply that having a large pool of potential investors with local bias does not give SMEs headquartered in megacities the home advantage in their quest for higher liquidity. What really matters is the number of shareholders who hold and trade the stocks, highlighting the need to provide investors with more information to increase their familiarity or recognition of the available stocks. However, the nonlinear relationship provides evidence of the costs of an expanded shareholder base, as diffuse ownership increases agency conflicts between controlling shareholders and dispersed small investors.

Our study contributes to the limited empirical literature on SME exchanges in general and the Shenzhen SME board in particular. For the latter, the available published studies examine the attributes of CEOs (Ge et al., 2019; Li et al., 2017; Munir et al., 2017), firm innovation performance (Ren et al., 2015), venture capital investment (Tan et al., 2013), capital structure decisions (Li et al., 2016, 2017; Munir et al., 2017), and the pricing of initial public offerings (IPO) (Gao et al., 2015; Ge et al., 2019; Zou et al., 2019). We address the fundamental issue of liquidity that is crucial to the functioning of secondary stock markets and is of great concern to all stock exchange entities. In addition, the institutional setting of Chinese stock markets allows us to test two competing hypotheses grounded on familiarity: firm location and investor recognition. Our empirical results support the latter, highlighting the importance of converting the large pool of potential investors who exhibit bias toward locally headquartered companies into shareholders who own stocks by providing more information to increase firm visibility or recognition. Finally, we add to the limited literature on the shareholder base reviewed by Chia et al. (2020). Our findings not only confirm its nonlinear relationship with liquidity but also complement the results of Yung and Jian (2017) on the costs of an expanded shareholder base for Chinese stock markets.

The remainder of the paper is structured as follows. Section 2 discusses the related literature and hypothesis development. Then, Section 3 describes the measurement of variables and specifies the liquidity model. Section 4 presents descriptive statistics for the final data. Sections 5 and 6 discuss the baseline results and robustness checks, respectively. Finally, Section 7 concludes the study.

## 2. Review of related literature and hypothesis development

This section provides a brief review of the related literature that motivates the development of our two testable hypotheses.

### 2.1. Firm location, local bias, and the large pool of prospective investors

The empirical finance literature shows that the geographic location of a firm's corporate headquarters exerts a significant effect on its traded stocks and corporate decisions. The

pioneering work of Loughran and Schultz (2005) provides evidence that firms in the top 10 largest cities have higher stock liquidity than their rural counterparts. They note that the difference is ascribed to a larger pool of potential investors from the urban population. Loughran (2007) finds that the returns of urban stocks lead the returns of rural/small city stocks. The high population density implies that urban firms have more potential investors than firms located in non-urban areas. Owing to intense scrutiny, the market-wide common information disseminates gradually from densely populated metropolitan areas to less populous remote rural areas. Using the same classification of firm location, Loughran (2008) argues that the costs of information acquisition for rural firms are significantly higher than those for urban firms as the former have a smaller pool of potential investors in their vicinity. Given this location-induced information asymmetry, rural firms are less likely to conduct seasoned equity offerings. The implication goes beyond equity, where Arena and Dewally (2012) show that rural firms also incur a relatively higher cost of debt and attract less prestigious bank syndicates. Subsequent studies document the significant effects of firm location, whether urban or rural, on lease intensity (Devos & Rahman, 2014), managerial compensation (Francis et al., 2016), IPO underpricing (Nielsson & Wójcik, 2016), mergers and acquisitions (Bick et al., 2017), market efficiency (Boubaker et al., 2019), firm value (Benson et al., 2020), and cost of bonds (Francis et al., 2022).

The parallel literature on geographic proximity provides overwhelming evidence of local bias where investors allocate disproportionately large portfolio weights to stocks of locally headquartered firms. This strong preference for local stocks is driven either by emotionally rooted familiarity bias or rational asymmetric information. First, Huberman (2001) provides evidence that investors are more comfortable investing in the stock of their local telephone company, with their familiarity-based investment decisions ignoring the principle of portfolio diversification. Grinblatt and Keloharju (2001) find that familiarity breeds investment in local stocks through distance, language, and culture. Baltzer et al. (2015) document the phenomenon of “flight to familiarity” during times of heightened market uncertainty. To provide theoretical grounds, the models of Cao et al. (2011) and Boyle et al. (2012) attribute the documented behavioral bias to fear of the unfamiliar and ambiguity aversion, respectively. Second, geographic proximity gives local investors the advantage of acquiring geographically localized soft information through different channels, such as local media (Engelberg & Parsons, 2011), word-of-mouth communication (Hong et al., 2005), and social interaction (Hong et al., 2004). The existing empirical studies report evidence that such local information advantage yields positive abnormal returns for institutions (Coval & Moskowitz, 2001; Sialm et al., 2020) as well as individuals (Ivković & Weisbenner, 2005; Bodnaruk, 2009) on their local investments, suggesting that location-driven information asymmetry generates local bias.

Merging the above two strands of literature on financial geography, the key implication of local bias to firm location is that urban firms are likely to have a larger pool of prospective

investors who prefer familiar local stocks to rural firms. This is particularly relevant for China on two grounds. First, the Chinese stock markets are largely dominated by individual investors who account for approximately 99% of the total shareholder base and 90% of the daily trading volume. It is well-established that individual investors are subject to behavioral biases and engage in non-information-based noise trading. This notion implies that the local bias reported by previous Chinese studies for individual investors (Huang et al., 2016; Liao et al., 2012; Shao & Wang, 2021) is largely driven by behavioral-induced familiarity rather than rational asymmetric information. Second, Liu et al. (2018) document the provincial disparity of stock market participation in China and find that GDP per capita is a key determining factor. Using the brokerage accounts of 281,947 individual Chinese investors at the end of 2012 across 20 provinces, Shao and Wang (2021) report that the provinces with a larger population and higher GDP per capita are associated with more shareholders. These findings suggest that firms headquartered in Chinese megacities with large population sizes and high per capita disposable income have access to a large pool of prospective investors because of their strong preference for local stocks.

Extending the work of Loughran and Schultz (2005) to firms listed on the Shenzhen SME board, we formulate our first hypothesis in the alternative form:

**H1.** *Chinese listed SMEs headquartered in megacities are associated with higher stock liquidity than those in non-megacities.*

## 2.2. Investor recognition and the size of the shareholder base

In the capital market equilibrium model of Merton (1987), the incompleteness of public information compels investors to hold only a subset of stocks they are familiar with or know about. Hence, their portfolios cannot be fully diversified.<sup>5</sup> A crucial parameter is the degree of investor recognition, defined as the number of investors with knowledge of the stock.<sup>6</sup> The model predicts that an increase in the size of the shareholder base is associated with lower expected returns and higher firm value. Since the seminal paper of Merton (1987), the investor

<sup>5</sup> Merton (1987: 488) writes: “... an investor uses security  $k$  in constructing his optimal portfolio only if the investor knows about security  $k$ .” Being familiar because investors possess knowledge about a stock differs from (i) heuristic-based familiarity due to the fear of unfamiliar (Cao et al., 2011) or ambiguity aversion (Boyle et al., 2012); and (ii) information-based familiarity coined by Massa and Simonov (2006) where investors generate positive abnormal returns through their superior information. This is because having information about stock implies their investment decisions are not driven purely by behavioral bias, whereas obtaining information through public sources does not make investors better informed. To avoid confusion, we follow previous studies that are grounded on Merton’s (1987) model in using the term “investor recognition”.

<sup>6</sup> Lehavy and Sloan (2008) argue that the number of investors who know about the stock is not directly observable or measurable, but it is positively correlated with the number of investors who own the stock, hence the size of the shareholder base is an appropriate proxy.

recognition hypothesis has been subjected to extensive empirical investigation. One strand of literature identifies events that affect the level of investor recognition, such as major stock exchange listings (Kadlec & McConnell, 1994), cross-border listings (Foerster & Karolyi, 1999), stock index additions (Chen et al., 2004), product market advertising (Grullon et al., 2004), company name fluency (Green & Jame, 2013), and Internet search frequency (Ding & Hou, 2015). A consistent finding from the above-cited papers is the significant expansion of the shareholder base, which they attribute to enhanced investor recognition. Another group of studies instead uses the number of shareholders as a proxy of investor recognition to test the model predictions. The significant effects of the shareholder base are not confined to expected returns (Lehavy & Sloan, 2008; Bodnaruk & Östberg, 2009) and firm value (Karpoff et al., 2021; Yung & Jian, 2017) but extend to payout policy (Bodnaruk & Östberg, 2013), volatility (Chichernea et al., 2015; Jankensgård & Vilhelmsson, 2018), and liquidity (Chia et al., 2020).

As liquidity is theoretically associated with expected returns and firm value (Amihud & Mendelson, 1986), Chia et al. (2020) motivate the positive relationship between shareholder base and liquidity through the investor recognition channel. The authors draw further motivation from Amihud and Mendelson (2000, 2008), who advocate the expansion of the shareholder base, particularly uninformed individual investors, as an effective liquidity-enhancing strategy. However, caution is given on the costs of an expanded shareholder base where agency conflicts become more severe with diffuse ownership, which is detrimental to liquidity. Consistent with the cost-benefit trade-off, Chia et al. (2020) report a nonlinear relationship between the *NSH* and liquidity for Malaysian publicly listed firms. However, the authors ascribe the negative liquidity effect to higher volatility induced by noise trading. Despite the liquidity benefit brought by investor recognition, the dominance of individual investors in the Chinese stock markets suggests that the costs of a larger shareholder base cannot be ignored. The classical free-rider problem prevails because individual investors are reluctant to bear the cost of managerial monitoring. For instance, Yung and Jian (2017) test the key model prediction of Merton (1987) using data from Chinese publicly listed firms. Their empirical evidence contradicts the investor recognition hypothesis as more shareholders are found to be associated with lower firm value. The analysis reveals that the negative valuation effect arises because diffuse ownership increases agency conflicts between the controlling shareholders and a large number of individual investors. Hence, we can reasonably expect a nonlinear relationship between the shareholder base and liquidity for Chinese firms.

Extending the work of Chia et al. (2020) to firms listed on the Shenzhen SME board, we formulate our second hypothesis in the alternative form:

**H2.** *The liquidity of Chinese listed SMEs is positively associated with the size of the shareholder base, but liquidity declines when the number of shareholders exceeds the threshold level.*

### 2.3. Summary

Our first hypothesis is drawn from the literature on financial geography, namely, the firm's geographic location and geographic proximity that generates local bias. The key implication is that liquidity is determined by the size of prospective investors, in which firms headquartered in megacities have an advantage over those in non-megacities given their larger population size and higher per capita disposable income. Our second hypothesis, however, specifies liquidity as a function of the number of investors holding the stocks. This implies that the liquidity benefits can only be attained when the large pool of prospective investors become shareholders who own stocks of the listed SMEs. The hypothesized nonlinear relationship further implies the existence of a maximum threshold level for the number of shareholders, given that diffuse ownership exacerbates agency conflicts.

### 3. Measurement of variables and model specification

This section describes the measurement and data sources for the dependent variable of stock liquidity, the competing key independent variables of firm location and investor recognition, and the common set of control variables. Table 1 presents the definitions for all the variables in the baseline model.

#### 3.1. Stock liquidity

Given the multifaceted nature of liquidity, the literature has proposed a menu of low-frequency liquidity proxies (see the survey paper of Le & Gregoriou, 2020). Facing the selection dilemma, liquidity horseraces provide a useful guide to researchers. This study measures liquidity using the Closing Percent Quoted Spread (*CPQS*) proposed by Chung and Zhang (2014). *CPQS* is the best performer for global research and during extremely illiquid periods in the liquidity horseraces by Fong et al. (2017) and Będowska-Sójka and Echaust (2020), respectively.

*CPQS* can be constructed by using only daily closing ask and bid prices sourced from Refinitiv Datastream, as follows:

$$CPQS_{i,d} = \frac{\text{Closing Ask}_{i,d} - \text{Closing Bid}_{i,d}}{(\text{Closing Ask}_{i,d} + \text{Closing Bid}_{i,d})/2} \times 100 \quad (1)$$

where the computation is for stock *i* on day *d*, and the multiplication by 100 is for scaling purposes. The computed daily *CPQS* values are then averaged over each year to provide the annual estimates. *CPQS* is an inverse measure of liquidity because wider spreads indicate higher transaction costs.

#### 3.2. Firm location

The standard proxy for geographic location in the extant literature is the city of the firm's corporate headquarters. The reason is that the headquarters is the center of core business activities and information exchange between the firm and its

Table 1  
Variable definitions and data sources.

Variable	Definition	Data Sources
<i>CPQS</i>	The low-frequency liquidity proxy is Closing Percent Quoted Spread proposed by Chung and Zhang (2014), computed as the ratio of the difference between closing ask and closing bid prices over the mid-point of these prices. The <i>CPQS</i> is first computed at the daily frequency, and then these daily values are averaged over the year to obtain annual estimates for each stock and each year. <i>CPQS</i> is an inverse measure of liquidity, hence a higher value implies a lower level of stock liquidity.	Refinitiv Datastream
<i>MEGA30</i>	Firm location is proxied by a dummy variable that takes the value of one if the corporate headquarters of the SME is in one of the top 30 megacities based on the ranking of Warton Economic Institute, zero otherwise.	WIND Database
<i>lnNSH</i>	Investor recognition is proxied by the natural logarithm of the total number of shareholders.	WIND Database
<i>INST</i>	Institutional ownership is the fraction of total outstanding shares held by institutional investors.	WIND Database
<i>BLOCK</i>	Blockholdings are defined as the shareholdings of blockholders who own at least 5% of the total outstanding shares.	WIND Database
$\ln(1 + ANALYST)$	Analyst coverage is proxied by the natural logarithm of one plus the number of security analysts issuing earning forecasts.	Refinitiv Datastream
<i>lnSIZE</i>	Natural logarithm of firm size, measured by the book value of total assets.	Refinitiv Datastream
<i>TO</i>	Stock turnover is defined as the number of shares traded scaled by the number of shares outstanding. The annual estimates for each stock are computed as the time-series averages of daily turnover ratios over each year.	Refinitiv Datastream
<i>RET</i>	Daily stock return is computed as the natural logarithm of price relatives and then averaged over the year to obtain annual stock return for each stock and each year.	Refinitiv Datastream
<i>LEV</i>	Leverage is computed by scaling the book value of debts over the book value of assets.	Refinitiv Datastream
<i>VOL</i>	Annual return volatility is computed as the standard deviation of daily stock returns over the year.	Refinitiv Datastream
<i>lnBSIZE</i>	Natural logarithm of board size, measured by the total number of directors on the corporate board.	WIND Database
<i>BINDEP</i>	Board independence is measured as the proportion of independent non-executive directors on the corporate board.	WIND Database
<i>DUALITY</i>	CEO duality is a dummy variable that takes the value of one if the chief executive officer and board chairman are the same individuals, zero otherwise.	WIND Database

stakeholders. To define an urban firm, the pioneering work of Loughran and Schultz (2005) uses the top 10 largest metropolitan statistical areas based on population size. Rural firm, on the other hand, has its headquarters at least 100 miles from any U.S. city with a population of more than one million. We do not follow the urban/rural classification of Loughran and Schultz (2005) simply because there are Chinese cities with a population size of millions but are economically underdeveloped. Apart from the large population size, prospective investors in the city should have high per capita disposable income to afford equity investment. Hence, we use the “China Top 100 Cities” ranking in 2019 constructed by Warton Economic Institute and assign the top 30 on the list as megacities.<sup>7</sup> This ranking is based on a composite index that considers GDP, household savings, environment, science, education, culture, and health. The location of the firm headquarters is sourced from the WIND database based on their business addresses.<sup>8</sup> In the regression analysis, a dummy variable of *MEGA30* is constructed where SMEs headquartered in one of the top 30 cities take a value of 1 and 0 if otherwise. Given the arbitrary choice, the robustness check also considers the top 10 (*MEGA10*) and top 20 (*MEGA20*) cities on the same list by Warton Economic Institute, as well as following Kuang et al. (2021) to define Beijing, Shanghai, Guangzhou, and Shenzhen as megacities (*MEGA4*).

<sup>7</sup> The annual ranking is available on the website of Warton Economic Institute at <http://www.warton.com.cn/index.php?m=Wap&c=Index&a=lists&catid=85> (retrieved on 1 July 2020).

<sup>8</sup> If business addresses are missing in the database, we use registered addresses to identify corporate headquarters.

### 3.3. Investor recognition

In the literature on investor recognition, the standard proxy is the *NSH* because investors are more likely to buy what they know. Yung and Jian (2017) use this proxy to test the relationship between shareholder base and firm value for all Chinese non-financial public firms. Following the convention in previous studies, we collect the data for the *NSH* from the WIND database.

### 3.4. Control variables

We control for the same set of variables as in Chia et al. (2020), comprising ownership, analyst coverage, firm characteristics, and corporate governance (for details, see references cited therein). First, institutional ownership and blockholdings are found to be associated with lower stock liquidity through the asymmetric information channel. Institutional investors and blockholders are widely acknowledged as informed investors because of their privileged access to private firm-specific information, which increases information asymmetry and adverse selection costs. The data for institutional ownership and blockholdings are sourced from the WIND database. Second, security analysts play an important role in alleviating information asymmetries among market participants. Despite the mixed findings on its coefficient sign, analyst coverage has been found to be a significant determinant of liquidity. The number of security analysts covering the listed firms is extracted from the Refinitiv Datastream. Third, we collect from Refinitiv Datastream the data for five firm characteristics, namely, firm size, turnover, stock returns, leverage, and return volatility. The

predicted relationship with liquidity is positive for the first three variables and negative for the last two measures. Fourth, we obtain data for board size, board independence, and CEO duality from the WIND database to control for the possible influence of corporate governance.

### 3.5. Model specification

Motivated by the findings of Chia et al. (2020), we formulate a quadratic model with a squared term added to the size of the shareholder base. The liquidity model for Chinese publicly listed SMEs is specified as follows:

$$\begin{aligned}
 CPQS_{it} = & \alpha_0 + \alpha_1 MEGA30_{it} + \alpha_2 \ln NSH_{it} \\
 & + \alpha_3 \ln NSH_{it}^2 + \alpha_4 INST_{it} + \alpha_5 BLOCK_{it} + \alpha_6 \ln (1 + ANALYST)_{it} + \alpha_7 \ln SIZE_{it} + \alpha_8 TO_{it} + \alpha_9 RET_{it} + \alpha_{10} LEV_{it} + \alpha_{11} VOL_{it} \\
 & + \alpha_{12} \ln BSIZE_{it} + \alpha_{13} BINDEP_{it} + \alpha_{14} DUALITY_{it} + \sum_{j=1}^{J-1} \alpha_{15j} IND_j + \sum_{t=1}^{T-1} \alpha_{16t} YR_t + \varepsilon_{it},
 \end{aligned} \tag{2}$$

where  $\ln$  indicates the natural logarithm. The dependent variable is  $CPQS$ , an inverse measure of stock liquidity. The two competing key independent variables of firm location and investor recognition are proxied by the megacity dummy ( $MEGA30$ ) and the  $NSH$ , respectively. The control variables are institutional ownership ( $INST$ ), blockholdings ( $BLOCK$ ), analyst coverage ( $ANALYST$ ), firm size ( $SIZE$ ), turnover ( $TO$ ), stock returns ( $RET$ ), leverage ( $LEV$ ), return volatility ( $VOL$ ), board size ( $BSIZE$ ), board independence ( $BINDEP$ ), and CEO duality ( $DUALITY$ ). We control for industry effects through the industry dummies, where  $IND_j = 1$  if firm  $i$  is in industry  $j$  and 0 if otherwise, and  $J$  is the number of industries following the classifications of the National Bureau of Statistics of China. Year dummies are included to control for common shocks, where  $YR_t = 1$  for year  $t$  and 0 if otherwise, and  $T$  is the number of years. The liquidity model is estimated with pooled ordinary least squares (OLS), where the standard errors are adjusted through double-clustering to account for within-cluster correlations.

## 4. Data

This section discusses the selection of the listed SMEs in the final sample for data collection. Summary statistics of the assembled data are then provided, followed by the correlation matrix for all variables in the baseline liquidity model.

### 4.1. Final sample

The Shenzhen SME board was established in May 2004 to provide a new financing channel and development platform for SMEs in China. By the end of 2004, there were 38 new listings. However, many variables have no data for the inaugural year;

hence, our analysis covers the sample period from 2005 to 2019. As of December 2019, there were 943 listed firms, an increase of 25-fold during the short history of the SME board. Removing firms with insufficient data in Refinitiv Datastream to construct  $CPQS$ , we are left with 914 firms distributed across seven regions, as shown in Fig. 1. Geographically, 72.6% of the SMEs have corporate headquarters in the two regions of South China and East China. Across the 17 industries, manufacturing accounts for 74% of the total listed SMEs.<sup>9</sup> Following the convention in the academic literature, firms from the finance industry are excluded because of different regulatory and supervisory frameworks. This leaves the final

sample with 902 listed SMEs over the 15-year sample period of 2005–2019. All variables are winsorized at the 1st and 99th percentiles, except the dummies of  $MEGA30$  and  $DUALITY$ , to control for outliers.

### 4.2. Summary statistics

Table 2 presents the descriptive statistics for all variables in the baseline liquidity model. The discussion here focuses on liquidity, firm location, and investor recognition. The average value of  $CPQS$  is 0.1202 for Chinese listed SMEs. As this study uses a similar formula as Chia et al. (2020), the  $CPQS$  values are thus comparable. Chia et al. (2020) report an average  $CPQS$  value of 5.3370 for 1250 Malaysian publicly listed firms over the 16 years from 2000 to 2015. Given that  $CPQS$  is an inverse measure of liquidity, the comparison implies that stocks listed on the Shenzhen SME board are on average more liquid than those traded on the Main Board of Bursa Malaysia. This result is surprising because Bursa Malaysia has been incorporated for approximately half a century, whereas the Shenzhen SME board has a short history of 16 years. We thus test two competing familiarity-based explanations for the high liquidity of Chinese listed SMEs because of the complete dominance of retail investors. The firm location proxied by the  $MEGA30$  dummy has a mean value of 0.5668, implying that slightly more than half of the SMEs are headquartered in the top 30

<sup>9</sup> Based on the classifications of National Bureau of Statistics of China, the listed SMEs fall into 17 different industries, namely (1) Agriculture; (2) Business Support; (3) Construction; (4) Education; (5) Environment Protection; (6) Finance; (7) Hotels and Catering; (8) IT; (9) Manufacturing; (10) Media; (11) Mining; (12) Public Health; (13) Real Estate; and (14) Research and Development; (15) Transportation; (16) Utilities; (17) Wholesale and Retail.

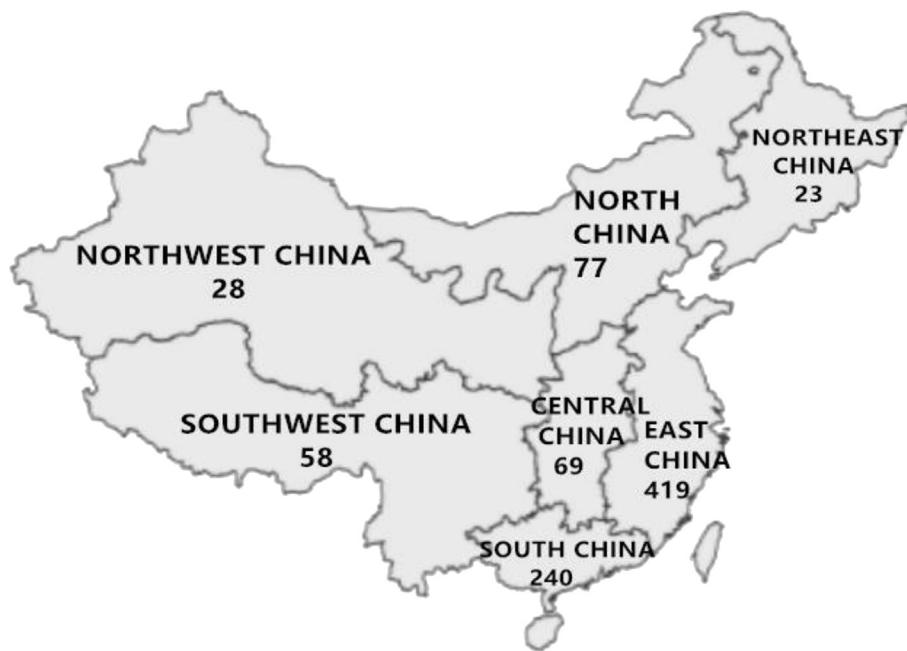


Fig. 1. Regional distribution of listed SMEs as of December 2019. Notes: This figure provides the distribution of 914 firms listed on the Shenzhen SME board with complete data across seven regions. However, the empirical analysis excludes the finance industry, leaving 902 listed SMEs in the final sample.

Table 2  
Descriptive statistics.

	<i>N</i>	Mean	S.D.	P5	P25	Median	P75	P95
<i>CPQS</i>	8428	0.1202	0.0614	0.0431	0.0772	0.1084	0.1492	0.2401
<i>MEGA30</i> <sup>#</sup>	7771	0.5668						
<i>NSH</i>	8588	29,804	24,389	7163	13,766	22,156	37,720	80,185
<i>INST</i>	8280	0.3238	0.2394	0.0095	0.1032	0.2945	0.5161	0.7347
<i>BLOCK</i>	7558	0.5087	0.1574	0.2300	0.3900	0.5200	0.6300	0.7500
<i>ANALYST</i>	13,710	1.4136	2.6732	0.0000	0.0000	0.0000	2.0000	7.0000
<i>SIZE</i>	9857	3,784,668	5,347,326	394,317	979,004	1,979,088	4,197,393	13,800,000
<i>TO</i>	7583	7.0087	6.8155	1.0683	2.5907	4.8824	8.7610	20.6099
<i>RET</i>	8440	0.0186	0.2355	-0.3202	-0.1222	0.0080	0.1409	0.3931
<i>LEV</i>	9842	0.1961	0.1612	0.0000	0.0525	0.1734	0.3069	0.4963
<i>VOL</i>	8436	2.8544	0.8555	1.7259	2.2621	2.6914	3.2796	4.6079
<i>BSIZE</i>	10,026	8.3878	1.5213	5.0000	7.0000	9.0000	9.0000	11.0000
<i>BINDEP</i>	10,026	0.3607	0.0772	0.3333	0.3333	0.3333	0.4286	0.4444
<i>DUALITY</i> <sup>#</sup>	3494	0.3535						

Notes: This table presents the descriptive statistics for all the variables in the baseline liquidity model. The variable descriptions are provided in Table 1. For ease of interpretation, the table reports the original measurement unit for *NSH*, *ANALYST*, *SIZE* and *BSIZE*. To control for outliers, all variables are winsorized at the 1st and 99th percentiles, except the dummies of *MEGA30* and *DUALITY*.

*P* denotes percentiles, where statistics are provided at the representative 5th, 25th, 75th and 95th percentiles. S.D. is the standard deviation. *N* denotes the number of firm-year observations. <sup>#</sup>*N* indicates the number of firm-year observations that the dummy variable takes the value of one.

megacities. Investor recognition proxied by the *NSH* has an average value of 29,804, which is approximately five times more than the average *NSH* reported by Chia et al. (2020) for Malaysian firms.

Table 3 presents the Pearson correlation matrix for all 14 variables in the baseline liquidity model. The correlation between *CPQS* and the right-hand-side variables provides a preliminary view of their univariate relationship. *MEGA30* is

negatively correlated with *CPQS*, which is consistent with the predicted positive relationship between megacities and liquidity. The negative coefficient of  $\ln NSH$  indicates a positive relationship between the shareholder base and liquidity through the investor recognition channel. Except for *BLOCK*, *VOL*, and  $\ln BSIZE$ , all the control variables yield the expected relationships with *CPQS*. Among the independent variables, the highest coefficient is 0.4962 between  $\ln SIZE$  and  $\ln$

Table 3  
Correlation matrix.

Variable	<i>CPQS</i>	<i>MEGA30</i>	<i>lnNSH</i>	<i>INST</i>	<i>BLOCK</i>
<i>CPQS</i>	1.0000				
<i>MEGA30</i>	-0.0269	1.0000			
<i>lnNSH</i>	-0.0157	0.0395	1.0000		
<i>INST</i>	0.0252	0.0580	-0.0370	1.0000	
<i>BLOCK</i>	-0.0936	0.0458	-0.3401	0.2183	1.0000
$\ln(1+ANALYST)$	-0.1661	0.0557	0.2130	0.2773	0.0142
<i>lnSIZE</i>	-0.0542	0.0635	0.4593	0.3180	-0.0623
<i>TO</i>	-0.1602	-0.0694	-0.1531	-0.1375	-0.0442
<i>RET</i>	-0.2347	0.0130	-0.0866	0.0337	0.0446
<i>LEV</i>	0.1844	-0.1139	0.0953	0.0546	-0.1167
<i>VOL</i>	-0.1886	-0.0007	-0.0171	-0.1428	0.0574
<i>lnBSIZE</i>	0.0167	-0.0618	0.0114	0.1066	-0.0184
<i>BINDEP</i>	-0.0222	0.0330	0.0049	-0.0260	0.0410
<i>DUALITY</i>	-0.0648	0.0261	-0.0362	-0.0736	0.0396
	$\ln(1+ANALYST)$	<i>lnSIZE</i>	<i>TO</i>	<i>RET</i>	<i>LEV</i>
$\ln(1+ANALYST)$	1.0000				
<i>lnSIZE</i>	0.4962	1.0000			
<i>TO</i>	-0.0867	-0.3176	1.0000		
<i>RET</i>	-0.0675	-0.0441	0.0962	1.0000	
<i>LEV</i>	-0.0469	0.2591	-0.0119	-0.0414	1.0000
<i>VOL</i>	-0.2149	-0.2458	0.1893	0.2890	-0.0240
<i>lnBSIZE</i>	0.0875	0.1022	-0.0017	-0.0158	0.0398
<i>BINDEP</i>	0.1128	0.1021	-0.0331	0.0101	-0.0257
<i>DUALITY</i>	-0.0187	-0.0817	0.0462	0.0084	-0.0497
	<i>VOL</i>	<i>lnBSIZE</i>	<i>BINDEP</i>	<i>DUALITY</i>	
<i>VOL</i>	1.0000				
<i>lnBSIZE</i>	-0.0171	1.0000			
<i>BINDEP</i>	-0.0059	-0.0882	1.0000		
<i>DUALITY</i>	0.0269	-0.1488	0.0810	1.0000	

Notes: This table presents the Pearson correlation coefficients between pairs of variables in the baseline liquidity model. The variable descriptions are provided in Table 1.

(1+ANALYST), indicating that multicollinearity is not a major issue in our empirical analysis.

### 5. Baseline results

This section presents the baseline pooled OLS results for the liquidity model (2), focusing on the role of firm location ( $H_1$ ) and investor recognition ( $H_2$ ).

#### 5.1. Results for $H_1$

$H_1$  states that Chinese listed SMEs headquartered in megacities are associated with higher stock liquidity than those in non-megacities. Given the large population size and high per capita disposable income, firms in megacities have access to a large pool of prospective investors because of their familiarity bias toward local stocks. Table 4 presents the empirical results for the linear and quadratic models. Notably, the *MEGA30* dummy is statistically insignificant in both models. This result implies that the choice of location in large metropolitan areas does not translate into higher liquidity for listed SME stocks, which

Table 4  
Firm location, investor recognition, and liquidity.

	Linear Model	Quadratic Model	Economic Impact
<i>MEGA30</i>	0.0010 (0.0023)	0.0002 (0.0022)	0.0001
<i>lnNSH</i>	0.0061 (0.0063)	-0.3666*** (0.0622)	-0.3862
<i>lnNSH</i> <sup>2</sup>		0.0184*** (0.0030)	0.3277
<i>INST</i>	0.0107** (0.0042)	0.0090** (0.0043)	0.0022
<i>BLOCK</i>	-0.0349*** (0.0102)	-0.0265*** (0.0098)	-0.0042
$\ln(1+ANALYST)$	-0.0138*** (0.0031)	-0.0145*** (0.0030)	-0.0112
<i>lnSIZE</i>	-0.0102*** (0.0021)	-0.0119*** (0.0024)	-0.0126
<i>TO</i>	-0.0011*** (0.0003)	-0.0012*** (0.0003)	-0.0081
<i>RET</i>	-0.0023 (0.0132)	-0.0133 (0.0133)	-0.0031
<i>LEV</i>	0.0577*** (0.0083)	0.0598*** (0.0085)	0.0096
<i>VOL</i>	-0.0264*** (0.0067)	-0.0262*** (0.0065)	-0.0224
<i>lnBSIZE</i>	-0.0079 (0.0069)	-0.0060 (0.0066)	-0.0012
<i>BINDEP</i>	-0.0235 (0.0204)	-0.0344* (0.0202)	-0.0027
<i>DUALITY</i>	-0.0016 (0.0016)	-0.0017 (0.0016)	-0.0008
CONSTANT	0.3519*** (0.0464)	2.2475*** (0.3325)	
Year Dummies	Yes	Yes	
Industry Dummies	Yes	Yes	
<i>N</i>	7136	7136	
Adj. $R^2$	0.4031	0.4386	

Notes: This table presents the pooled OLS estimation results for both linear and quadratic liquidity models where the dependent variable is Closing Percent Quoted Spread (*CPQS*). The variable descriptions are provided in Table 1. The last column computes the economic impacts of all explanatory variables on *CPQS*, by multiplying one standard deviation of the variable with its coefficient estimate obtained from the quadratic model.

For brevity, year and industry dummies are suppressed. Double-clustered standard errors are reported in parentheses. *N* denotes the number of firm-year observations.

\*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

contradicts the findings of Loughran and Schultz (2005) for U.S. stocks. Liu et al. (2018) and Shao and Wang (2021) find that Chinese provinces with larger populations and higher GDP per capita are associated with more shareholders. However, our results show that the former, as proxied by the *MEGA30* dummy, do not exert a direct effect on liquidity. The conjecture of Loughran (2007) that the acceleration of information flows through the Internet has rendered firm location irrelevant is applicable here, given that the Shenzhen Stock Exchange fully utilizes online platforms for information dissemination.

From another aspect, the insignificant role of geographic location might explain its notable absence in existing empirical

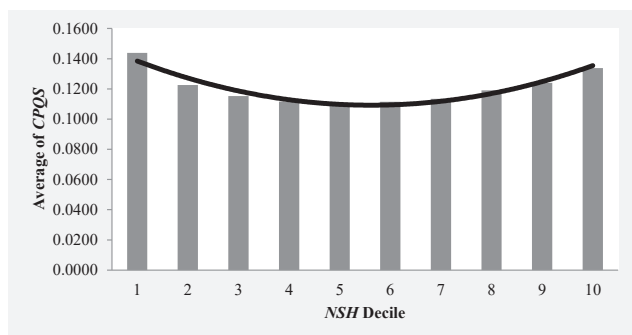


Fig. 2. Univariate relationship between *NSH* and *CPQS*. Notes: This figure plots the average of *CPQS* against deciles based on the number of shareholders (*NSH*), with decile 1 (10) containing the lowest (highest) *NSH* values.

studies on Chinese stock markets. Instead, their focus is on geographic proximity, capitalizing on the exogenous shock provided by the construction of China's high-speed rail (HSR) to establish causal effects. The HSR network improves connectivity among cities, and the shorter time distance implies that previously remote firms in non-connected cities are now considered “local” (see, for example, [Chen et al., 2022a](#); [Gao et al., 2022](#); [Kuang et al., 2021](#)). We do not rule out the effect of HSR connections on liquidity through enhanced investor recognition of a broader set of previously distant stocks but leave this empirical investigation for future studies.

### 5.2. Results for $H_2$

In  $H_2$ , we hypothesize a nonlinear relationship between shareholder base and liquidity for Chinese listed SMEs. The first column of [Table 4](#) shows that  $\ln NSH$  is not significantly associated with *CPQS*. However, the second column reveals that the insignificance is mainly because of the functional form of their relationship. The first-order variable for  $\ln NSH$  is negative and statistically significant at the 1% level, whereas the squared term is positively and significantly associated with *CPQS*. The statistical significance of  $\ln NSH$  and  $\ln NSH^2$  supports the existence of a nonlinear relationship between shareholder base and liquidity. Their opposing signs further reveal that the relationship between the *NSH* and *CPQS* is U-shaped. As *CPQS* is an inverse measure of liquidity, the results imply that the liquidity of Chinese listed SMEs is increasing in the size of the shareholder

Table 5  
Formal statistical test for U-shape.

	Dependent Variable <i>CPQS</i>
Slope at Lower Bound	-0.2443 (0.0000)
Slope at Upper Bound	0.0672 (0.0000)
<a href="#">Lind and Mehlum (2010)</a> Test for U-Shape	5.82 (0.0000)
Threshold Point	9.9896
Fieller 95% Confidence Interval	[9.6666, 10.2663]

Notes: The *U* test is a joint test on the combined null hypotheses of an inverted-U or monotone relationship. This table presents the *U* test results on the baseline liquidity model. Entries in parentheses indicate *p*-values.

base. However, liquidity declines when the *NSH* exceeds the threshold level. The last column of [Table 4](#) reports the economic impacts of all explanatory variables on *CPQS*, with the largest effect coming from the proxy of investor recognition. More specifically, a one standard deviation increase in  $\ln NSH$  is associated with a reduction of 0.3862 in *CPQS* (i.e., increases in liquidity). However, further expansion of the shareholder base beyond the threshold level by a similar magnitude triggers an increase of 0.3277 in *CPQS* (i.e., declines in liquidity).

The above nonlinear relationship between shareholder base and liquidity is consistent with the findings reported for Malaysian publicly listed firms by [Chia et al. \(2020\)](#). Owing to

Table 6  
Alternative measures for megacities.

	(1)	(2)	(3)
<i>MEGA4</i>	-0.0024 (0.0024)		
<i>MEGA10</i>		-0.0002 (0.0023)	
<i>MEGA20</i>			0.0002 (0.0021)
$\ln NSH$	-0.3672*** (0.0626)	-0.3669*** (0.0619)	-0.3666*** (0.0620)
$\ln NSH^2$	0.0184*** (0.0031)	0.0184*** (0.0030)	0.0184*** (0.0030)
<i>INST</i>	0.0089** (0.0042)	0.0091** (0.0042)	0.0090** (0.0042)
<i>BLOCK</i>	-0.0261*** (0.0099)	-0.0264*** (0.0099)	-0.0265*** (0.0099)
$\ln(1+ANALYST)$	-0.0144*** (0.0030)	-0.0145*** (0.0030)	-0.0145*** (0.0030)
$\ln SIZE$	-0.0118*** (0.0024)	-0.0119*** (0.0024)	-0.0119*** (0.0024)
<i>TO</i>	-0.0012*** (0.0003)	-0.0012*** (0.0003)	-0.0012*** (0.0003)
<i>RET</i>	-0.0132 (0.0132)	-0.0133 (0.0133)	-0.0133 (0.0133)
<i>LEV</i>	0.0594*** (0.0083)	0.0596*** (0.0085)	0.0597*** (0.0084)
<i>VOL</i>	-0.0261*** (0.0065)	-0.0262*** (0.0065)	-0.0262*** (0.0065)
$\ln BSIZE$	-0.0061 (0.0066)	-0.0061 (0.0066)	-0.0060 (0.0065)
<i>BINDEP</i>	-0.0326 (0.0203)	-0.0343* (0.0203)	-0.0344* (0.0203)
<i>DUALITY</i>	-0.0016 (0.0016)	-0.0017 (0.0016)	-0.0017 (0.0016)
CONSTANT	2.2479*** (0.3354)	2.2485*** (0.3317)	2.2475*** (0.3318)
Year Dummies	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes
<i>N</i>	7136	7136	7136
Adj. $R^2$	0.4388	0.4386	0.4386

Notes: This table presents the estimation results for the baseline liquidity model where the dependent variable is Closing Percent Quoted Spread (*CPQS*), but replaces *MEGA30* with alternative proxies—*MEGA4*, *MEGA10* and *MEGA20*. The variable descriptions are provided in [Table 1](#).

For brevity, year and industry dummies are suppressed. Double-clustered standard errors are reported in parentheses. *N* denotes the number of firm-year observations.

\*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7  
Alternative liquidity measures.

	<i>CPQSIM</i>		<i>ILLIQ</i>	
	Linear Model	Quadratic Model	Linear Model	Quadratic Model
<i>MEGA30</i>	0.0014 (0.0022)	0.0006 (0.0022)	-0.1089* (0.0570)	-0.1120** (0.0567)
$\ln NSH$	-0.0101* (0.0058)	-0.4409*** (0.1376)	-0.1875* (0.0972)	-1.7876*** (0.6098)
$\ln NSH^2$		0.0212*** (0.0066)		0.0788** (0.0312)
<i>INST</i>	-0.0010 (0.0071)	-0.0029 (0.0076)	-0.1064 (0.1019)	-0.1136 (0.1003)
<i>BLOCK</i>	0.0311* (0.0171)	0.0408** (0.0195)	0.7381*** (0.2174)	0.7740*** (0.2249)
$\ln(1+ANALYST)$	-0.0151*** (0.0038)	-0.0159*** (0.0039)	-0.1552*** (0.0484)	-0.1580*** (0.0485)
$\ln SIZE$	-0.0277*** (0.0074)	-0.0297*** (0.0080)	-0.2590** (0.1021)	-0.2662** (0.1045)
<i>TO</i>	-0.0012*** (0.0005)	-0.0014*** (0.0005)	-0.0109*** (0.0035)	-0.0113*** (0.0036)
<i>RET</i>	0.0025 (0.0133)	-0.0102 (0.0134)	0.7044 (0.6563)	0.6575 (0.6638)
<i>LEV</i>	0.0589*** (0.0153)	0.0613*** (0.0160)	0.5907* (0.3164)	0.5997* (0.3197)
<i>VOL</i>	-0.0468*** (0.0152)	-0.0465*** (0.0150)	-0.1096 (0.1028)	-0.1085 (0.1028)
$\ln BSIZE$	-0.0046 (0.0103)	-0.0023 (0.0100)	-0.2130** (0.0868)	-0.2047** (0.0871)
<i>BINDEP</i>	-0.0416 (0.0280)	-0.0541* (0.0295)	-0.6697** (0.2600)	-0.7162*** (0.2701)
<i>DUALITY</i>	-0.0022 (0.0025)	-0.0024 (0.0026)	-0.0094 (0.0424)	-0.0101 (0.0418)
CONSTANT	2.9360*** (0.8094)	0.7449*** (0.1659)	14.9546*** (3.9863)	6.8178*** (1.1525)
Year Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
<i>N</i>	7136	7136	7137	7137
Adj. <i>R</i> <sup>2</sup>	0.5161	0.5295	0.1670	0.1677

Notes: This table presents the estimation results for both linear and quadratic liquidity models where the dependent variable is *CPQS* Impact (*CPQSIM*) and *Amihud* (2002) illiquidity ratio (*ILLIQ*). The variable descriptions are provided in Table 1.

For brevity, year and industry dummies are suppressed. Double-clustered standard errors are reported in parentheses. *N* denotes the number of firm-year observations.

\*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

enhanced investor recognition, an increase in the *NSH* is associated with higher liquidity. However, when the expanded shareholder base exceeds the maximum threshold level, liquidity declines as diffuse ownership exacerbates agency conflicts between the controlling shareholders and small individual investors. This result implies that the costs outweigh the benefits when the *NSH* becomes too large, with the maximum threshold level of 21,205 shareholders.<sup>10</sup> From the descriptive statistics in Table 2, the average size of the shareholder base for

<sup>10</sup> The threshold level is computed from the estimated coefficients of  $\ln NSH$  and  $\ln NSH^2$  in the liquidity model (2). Plugging the values into  $-\gamma_1 / 2\gamma_2$  gives  $\ln NSH = 9.9620$ . Taking  $e^{9.9620}$ , the threshold maximum level for the size of shareholder base is 21,205.

our sample of listed SMEs is 29,804, which exceeds the threshold level and implies that the costs should be evaluated by individual firms.

Considering the results of our two competing hypotheses, the insignificance of *MEGA30* dummy implies that having a large pool of prospective investors in megacities does not give SMEs the home advantage in their quest for higher liquidity. The theoretical model of *Merton* (1987) highlights that these prospective investors will proceed to buy if they have enough information about the stocks. Improvement in liquidity only materializes when they become new shareholders. Hence, additional information should be provided to prospective investors to increase their familiarity or recognition of the available stocks.

Investor recognition contributes to higher liquidity of listed SME stocks. Hence, we discuss several initiatives undertaken by the Shenzhen Stock Exchange to protect investors' rights to know and enhance investor education. First, under the “Guidelines of Investor Relations Management”, the exchange encourages listed firms to accommodate visit requests from investors, security analysts, and fund managers. The physical visit to a firm's headquarters includes face-to-face interactions with managers and employees, as well as a field tour of its facilities. All listed firms are required to include visit records in their annual reports and provide timely public disclosure of site visits on the exchange's investor relations management platform. Recent studies find that security analysts (*Cheng et al., 2016; Han et al., 2018*) and mutual funds (*Chen et al., 2022b; Liu et al., 2017*) acquire valuable soft information through these company visits. Second, an Easy-IR micro-blogging platform was launched in 2011 to facilitate communication between investors and listed companies. The quality of mandatory responses from the latter forms a part of the exchange's annual disclosure review (*ICSA, 2013*). This web-based one-stop investor relations management platform has been expanded with new features over the years, such as investment knowledge, company analysis, and online voting.<sup>11</sup> Third, the exchange continues to innovate its methods of investor education using advancements in visual technologies to develop scenario-based interactive educational modules, including capitalizing on social media for wider dissemination of investor education.<sup>12</sup> Fourth, an annual survey on individual investors has been conducted by the exchange since 2009, with a primary aim to track changes in investor structure and behavioral characteristics so that targeted investment education products can be effectively delivered.<sup>13</sup>

<sup>11</sup> See [https://www.szse.cn/English/about/news/szse/t20190521\\_567316.html](https://www.szse.cn/English/about/news/szse/t20190521_567316.html) (retrieved on 1 July 2020).

<sup>12</sup> See <https://focus.world-exchanges.org/articles/empowering-investors-investor-education-practices-shenzhen-stock-exchange> (retrieved on 1 July 2020).

<sup>13</sup> See for example, the latest 3 years of “Survey Report on Individual Investors” released by Shenzhen Stock Exchange at [http://www.szse.cn/English/about/news/szse/t20180316\\_558301.html](http://www.szse.cn/English/about/news/szse/t20180316_558301.html) (2017), [http://www.szse.cn/English/about/news/szse/t20190319\\_565573.html](http://www.szse.cn/English/about/news/szse/t20190319_565573.html) (2018), and [http://www.szse.cn/English/about/news/szse/t20200320\\_575313.html](http://www.szse.cn/English/about/news/szse/t20200320_575313.html) (2019) (retrieved on 1 July 2020).

Table 8  
Alternative estimation methods.

	Fama- MacBeth	Quantile Regression				
		10th	25th	50th	75th	90th
<i>MEGA30</i>	0.0001 (0.0015)	-0.0024** (0.0011)	-0.0008 (0.0012)	0.0011 (0.0010)	0.0003 (0.0014)	0.0014 (0.0023)
<i>lnNSH</i>	-0.3838*** (0.1036)	-0.1655*** (0.0214)	-0.2139*** (0.0196)	-0.3244*** (0.0298)	-0.4325*** (0.0299)	-0.6110*** (0.0382)
<i>lnNSH<sup>2</sup></i>	0.0195*** (0.0055)	0.0078*** (0.0010)	0.0105*** (0.0010)	0.0162*** (0.0015)	0.0218*** (0.0015)	0.0309*** (0.0019)
<i>INST</i>	-0.0101 (0.0109)	0.0084*** (0.0023)	0.0045 (0.0029)	0.0108*** (0.0022)	0.0115*** (0.0035)	0.0123*** (0.0044)
<i>BLOCK</i>	-0.0081 (0.0081)	-0.0327*** (0.0036)	-0.0294*** (0.0029)	-0.0206*** (0.0046)	-0.0159*** (0.0042)	-0.0039 (0.0065)
<i>ln (1+ANALYST)</i>	-0.0125*** (0.0032)	-0.0077*** (0.0007)	-0.0095*** (0.0007)	-0.0125*** (0.0009)	-0.0142*** (0.0011)	-0.0176*** (0.0016)
<i>lnSIZE</i>	-0.0129*** (0.0023)	-0.0085*** (0.0008)	-0.0103*** (0.0010)	-0.0123*** (0.0011)	-0.0117*** (0.0012)	-0.0116*** (0.0019)
<i>TO</i>	-0.0019** (0.0007)	-0.0010*** (0.0001)	-0.0011*** (0.0001)	-0.0011*** (0.0001)	-0.0009*** (0.0001)	-0.0009*** (0.0002)
<i>RET</i>	-0.0106 (0.0164)	-0.0012 (0.0048)	-0.0039 (0.0048)	-0.0035 (0.0060)	-0.0157** (0.0071)	-0.0072 (0.0081)
<i>LEV</i>	0.0531*** (0.0077)	0.0451*** (0.0031)	0.0534*** (0.0042)	0.0593*** (0.0037)	0.0611*** (0.0053)	0.0771*** (0.0068)
<i>VOL</i>	-0.0285*** (0.0054)	-0.0167*** (0.0012)	-0.0196*** (0.0015)	-0.0262*** (0.0016)	-0.0297*** (0.0014)	-0.0338*** (0.0026)
<i>lnBSIZE</i>	0.0098 (0.0082)	0.0034 (0.0036)	-0.0008 (0.0034)	-0.0028 (0.0043)	-0.0037 (0.0042)	0.0036 (0.0069)
<i>BINDEP</i>	-0.0210* (0.0110)	-0.0083 (0.0116)	-0.0354*** (0.0107)	-0.0313** (0.0148)	-0.0062 (0.0184)	0.0207 (0.0253)
<i>DUALITY</i>	-0.0009 (0.0010)	-0.0029** (0.0012)	-0.0017 (0.0012)	-0.0007 (0.0009)	-0.0021** (0.0010)	-0.0010 (0.0020)
CONSTANT	2.2528*** (0.4713)	1.1862*** (0.1157)	1.4585*** (0.0979)	2.0303*** (0.1437)	2.5510*** (0.1427)	3.3857*** (0.1924)
Year Dummies	No	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	7136	7136	7136	7136	7136	7136
<i>R<sup>2</sup>/Pseudo R<sup>2</sup></i>	0.4432	0.2043	0.2243	0.2639	0.3128	0.3616

Notes: This table presents the estimation results for the baseline liquidity model where the dependent variable is Closing Percent Quoted Spread (*CPQS*) but replaces pooled OLS with Fama-MacBeth two-step regression and quantile regression. The variable descriptions are provided in Table 1.

For brevity, year and industry dummies are suppressed. Standard errors are reported in parentheses. *N* denotes the number of firm-year observations.

\*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

### 5.3. Control variables

From Table 4, seven control variables are highly significant across the linear and quadratic models. First, previous studies find that institutional ownership and blockholdings are associated with lower liquidity because both have privileged access to private firm-specific information. Hence, their information advantage increases adverse selection costs. The results in Table 4 show that the information asymmetry hypothesis only holds for institutional ownership, reaffirming that institutions are informed investors in China. Blockholdings, however, are negatively and significantly associated with *CPQS*, which contradicts existing empirical evidence. We conjecture that blockholders in Chinese stock markets are wealthy individuals who do not have an information advantage. Hence, their noise trading improves liquidity. Second, the negative coefficient for security analysts underscores their important role in alleviating information asymmetries among market participants. Third,

firm size has the expected negative coefficient, which is consistent with the explanation that larger firms are associated with lower information asymmetry and enhanced investor recognition, resulting in higher stock liquidity. Fourth, higher turnover is associated with higher liquidity, which is consistent with the conventional wisdom that more stock trading lowers transaction costs. Fifth, leverage yields the predicted negative relationship with liquidity because of reduced competition among traders and higher firm riskiness that deter risk-averse investors from trading. Sixth, the negative coefficient for *VOL* implies that stocks with higher return volatility are associated with improved liquidity, which is a counterintuitive result that warrants future investigation for a market completely dominated by retail investors. Notably, we find no evidence that corporate governance is driving the liquidity of Chinese listed SMEs. This result is consistent with Chia et al. (2020) for Malaysian firms but contradicts the pioneering work of Chung et al. (2010) for U.S. stocks.

Table 9  
Robustness check on endogeneity.

	Lag in Variables	Changes in Variables	Firm Fixed Effects	System GMM
	(1)	(2)	(3)	(4)
<i>MEGA30</i>	−0.0010 (0.0022)		−0.0001 (0.0011)	−0.0026 (0.0530)
<i>lnNSH</i>	−0.3223*** (0.0462)	−5.6018 (5.2462)	−0.3609*** (0.0178)	−0.9800*** (0.1413)
<i>lnNSH</i> <sup>2</sup>	0.0164*** (0.0023)	2.1329 (2.4577)	0.0181*** (0.0009)	0.0487*** (0.0071)
<i>INST</i>	−0.0005 (0.0043)	0.0009 (0.0006)	0.0086*** (0.0025)	−0.0079 (0.0187)
<i>BLOCK</i>	−0.0121 (0.0084)	−0.0880** (0.0393)	−0.0278*** (0.0039)	−0.0663 (0.0654)
<i>ln (1+ANALYST)</i>	−0.0114*** (0.0021)	−0.0217 (0.0151)	−0.0148*** (0.0008)	−0.0109 (0.0123)
<i>lnSIZE</i>	−0.0110*** (0.0025)	−3.3250*** (0.7878)	−0.0110*** (0.0009)	−0.0391** (0.0199)
<i>TO</i>	−0.0006*** (0.0002)	−0.0025 (0.0162)	−0.0013*** (0.0001)	−0.0006** (0.0003)
<i>RET</i>	−0.0775*** (0.0178)	0.0012 (0.0016)	−0.0152*** (0.0048)	−0.0784** (0.0377)
<i>LEV</i>	0.0596*** (0.0095)	0.0037 (0.0030)	0.0575*** (0.0039)	0.1481* (0.0757)
<i>VOL</i>	−0.0204*** (0.0066)	−0.2384*** (0.0656)	−0.0256*** (0.0011)	−0.0330*** (0.0073)
<i>lnBSIZE</i>	−0.0046 (0.0066)	0.0181 (0.0898)	−0.0057 (0.0038)	0.0807 (0.1264)
<i>BINDEP</i>	−0.0361 (0.0221)	0.0472 (0.0803)	−0.0324** (0.0126)	0.1609 (0.3478)
<i>DUALITY</i>	−0.0026 (0.0016)		−0.0017 (0.0012)	0.0020 (0.0272)
<i>CPQS</i> <sub><i>t</i>−1</sub>				0.4006*** (0.0917)
CONSTANT	1.9394*** (0.2453)	−0.1167 (0.0807)	2.2002*** (0.0930)	5.9322*** (1.5382)
Year Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	No	Yes
<i>N</i>	6323	3781	7136	7115
Adj. <i>R</i> <sup>2</sup>	0.4191	0.3794	0.4414	
Sargan test ( <i>p</i> -value)				39.77 (0.2290)
<i>AR</i> (1) ( <i>p</i> -value)				−7.09 (0.0000)
<i>AR</i> (2) ( <i>p</i> -value)				0.11 (0.9150)

Notes: Columns (1) and (2) estimate the baseline liquidity model but specify the independent variables in one year lagged (*t*−1) and annual changes ( $\Delta$ ), respectively. Columns (3) and (4) re-estimate the model with firm fixed effects estimator and system GMM, respectively. The diagnostic tests for system GMM are presented: Sargan test of over-identifying restrictions is under the null that all instruments are valid. *AR*(1) and *AR*(2) tests are under the null of no first-order and second-order serial correlation, respectively, in the first-differenced residuals. The variable descriptions are provided in Table 1. For brevity, year and industry dummies are suppressed. Standard errors are reported in parentheses. *N* denotes the number of firm-year observations.

\*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

## 6. Robustness checks

The baseline results reveal a nonlinear relationship between the shareholder base and stock liquidity. This section conducts a series of robustness checks to ensure reliable statistical inferences from our baseline liquidity model.

### 6.1. Confirming the U-shaped relationship

We provide a graphical plot and conduct a formal *U* test to confirm the U-shaped relationship between *lnNSH* and *CPQS*. First, we sort and partition our data into deciles based on the *NSH* and then compute the average of *CPQS* for each decile. Fig. 2 depicts the U-shaped relationship between both variables.

Second, we present the results of a formal *U* test proposed by Lind and Mehlum (2010), which is a joint test on the two null hypotheses of an inverted-U or monotone relationship. Table 5 shows that the slope at the lower bound of *lnNSH* is significantly negative, but the sign changes to positive at the upper bound. This result is consistent with the test statistic, which rejects the combined null hypotheses at the 1% level of significance in favor of a U-shaped relationship between *lnNSH* and *CPQS*.

### 6.2. Alternative measures for megacities

In the baseline analysis, we use the “China’s Top 100 Cities” ranking in 2019 constructed by Warton Economic Institute and assign the top 30 on the list as megacities (*MEGA30*). Given the

arbitrary choice, the robustness check considers the top 10 (*MEGA10*) and top 20 (*MEGA20*) cities on the same list. Moreover, we follow [Kuang et al. \(2021\)](#) to define Beijing, Shanghai, Guangzhou, and Shenzhen as megacities (*MEGA4*). Across all three columns in [Table 6](#), the alternative proxies for megacities are statistically insignificant, whereas the nonlinear relationship between shareholder base and liquidity remains intact.

### 6.3. Alternative liquidity measures

We replicate [Table 4](#) but use liquidity measures from the dimension of price impacts, namely, *CPQS Impact (CPQSIM)* and [Amihud's \(2002\)](#) illiquidity ratio (*ILLIQ*). The former is computed as the ratio of *CPQS* scaled by trading volume, whereas the latter is the ratio of absolute stock returns scaled by trading volume. In [Table 7](#), the highly significant  $\ln NSH$  and its squared term reinforce our baseline result of a nonlinear relationship between shareholder base and liquidity. Although the significance of *MEGA30* in the model with *ILLIQ* is consistent with  $H_1$ , we refrain from drawing such a conclusion because it is not robust to other liquidity measures.

### 6.4. Alternative estimation methods

We next determine whether the nonlinear relationship detected by the pooled OLS regression in the baseline analysis remains intact when two alternative estimation methods are used. The first method is Fama-MacBeth two-step regression, which takes time-series averages of coefficients from annual cross-sectional regressions. The second is the quantile regression, which determines whether the nonlinear relationship holds across the entire range of the *CPQS* conditional distribution. [Table 8](#) shows that  $\ln NSH$  and its squared term are highly significant across both estimation methods, with signs consistent with a U-shaped relationship.

### 6.5. Endogeneity

[Table 9](#) uses four econometrics approaches to address endogeneity, but we are mindful that the problem cannot be fully resolved. First, we specify the baseline liquidity model as predictive regression, where all the explanatory variables are lagged one year ( $t-1$ ), and re-estimate using pooled OLS. The results presented in column (1) reinforce the key finding of the nonlinear relationship between shareholder base and liquidity. Second, we specify the dependent and continuous independent variables in annual changes, reflecting short-term movements after removing any longer term effects. The results in column (2) show that  $\ln NSH$  and  $\ln NSH^2$  expressed in changes lose their explanatory power, indicating that their nonlinear relationship exists over the longer term. Third, we address time-invariant unobserved heterogeneity using a firm fixed effects estimator in column (3). The nonlinear relationship remains intact, thereby ruling out the possibility that common unobservable firm factors simultaneously determine shareholder base and liquidity. Fourth, we specify the model as a dynamic panel, where all the explanatory variables are in lagged terms,

and the lagged *CPQS* is added as an additional regressor. The estimation results from the system generalized method-of-moments (GMM) in column (4), which pass the diagnostic tests, provide indicative evidence of a causal relationship from the *NSH* to liquidity.

## 7. Conclusion

Given the economic importance of SMEs to almost every economy, addressing their long-term financing needs is of top priority to governments worldwide. Although public listing at dedicated SME exchanges provides an alternative avenue, a major obstacle to attracting participating SMEs is the low liquidity of the secondary markets. The Shenzhen SME board is perhaps the few exception, with the number of listed SMEs growing from 38 in the inaugural year to 943 in 2019. In addition, the liquidity of its traded stocks is much higher than the average reported by [Chia et al. \(2020\)](#) for firms listed on the Main Board of the half-century-old Malaysian stock exchange. This result motivates us to explore the liquidity drivers of listed stocks on the Shenzhen SME board from 2005 to 2019. The empirical findings can serve as a reference point for other SME exchanges formulating liquidity-enhancing strategies.

With the large urban population size and complete dominance by unsophisticated individual investors in China, we test two competing hypotheses grounded on familiarity: firm location and investor recognition. The former predicts liquidity as a function of prospective investors ([Loughran & Schultz, 2005](#)), whereas the latter advocates the size of the shareholder base ([Chia et al., 2020](#)). Our extensive analyses consistently show that more shareholders are associated with higher liquidity through the investor recognition channel. However, liquidity declines when ownership becomes too dispersed because of elevated agency conflicts. The findings have two major implications. First, having a large pool of potential investors with local bias does not give SMEs head-quartered in megacities the home advantage in their quest for higher liquidity. Instead, liquidity improves because a large number of shareholders hold stocks that they are familiar with or have knowledge about. Hence, additional information should be provided to prospective investors to increase their familiarity or recognition of the available stocks. Second, liquidity declines when the shareholder base exceeds the maximum threshold level because diffuse ownership exacerbates agency conflicts. This implies that the costs outweigh the benefits when the number of shareholders becomes too large. [Yung and Jian \(2017\)](#) provide evidence of the negative effect of an expanded shareholder base on firm value, while we find that it is detrimental to liquidity. The cost-benefit trade-off, however, should be evaluated by individual firms.

In the earlier section, we discuss several initiatives undertaken by the Shenzhen Stock Exchange to increase firm visibility and investor recognition, which might play a role in expanding the shareholder base and improving the liquidity of listed SMEs. However, rigorous analyses are needed to establish the effectiveness of these well-structured investor education and protection programs, which we leave for future

studies. From another aspect, listed firms should not let regulators shoulder the full responsibility of improving market liquidity. Amihud and Mendelson (2000, 2008) repeatedly call for corporate managers to actively manage their shareholder base because the higher cost of capital and the lower market valuation arise from illiquidity are ultimately borne by the listed firms. One strategy that has recently received academic attention is the shareholder perks program widely adopted by Japanese companies (Huang et al., 2022; Karpoff et al., 2021; Nose et al., 2021). This program offers noncash tax-free perks, such as gifts, discount coupons, and travel vouchers, to shareholders who own a threshold number of shares as of the allotment date. The objective is to increase the number of small individual investors. Given the wide adoption of digital technologies, more innovative strategies should be formulated by listed SMEs to introduce their stocks to the large pool of prospective investors, thereby increasing the likelihood of them becoming new shareholders.

### Declaration of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Acknowledgements

We are indebted to an anonymous referee of the journal for the constructive comments that have improved the manuscript significantly. The third author acknowledges financial funding from Universiti Malaysia Sabah (Grant No: SBK0457-2021).

### References

- Abraham, F., Cortina, J. J., & Schmukler, S. L. (2021). The rise of domestic capital markets for corporate financing: Lessons from East Asia. *Journal of Banking & Finance*, 122, Article 105987.
- AFI. (2019). *SME finance guideline note*. Alliance for Financial Inclusion Guideline Note No.36, available at <https://www.afi-global.org/publications/3077/SME-Finance-Guideline-Note>.
- Amihud, Y. (2002). Illiquidity and stock returns: Cross-section and time-series effects. *Journal of Financial Markets*, 5(1), 31–56.
- Amihud, Y., & Mendelson, H. (1986). Asset pricing and the bid-ask spread. *Journal of Financial Economics*, 17(2), 223–249.
- Amihud, Y., & Mendelson, H. (2000). The liquidity route to a lower cost of capital. *The Journal of Applied Corporate Finance*, 12(4), 8–25.
- Amihud, Y., & Mendelson, H. (2008). Liquidity, the value of the firm, and corporate finance. *The Journal of Applied Corporate Finance*, 20(2), 32–45.
- Arena, M. P., & Dewally, M. (2012). Firm location and corporate debt. *Journal of Banking & Finance*, 36(4), 1079–1092.
- Ayyagari, M., Beck, T., & Demirguc-Kunt, A. (2007). Small and medium enterprises across the globe. *Small Business Economics*, 29(4), 415–434.
- Ayyagari, M., Demirguc-Kunt, A., & Maksimovic, V. (2011). *Small vs. young firms across the world: Contribution to employment, job creation, and growth*. World Bank Policy Research Working Paper No.5631, available at <https://ssrn.com/abstract=1807732>.
- Baltzer, M., Stolper, O., & Walter, A. (2015). Home-field advantage or a matter of ambiguity aversion? Local bias among German individual investors. *The European Journal of Finance*, 21(9), 734–754.
- Beck, T., Demirguc-Kunt, A., & Levine, R. (2005). SMEs, growth, and poverty: Cross-country evidence. *Journal of Economic Growth*, 10(3), 199–229.
- Benson, B. W., Chen, Y., James, H. L., & Park, J. C. (2020). So far away from me: Firm location and the managerial ownership effect on firm value. *Journal of Corporate Finance*, 64, Article 101658.
- Będowska-Sójka, B., & Echaust, K. (2020). What is the best proxy for liquidity in the presence of extreme illiquidity? *Emerging Markets Review*, 43, Article 100695.
- Bick, P., Crook, M. D., Lynch, A. A., & Walkup, B. (2017). Proximity to urban centers in mergers and acquisitions. *Managerial Finance*, 43(11), 1292–1308.
- Bodnaruk, A. (2009). Proximity always matters: Local bias when the set of local companies changes. *Review of Finance*, 13(4), 629–656.
- Bodnaruk, A., & Östberg, P. (2009). Does investor recognition predict returns? *Journal of Financial Economics*, 91(2), 208–226.
- Bodnaruk, A., & Östberg, P. (2013). The shareholder base and payout policy. *Journal of Financial and Quantitative Analysis*, 48(3), 729–760.
- Boubaker, S., Chkir, I., Chourou, L., & Saadi, S. (2019). Does geographic location matter to stock return predictability? *Journal of Forecasting*, 38(4), 311–326.
- Boyle, P., Garlappi, L., Uppal, R., & Wang, T. (2012). Keynes meets Markowitz: The trade-off between familiarity and diversification. *Management Science*, 58(2), 253–272.
- Cao, H. H., Han, B., Hirshleifer, D., & Zhang, H. H. (2011). Fear of the unknown: Familiarity and economic decisions. *Review of Finance*, 15(1), 173–206.
- Chen, D., Ma, Y., Martin, X., & Michaely, R. (2022a). On the fast track: Information acquisition costs and information production. *Journal of Financial Economics*, 143(2), 794–823.
- Chen, H., Noronha, G., & Singal, V. (2004). The price response to S&P 500 index additions and deletions: Evidence of asymmetry and a new explanation. *The Journal of Finance*, 59(4), 1901–1930.
- Chen, H., Qu, Y., Shen, T., Wang, Q., & Xu, D. X. (2022b). The geography of information acquisition. *Journal of Financial and Quantitative Analysis*, 57(6), 2251–2285.
- Cheng, Q., Du, F., Wang, X., & Wang, Y. (2016). Seeing is believing: Analysts' corporate site visits. *Review of Accounting Studies*, 21(4), 1245–1286.
- Chia, Y. E., Lim, K. P., & Goh, K. L. (2020). More shareholders, higher liquidity? Evidence from an emerging stock market. *Emerging Markets Review*, 44, Article 100696.
- Chichernea, D. C., Ferguson, M. F., & Kassa, H. (2015). Idiosyncratic risk, investor base, and returns. *Financial Management*, 44(2), 267–293.
- Chung, K. H., Elder, J., & Kim, J. C. (2010). Corporate governance and liquidity. *Journal of Financial and Quantitative Analysis*, 45(2), 265–291.
- Chung, K. H., & Zhang, H. (2014). A simple approximation of intraday spreads using daily data. *Journal of Financial Markets*, 17, 96–120.
- Coval, J. D., & Moskowitz, T. J. (2001). The geography of investment: Informed trading and asset prices. *Journal of Political Economy*, 109(4), 811–841.
- Devos, E., & Rahman, S. (2014). Location and lease intensity. *Journal of Corporate Finance*, 29, 20–36.
- Ding, R., & Hou, W. (2015). Retail investor attention and stock liquidity. *Journal of International Financial Markets, Institutions and Money*, 37, 12–26.
- Engelberg, J. E., & Parsons, C. A. (2011). The causal impact of media in financial markets. *The Journal of Finance*, 66(1), 67–97.
- Foerster, S. R., & Karolyi, G. A. (1999). The effects of market segmentation and investor recognition on asset prices: Evidence from foreign stocks listing in the United States. *The Journal of Finance*, 54(3), 981–1013.
- Fong, K. Y. L., Holden, C. W., & Trzcinka, C. A. (2017). What are the best liquidity proxies for global research? *Review of Finance*, 21(4), 1355–1401.
- Francis, B., Hasan, I., John, K., & Waisman, M. (2016). Urban agglomeration and CEO compensation. *Journal of Financial and Quantitative Analysis*, 51(6), 1925–1953.
- Francis, B., Hasan, I., & Waisman, M. (2022). The geography of information: Evidence from the public debt market. *Journal of Economic Geography*. <https://doi.org/10.1093/jeg/lbac002> (in press).

- Gao, J., Cong, L. M., & Evans, J. (2015). Earnings management, IPO underpricing, and post-issue stock performance of Chinese SMEs. *The Chinese Economy*, 48(5), 351–371.
- Gao, H., Qu, Y., & Shen, T. (2022). Geographic proximity and price efficiency: Evidence from high-speed railway connections between firms and financial centers. *Financial Management*, 51(1), 117–141.
- Ge, Y., Guo, H., Fung, H. G., & Guang, K. (2019). CEO effects on the IPO market under different policy regimes: Evidence from the Chinese SME board. *International Review of Economics & Finance*, 63, 163–175.
- Green, T. C., & Jame, R. (2013). Company name fluency, investor recognition, and firm value. *Journal of Financial Economics*, 109(3), 813–834.
- Grinblatt, M., & Keloharju, M. (2001). How distance, language, and culture influence stockholdings and trades. *The Journal of Finance*, 56(3), 1053–1073.
- Grullon, G., Kanatas, G., & Weston, J. P. (2004). Advertising, breadth of ownership, and liquidity. *Review of Financial Studies*, 17(2), 439–461.
- Han, B., Kong, D., & Liu, S. (2018). Do analysts gain an informational advantage by visiting listed companies? *Contemporary Accounting Research*, 35(4), 1843–1867.
- Harwood, A., & Konidaris, T. (2015). *SME exchanges in emerging market economies: A stocktaking of development practices*. World Bank Policy Research Working Paper No.7160, available at <https://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-7160>.
- Hong, H., Kubik, J. D., & Stein, J. C. (2004). Social interaction and stock-market participation. *The Journal of Finance*, 59(1), 137–163.
- Hong, H., Kubik, J. D., & Stein, J. C. (2005). Thy neighbor's portfolio: Word-of-mouth effects in the holdings and trades of money managers. *The Journal of Finance*, 60(6), 2801–2824.
- Huang, Y., Qiu, H., & Wu, Z. (2016). Local bias in investor attention: Evidence from China's Internet stock message boards. *Journal of Empirical Finance*, 38, 338–354.
- Huang, W., Rhee, S. G., Suzuki, K., & Yasutake, T. (2022). Do investors value shareholder perks? Evidence from Japan. *Journal of Banking & Finance*, 143, Article 106575.
- Huberman, G. (2001). Familiarity breeds investment. *Review of Financial Studies*, 14(3), 659–680.
- ICSA. (2013). *Financing of SMEs through capital markets in emerging market countries*. Final Report of International Council of Securities Association. available at [https://icsa.global/sites/default/files/Financing%20of%20SMEs%20through%20Capital%20Markets%20in%20Emerging%20Market%20Countries%282013.2%29\\_0.pdf](https://icsa.global/sites/default/files/Financing%20of%20SMEs%20through%20Capital%20Markets%20in%20Emerging%20Market%20Countries%282013.2%29_0.pdf).
- IOSCO. (2015). *SME financing through capital markets*. Final Report of International Organization of Securities Commissions. available at <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD493.pdf>.
- Ivkovic, Z., & Weisbender, S. (2005). Local does as local is: Information content of the geography of individual investors' common stock investments. *The Journal of Finance*, 60(1), 267–306.
- Jankensgård, H., & Vilhelmsson, A. (2018). The shareholder base hypothesis of stock return volatility: Empirical evidence. *Financial Management*, 47(1), 55–79.
- Kadlec, G. B., & McConnell, J. J. (1994). The effect of market segmentation and illiquidity on asset prices: Evidence from exchange listings. *The Journal of Finance*, 49(2), 611–636.
- Karpoff, J. M., Schonlau, R., & Suzuki, K. (2021). Shareholder perks and firm value. *Review of Financial Studies*, 34(12), 5676–5722.
- Kuang, C., Liu, Z., & Zhu, W. (2021). Need for speed: High-speed rail and firm performance. *Journal of Corporate Finance*, 66, Article 101830.
- Le, H., & Gregoriou, A. (2020). How do you capture liquidity? A review of the literature on low-frequency stock liquidity. *Journal of Economic Surveys*, 34(5), 1170–1186.
- Lehavy, R., & Sloan, R. G. (2008). Investor recognition and stock returns. *Review of Accounting Studies*, 13(2), 327–361.
- Li, T., Abd Karim, M. R., & Munir, Q. (2016). The determinants of leasing decisions: An empirical analysis from Chinese listed SMEs. *Managerial Finance*, 42(8), 763–780.
- Li, T., Munir, Q., & Abd Karim, M. R. (2017). Nonlinear relationship between CEO power and capital structure: Evidence from China's listed SMEs. *International Review of Economics & Finance*, 47, 1–21.
- Liao, L., Li, Z., Zhang, W., & Zhu, N. (2012). Does the location of stock exchange matter? A within-country analysis. *Pacific-Basin Finance Journal*, 20(4), 561–582.
- Lind, J. T., & Mehlum, H. (2010). With or without U? The appropriate test for a U-shaped relationship. *Oxford Bulletin of Economics & Statistics*, 72(1), 109–118.
- Liu, S., Dai, Y., & Kong, D. (2017). Does it pay to communicate with firms? Evidence from firm site visits of mutual funds. *Journal of Business Finance & Accounting*, 44(5–6), 611–645.
- Liu, Z., Zhang, T., Li, W., & Kuang, X. (2018). The neighborhood effects of provincial-level stock market participation in China. *Physica A: Statistical Mechanics and Its Applications*, 509, 459–468.
- Loughran, T. (2007). Geographic dissemination of information. *Journal of Corporate Finance*, 13(5), 675–694.
- Loughran, T. (2008). The impact of firm location on equity issuance. *Financial Management*, 37(1), 1–21.
- Loughran, T., & Schultz, P. (2005). Liquidity: Urban versus rural firms. *Journal of Financial Economics*, 78(2), 341–374.
- Massa, M., & Simonov, A. (2006). Hedging, familiarity and portfolio choice. *Review of Financial Studies*, 19(2), 633–685.
- Merton, R. C. (1987). A simple model of capital market equilibrium with incomplete information. *The Journal of Finance*, 42(3), 483–510.
- Munir, Q., Kok, S. C., Teplova, T., & Li, T. (2017). Powerful CEOs, debt financing, and leasing in Chinese SMEs: Evidence from threshold model. *The North American Journal of Economics and Finance*, 42, 487–503.
- Nielsson, U., & Wójcik, D. (2016). Proximity and IPO underpricing. *Journal of Corporate Finance*, 38, 92–105.
- Nose, Y., Miyagawa, H., & Ito, A. (2021). How do firms attract the attention of individual investors? Shareholder perks and financial visibility. *Journal of Behavioral and Experimental Finance*, 31, Article 100520.
- Ren, S., Eisingerich, A. B., & Tsai, H. T. (2015). How do marketing, research and development capabilities, and degree of internationalization synergistically affect the innovation performance of small and medium-sized enterprises (SMEs)? A panel data study of Chinese SMEs. *International Business Review*, 24(4), 642–651.
- Shao, R., & Wang, N. (2021). Trust and local bias of individual investors. *Journal of Banking & Finance*, 133, Article 106273.
- Shinozaki, S. (2014). *Capital market financing for SMEs: A growing need in emerging Asia*. ADB Working Paper No.121, available at <https://www.adb.org/publications/capital-market-financing-smes-growing-need-emerging-asia>.
- Sialm, C., Sun, Z., & Zheng, L. (2020). Home bias and local contagion: Evidence from funds of hedge funds. *Review of Financial Studies*, 33(10), 4771–4810.
- Tan, Y., Huang, H., & Lu, H. (2013). The effect of venture capital investment: Evidence from China's small and medium-sized enterprises board. *Journal of Small Business Management*, 51(1), 138–157.
- Wang, J. G., & Yang, J. (2013). Who gets funds from China's capital market?. *A micro view of China's economy via case studies on listed Chinese SMEs*. London: Springer.
- WFE. (2016). *WFE report on SME exchanges*. World Federation of Exchanges Report, available at <https://www.world-exchanges.org/our-work/articles/wfe-report-sme-exchanges>.
- WFE. (2017). *SME financing and equity markets*. World Federation of Exchanges Report, available at <https://www.world-exchanges.org/our-work/articles/wfe-report-equity-market-financing-smes>.
- WFE. (2018). *An overview of WFE SME markets*. World Federation of Exchanges Report, available at <https://www.world-exchanges.org/our-work/articles/wfe-overview-sme-markets-report-october-2018>.
- Yung, K., & Jian, Y. (2017). Effects of the shareholder base on firm behavior and firm value in China. *International Review of Economics & Finance*, 49, 370–385.
- Zou, G., Cheng, Q., Chen, W., & Meng, J. G. (2019). What causes the IPO underpricing? New evidence from China's SME market. *Applied Economics*, 52(23), 2493–2507.