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Passageway business regulation and bank loan financing—— A quasi-natural experiment based on new asset management rules

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ABSTRACT

Using the exogenous shock of New Asset Management Rules (NAMRs), this paper examines the impact of strengthening passageway business regulation on bank loan financing. We find that since the introduction of the NAMRs, firms that used to adopt passageway financing are obtaining more bank loans. When firms change their business to directions supported by industrial policies, they are more likely to obtain loans from state-owned commercial banks. In addition, firms can improve their performance to obtain loans from other commercial banks. Further tests show that after firms turn to loan financing, the cost of loans can decrease but other financing behaviours do not change significantly. The test of economic consequences also shows that after considering adjustment costs, turning to bank loan financing does not lead to worse net income. This paper provides new insights for understanding the micro effects of shadow banking regulation and improving China's financial regulatory policies.

KEYWORDS

Passageway business;
shadow banking; bank loan;
financial risk

1. Introduction

With the expansion of financial business scopes and cross-industry operations, the scale of shadow banking in China has increased by more than 20% every year since 2008 (China Banking and Insurance Regulatory Commission, 2020). Due to the lack of necessary regulation, it is easy for shadow banking to become a hidden danger of systemic financial risks. Controlling the risks brought by shadow banking has become an important task in China's economic battle in the new era. In the process of defusing risks, the passageway business of commercial banks (hereinafter referred to as 'passageway business') has become the object focused on by China's financial supervision departments. Passageway business is an important part of China's shadow banking system. It is a transaction in which banks use their own capital or other capital, with the help of third-

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party intermediaries such as security companies and trust companies as conduits, and set up asset or wealth management products to provide financing for target customers. Obtaining capital from this business is called passageway financing. As passageway business is off the balance sheet and has fewer regulatory constraints, it grew rapidly in scale from 2008 to 2016. According to the statistics of the Wind database and the China Trustee Association, by the end of 2016, the capital scale of the special account business of fund companies, the directional asset management plans of securities companies, and the affairs management of trust companies that passageway business rely on exceeded 40 trillion yuan.

In an environment where there is imperfect regulation of commercial banks' off-balance-sheet business and inconsistent regulation standards for intermediaries, passageway business is likely to alleviate the financing difficulties of firms. However, this business bypasses regulatory requirements and invests bank capital into high-risk and restricted sections, accumulating serious systemic risks. To curb regulatory arbitrage and resolve financial risks, the People's Bank of China (PBC), the China Banking and Insurance Regulatory Commission (CBIRC), the China Securities Regulatory Commission (CSRC) and the State Administration of Foreign Exchange (SAFE) jointly released the draft of *Guiding Opinions on Regulating the Asset Management Business of Financial Institutions* (abbreviated as new asset management rules, NAMRs) on 17 November 2017. The policy regulates asset management industries in a unified way and puts forward specific requirements for the product orientations and operation modes of the asset management business. In particular, the policy clearly requires financial institutions not to provide passageway services for other financial institutions' asset management products (AMPs) to avoid regulatory requirements. Financial institutions need to strengthen the compression of passageway business during the policy transition period and timely liquidate when this business expires. Figure 1 shows that by the end of 2020, the total amount of special account business, directional asset management plans and affairs management had dropped to 23.2 trillion yuan. There was a significant 45% reduction in the scale of the above business from 2016 to 2020. The data show that since the introduction of the

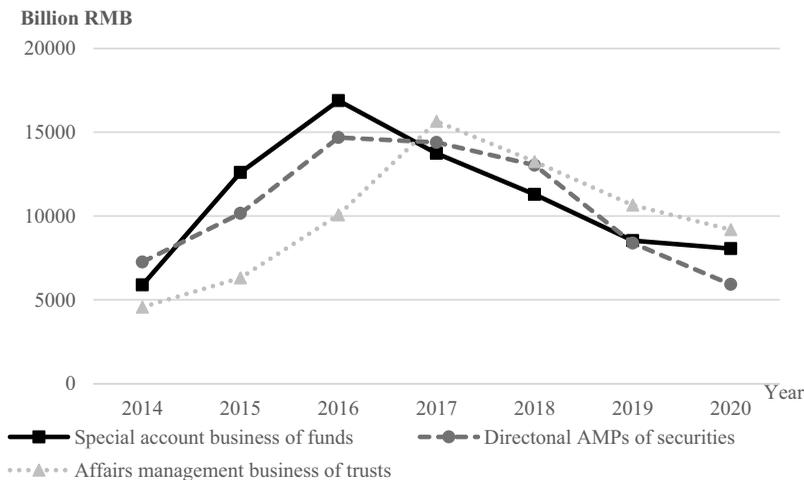


Figure 1. The total amount of three types of passageway business in China.

NAMRs, the passageway business represented by bank-fund cooperation, bank-security brokerage cooperation, and bank-trust cooperation has decreased remarkably.

In theory, the effect of shadow banking regulation has advantages and disadvantages. On the one hand, shadow banking regulation can reduce systemic financial risks (Huang, 2018; Moosa, 2017). On the other hand, as an effective supplement to bank loans, shadow banking can alleviate the financing constraints of firms, and regulation may cause damage to the real economy (Li et al., 2022; Yang et al., 2019). The NAMRs have reduced the passageway financing of firms, and the issuance of bonds and stocks is subject to the supervision and restriction of the CSRC and stock exchanges. In contrast, bank loans, which serve as the primary avenue for firms to alter their financing methods, are more flexible and have a stable source of funds (Sheng et al., 2017). Following the strengthen the regulation of passageway business through the NAMRs, can firms successfully turn to bank loan financing and alleviate their capital shortage? How do banks and firms jointly influence the transformation in ways of financing? How do firms' financing costs and net income change? These questions can help us answer the debate about shadow banking regulation and are also of great significance for government departments to evaluate the micro effects of NAMRs and encourage financial sectors to better serve the real economy. However, the existing literature does not give enough attention to these questions.

To answer the above questions, we adopt the difference-in-difference (DiD) method and take non-financial listed firms from 2014 to 2019 as the research sample. We find that since the introduction of the NAMRs, firms that used to adopt passageway financing are likely to obtain more loans that come from state-owned commercial banks and other commercial banks. The finding still holds after carrying out a series of robustness tests, such as removing ambiguous observations, replacing dependent variables, changing the event time, and using paired samples. Our study finds that banks and firms jointly determine the shift in ways of financing. State-owned commercial banks allocate loans mainly according to the industrial policy guidance. Since the issuance of the NAMRs, firms are more likely to obtain loans from state-owned commercial banks when they change their business to the policy-supporting field through M&A and the introduction of technology. The allocation of loans by other commercial banks is mainly based on the performance of firms. When firms improve their growth and repayment ability, they are more likely to access financing from other commercial banks. In a further analysis, we find that the cost of loans decreases after firms change their ways of financing, but other financing behaviours (i.e. seasoned equity offerings and bond issuance) do not change significantly. The test of economic consequences shows that after considering adjustment costs, turning to bank loan financing does not change a firm's net income. However, this financing shift guides the bank capital from off the balance sheet to on the balance sheet, which resolves financial risks and promotes the stable development of the economy.

Our paper adds to several strands of literature and provides implications for regulators. Firstly, our study expands the relevant literature on shadow banking regulation. Although shadow banking carries high risks, it also has the advantages of low threshold and flexibility (Hou et al., 2018). The existing literature has theoretically discussed the positive and negative effects of shadow banking regulation (He et al., 2018; Moosa, 2017; Wallison, 2012; Yang et al., 2019). From the perspective of passageway business, this paper attempts to capture the changes in the financing behaviours of firms after the issuance of the NAMRs and finds that shadow banking supervision does not harm the performance

of firms while reducing risks, which provides empirical evidence for the debate on the real effect of shadow banking regulation.

Secondly, this paper expands the literature on the relationship between informal financing and formal financing channels from the firm-level data. The main difference between the two ways of financing is whether or not they are formally supervised by regulators. The capital of shadow banking in China mainly comes from commercial banks (Liu et al., 2019). Previous research, such as Gao et al. (2018) and Gao et al. (2020), used theoretical models to find that shadow banking systems partially replace the credit functions of commercial banks. Our research uses a firm-level sample and finds that there is a partial substitution between informal financing (i.e. passageway business) and formal financing (i.e. bank loans) channels. In addition, we find that the process of turning to formal financing is affected by banks and firms, which complements prior studies.

Finally, this paper reveals the impact of NAMRs on the economy from the financing perspective, providing implications for the government to prevent financial risks and promote the steady development of the economy. Our research finds that the policy makes firms shift from passageway financing to bank lending, which can resolve financial risks and guide passageway capital to the on-balance-sheet transactions of banks. Furthermore, our study finds that firms can obtain bank loans by changing the direction of their business and improving their capabilities, and these improvements help firms increase total factor productivity (TFP). The results of this paper show that the issuance of the NAMRs has had a positive effect in guiding the transformation and upgrading of firms, which has practical significance for the government to improve relevant policies.

The rest of the paper is organised as follows: [Section 2](#) presents the institutional background. [Section 3](#) develops hypotheses, while [section 4](#) describes the sample selection and the research design. [Sections 5](#) and [6](#) discuss the empirical results and further analysis. [Section 7](#) concludes the paper.

2. Institutional background

Under strict regulatory requirements, the capital provided by formal financing channels (e.g. bank loans) cannot fully meet the needs of enterprises. Driven by suppliers, demanders and intermediaries, there was a rapid growth in the total amount of passageway business from 2008 to 2016. Specifically, supply-side banks are subject to many restrictions from regulatory departments and policies (Barth et al., 2004; Lei & Wang, 2014; Liu & Guo, 2017; Liu et al., 2019), including deposit rate ceilings, liquidity and credit directions. To bypass regulation, banks have the motivation to provide capital to demanders through conduits such as the wealth management products of fund companies, security companies and trust companies, which help banks to transfer on-balance-sheet assets to off-balance-sheet investment receivables (Zhang et al., 2023). Demand-side firms do not need to meet the requirements of formal financing in terms of specific investment directions and financial indicators (Peng & He, 2020). Firms in bloated and backward industries or with poor performance can still obtain capital from the passageway business. In addition, when demanders need to reduce the leverage or cover up the risk of high leverage, they can use passageway financing and design it as ‘fake equity real debt’. Finally, for intermediary-side financial institutions, brokerage fees from large-scale passageway business can significantly boost their earnings. One thing worthy of note is that intermediaries

merely act as passive owners; they do not need to bear additional risks and costs. Therefore, suppliers, demanders and intermediaries jointly promote the expansion of passageway business.

Although the passageway business can provide capital for enterprises, it accumulates a high degree of systemic financial risks, mainly reflected on the bank side.¹ On the one hand, commercial banks cooperate with intermediaries, and part of the on-balance-sheet capital is transferred to the off-balance-sheet investment receivables through the passageway business and invested in restricted projects that have no qualification to obtain bank loans. The financial statement of banks cannot reflect the real risks, and the regulatory departments can hardly evaluate the level of systemic risks in the financial system. On the other hand, due to the lack of regulation in the passageway business and the high financing costs, banks have less risk aversion to corporate behaviours, resulting in greater risk exposure (Moosa, 2017).

China's regulatory departments have paid attention to the risk of passageway business since the early years. For example, in 2008 and 2010, the China Banking Regulatory Commission issued *Guidelines on Business Cooperation between Banks and Trust Companies* and *Regulation of Business Cooperation between Banks and Trust Companies* to regulate the passageway business. In 2016, the CSRC issued *Regulation on the Management of Subsidiaries of Fund Companies* and other policies to warn of the risks in the bank-fund collaborated passageway business. However, within the framework of China's separate regulation system, the passageway business can be transformed into different forms, including the channelling of capital to trust companies (bank-trust cooperation), to securities brokerages (bank-security brokerage cooperation) and to fund companies (bank-fund cooperation), and the scale of the business continues to increase.

Eliminating regulatory arbitrage and prohibiting passageway business that circumvents regulatory requirements have become important parts of preventing systemic risks in financial institutions. In this context, the PBC, CBIRC, CSRC and SAFE promulgated the NAMRs on 17 November 2017. The NAMRs require regulatory departments to carry out unified regulation of the asset management industry. This policy puts forward clear requirements for the operation modes and product orientations of the asset management business and sets the entry threshold for investors. In particular, the NAMRs formally prohibit financial institutions from providing passageway services for other financial institutions' AMPs to bypass regulatory indicators, and require the trustee institutions to effectively perform their management responsibilities. The transition period for the new rules was from the date of promulgation to the end of 2021. During this period, financial institutions had to compress the amount of passageway business to reduce systemic financial risks.

After the issuance of the NAMRs, the CSRC and other institutions promulgated *Measures for the Supervision and Administration of Financial Management Business of Commercial Banks*, *Measures for the Administration of Private Asset Management Business of Securities and Futures Companies* and other supporting policies to further urge the

¹The passageway business also accumulates systemic risks at the intermediary parties, such as trusts and security companies. For example, to avoid regulations, the business will be nested, resulting in a long business chain and easily creating financial risks.

rectification of the passageway business within the transitional period. Figure 1 shows that the total amount of passageway business decreased by 45% from 2016 to 2020, suggesting that the 2017 regulation has significantly curtailed passageway financing.

3. Theoretical analysis and hypothesis development

Firms will weigh costs and benefits when choosing financing methods. Compared with formal financing under regulation, the passageway business has fewer requirements on firms' capital use and financial indicators (Li, 2021; Peng & He, 2020). In addition, when firms need to reduce book leverage or cover up higher leverage risks, they can use passageway financing and design it as 'fake equity real debt'. Finally, compared with other informal financing methods such as private lending, firms can obtain stable and large amounts of funds from the passageway business with banks as the main supplier, which helps them to plan the direction of capital investment and promote the development of new projects. Therefore, passageway financing has been favoured by firms in the past. However, this financing method also has the nature of regulatory arbitrage. After the issuance of NAMRs, firms will no longer be able to obtain funds from passageway business. They will face a shortage of funds and seek alternative financing ways.

In China's bank-dominated financial system, bank loans have prominent advantages. This financing method can provide a large amount of capital for firms, and loan issuance is flexible (Sheng et al., 2017; Zeng & Lin, 2016). Different from the passageway business, banks consider various risk factors based on risk management theory and regulatory requirements when making lending decisions. Subsequently, they determine whether to grant loans, and also decide on details such as the loan amount and tenure. For example, in terms of political factors, whether a firm is supported by industrial policies, its political affiliation, and the nature of its property rights can all affect the acquisition of bank loans and interest rates (Hao & Zhang, 2011; He et al., 2016; Lin et al., 2012). In addition, the business operations, corporate governance, and information disclosure of firms are also closely related to risk levels, which affects firms' ability to obtain bank loans (Gallimberti, 2020; Liu et al., 2010; Yao et al., 2010). After the issuance of the NAMRs, the reduction of passageway business may prompt banks to bring back funds onto balance sheets, thus leading banks to reallocate credit resources. Meanwhile, when firms adopt passageway financing due to their business directions or financial indicators making them unable to meet the requirements of bank lending, the financial constraints and survival pressure brought by the NAMRs may force them to adjust their business or improve their performance to meet the banks' requirements for obtaining loans. We discuss how firms can turn to bank loan financing from state-owned commercial banks and other commercial banks by making adjustments.

State-owned commercial banks are dominant in China's financial market, and the nature of property rights determines that they need to undertake social and policy goals and provide financial support for economic reform (He et al., 2008; Tan et al., 2012; Wang & Yu, 2013). As the embodiment of national development strategy and reform direction, industrial policies guide the flow of resources and productive factors (Song & Wang, 2013). State-owned commercial banks need to allocate credit to industries with higher marginal efficiency according to industrial policy guidelines (Y. F. Lin et al., 2010; Ye & Li, 2014). In addition, as the executives of state-owned commercial banks are

appointed by the government (Gao et al., 2020), the strength of allocating banks' credit or loan resources to policy-supported industries is also included in the promotion assessment of relevant executives (China Banking Association, 2018). After the issuance of the NAMRs, the passageway capital of banks returned from off-balance-sheet transactions to on-balance-sheet assets. The property nature of state-owned commercial banks makes them more willing to allocate incremental credit to firms whose business is changing to the direction of policy support, so as to realise the target of economic reform and boost industry upgrade. For firms, the adoption of passageway financing often occurs when they are in overcapacity or backward industries. The withdrawal of passageway funds imposes more severe resource constraints and survival pressure on these firms. To acquire resources and adapt to changes in the institutional environment, firms may adjust their business operations and actively invest in industries encouraged by the government in order to meet the preferences of state-owned commercial banks (Yang et al., 2018). This transformation enables firms to obtain more loans from state-owned commercial banks, which bridges the funding gap and alleviates the survival crisis. Meanwhile, firms can also benefit from the resources and investment opportunities brought by industrial policies. According to the analysis, since the issuance of the NAMRs, firms that had previously adopted passageway financing are able to change their business scopes to comply with the guidelines on industrial policies so as to successfully obtain loans from state-owned commercial banks.

Other commercial banks (e.g. joint-stock banks, municipal commercial banks, rural commercial banks, and foreign banks) need to increase the efficiency of resource allocation in the financial market and alleviate the financing constraints of firms, especially non-SOEs and SMEs (Ferri, 2009; Liu et al., 2017; Lyu & Mao, 2020). Such banks pursue the maximisation of economic benefits, and their profits are directly linked to the salaries of managers and employees. When the regulation restricted passageway business, other commercial banks became more willing to allocate loans to firms with improved performance based on consideration of economic interests. Specifically, when deciding whether to issue loans, banks will evaluate firms' development and repayment capabilities. On the one hand, the growth ability of firms ensures that bank loans can be effectively utilised while increasing bank profits and driving local economic development (Li & Zheng, 2016; Pan & Tian, 2020; Zheng & Zhu, 2013); on the other hand, the repayment ability of firms ensures that bank loans can be repaid on time, reducing the risk of default (Duarte et al., 2020; Zhang & Li, 2012). The NAMRs have restrained the passageway financing of firms. The intensification of survival pressure may force firms to optimise their management and performance to gain favour from other commercial banks. Therefore, since the issuance of the NAMRs, firms that previously used passageway financing have been able to obtain loans from other banks by improving their development and repayment capabilities. On the basis of the above analysis, we propose the following hypothesis.

Hypothesis: In the context of the issuance of the NAMRs and the intensified regulation of the passageway business, firms that previously used passageway financing will shift towards bank loan financing.

However, after the introduction of the NAMRs, firms would not inevitably shift towards bank loans. When firms adopt passageway financing to reduce their leverage or cover up

higher leverage risks, turning to bank loans may be contrary to their intentions. In addition, there are factor costs and transaction costs due to adjustment behaviours brought by industrial upgrades and performance improvement (Mao & Sheng, 2021; Zheng et al., 2013). When the benefits from adjustments are less than the costs, firms tend to maintain the status quo, and the withdrawal of passageway capital further increases financial constraints and restricts development. Considering these risks, commercial banks will not increase or even decrease lending to firms. Therefore, the relationship between passageway business regulation and bank loan acquisition is inconclusive and needs to be empirically tested.

4. Sample selection and research design

4.1. Sample selection and data sources

Our study adopts the DiD approach and takes the year of issuing the draft of the NAMRs (2017) as the event year² Our sample period is from 2014 to 2019, including the three years before and after the implementation of the policy (i.e. 2014–2016; 2017–2019). Our initial sample includes all A-share firms listed on the Shanghai and Shenzhen stock exchanges. The sample is then screened using the following steps: 1) excluding listed firms in the financing industry, 2) eliminating observations with missing data or that were processed by ST or *ST during the period, and 3) excluding firms that went public after 2014. After the above screening steps, our final sample includes 9,846 firm-year observations (1,641 firms).

The bank loan data mainly comes from the RESSET database, which provides detailed data on the loans of listed firms, including issuance time, loan size, interest rates, etc. We also use data from the CSMAR database to certify and supplement. In addition, shareholding data is retrieved from the RESSET database. Other financial data, corporate governance data, and regional data in our study are sourced from the CSMAR and WIND databases.

4.2. Models and variables

To verify the hypothesis of our study, we set the following DiD model:

$$Loan_{i,t} = \alpha + \beta_1 Treat_i \times Post_t + \beta_2 Z_{i,t} + \mu_i + \delta_t + \varepsilon_{i,t} \quad (1)$$

where i and t index the firm and year, respectively. The dependent variable *Loan* represents the total loan amount, calculated by the total loans newly obtained from commercial banks divided by the total assets at the beginning of the year. According to the theoretical analysis, *Loan* is further subdivided into loan amount from state-owned commercial banks³ (*SOE_Loan*) and from other commercial banks (*Other_Loan*).

Treat is a dummy variable that equals one for firms involved in passageway financing before the introduction of the NAMRs and zero otherwise. The typical mode of

²Figure 1 shows that the scale of special account business and specific asset management products decreased at the end of 2017. Therefore, we take the time of the issuance of the NAMRs draft (2017) as the event year.

³State-owned commercial banks include the Industrial and Commercial Bank of China, the Agricultural Bank of China, the Bank of China, the China Construction Bank, the Postal Savings Bank of China and the Bank of Communications.

Table 1. Comparison of CARs between the treatment group and the control group during the event period.

Event windows	[-1,1]	[-2,2]	[-3,3]
Panel A Taking the date of issuing NAMRs draft (11/17/2017) as the event date			
Average CARs of treatment group	-0.003	-0.003	-0.002
Average CARs of control group	0.004	0.006	0.007
Difference	-0.007***	-0.009***	-0.009***
Panel B Taking the date of issuing NAMRs (04/27/2018) official document as the event date			
Average CARs of treatment group	-0.001	-0.005	-0.006
Average CARs of control group	0.003	0.002	0.001
Difference	-0.004	-0.007**	-0.007*

passageway business is shadow intermediaries use AMPs as conduits to provide funds for the demander. In practice, these AMPs hold company shares to provide capital for the demander. The capital provided in the passageway business is debt rather than equity in essence as the AMPs generally require repayment through repurchase (this business is known as ‘fake equity real debt’). Therefore, we use whether the firm was held by passageway capital in 2016 to define *Treat*. We take firms whose shareholders include the AMPs, special account business, and affairs management business of shadow intermediaries as the treatment group ($Treat = 1$) and other firms as the control group ($Treat = 0$). To establish the validity of the definition, we examine the cumulative abnormal returns of the treatment group and the control group during the event window of issuing the NAMRs. In the short term, the restrictions on passageway business mainly harm firms that rely on this financing channel, and market reactions are likely to distinguish the policy impact (Galil & Soffer, 2011; Jiang et al., 2020). Table 1 shows that in several windows surrounding the issuance of the NAMRs, the cumulative abnormal returns (CARs) of the treatment group were significantly lower than those of the control group, which indicates that the treatment group defined in our paper is more likely to be the firms that used passageway financing before the event. *Post* equals one if a firm-year observation falls in the post-event period (i.e. 2017–2019) and zero otherwise.

In accordance with the previous literature (Li & Xu, 2015; Zhai et al., 2020), we control a vector of variables affecting the availability of bank loans, including *Size*, *Lev*, *ROE*, *Fixasset*, *Cash*, *SOE*, *Inst*, *Board* and *Dual*. The level of local financial development also significantly affects the availability of bank loans (Yu & Pan, 2008). We control the number of bank branches in the province where the firm is located (*Bank*). To mitigate concerns about potentially correlated omitted variables, we control a full set of firm-fixed effects (i.e. μ) and year-fixed effects (i.e. δ) in our DiD estimation. We present the detailed definitions of our key variables in Table 2.

5. Empirical results and analysis

5.1. Descriptive statistics

Table 3 reports the descriptive statistics of the main variables. To mitigate the concern of outliers, we winsorise all continuous variables at the top (bottom) 1% level. For the independent variable *Loan*, the minimum, maximum, and standard deviation are 0, 1.028, and 0.201, respectively. The statistic indicates that there are significant differences in the loan amount obtained by different firms. The mean values of *SOE_Loan* and *Other_Loan* are 0.043 and 0.061, which shows that state-owned and other commercial

Table 2. Variable definitions.

	Variables	Definition
Dependent Variables	<i>Loan</i>	Loans newly obtained from commercial banks divided by total assets at the beginning of the year.
	<i>SOE_Loan</i>	Loans newly obtained from state-owned commercial banks divided by total assets at the beginning of the year.
	<i>Other_Loan</i>	Loans newly obtained from other commercial banks divided by total assets at the beginning of the year.
Independent Variables	<i>Treat</i>	Variable that equals one if firms' shareholders include asset management products, special account business and affairs management business of shadow intermediaries and zero otherwise.
	<i>Post</i>	A dummy variable that equals one if a firm-year observation falls in the post-event period (i.e. 2017–2019) and zero otherwise.
Control Variables	<i>Size</i>	The natural logarithm of the total assets at the end of the fiscal year.
	<i>Lev</i>	Total liabilities divided to total assets at the end of the fiscal year.
	<i>ROE</i>	Net profits divided by book value of total stockholders' equity at the end of the fiscal year.
	<i>Fixasset</i>	Fixed assets divided to total assets at the end of the fiscal year.
	<i>Cash</i>	The ratio of cashflow from operations to total assets at the end of the fiscal year.
	<i>SOE</i>	A dummy variable that equals one if a firm is a state-owned enterprise and zero otherwise.
	<i>Inst</i>	The percentage of institutional ownership in the firm at the end of the fiscal year.
	<i>Board</i>	The percentage of independent directors on the firms' board at the end of the fiscal year.
	<i>Dual</i>	A dummy variable that equals one if CEO and chairman are the same person and zero otherwise.
	<i>Bank</i>	The natural logarithm of one plus the number of bank branches in the province where the firm is located.

banks can provide different amounts of capital to a firm through bank loans. In terms of the independent variables, the mean of *Treat* is 0.361, indicating that 36.1% of observations in this study are in the treatment group, while the remaining observations are in the control group. The mean of *Post* is 0.500, and the numbers of observations before and after the implementation of the policy are equal. In terms of the other control variables, the descriptive statistics in our study are consistent with prior literature (Dai et al., 2019; Zhai et al., 2020).

Table 3. Descriptive statistics.

Variables	N	Mean	Median	Min	Max	SD
<i>Loan_{i,t}</i>	9,846	0.106	0.000	0.000	1.028	0.201
<i>SOE_Loan_{i,t}</i>	9,846	0.043	0.000	0.000	0.615	0.107
<i>Other_Loan_{i,t}</i>	9,846	0.061	0.000	0.000	0.708	0.130
<i>Treat_i</i>	9,846	0.361	0.000	0.000	1.000	0.480
<i>Post_t</i>	9,846	0.500	0.500	0.000	1.000	0.500
<i>Size_{i,t}</i>	9,846	22.422	22.256	19.720	26.298	1.304
<i>Lev_{i,t}</i>	9,846	0.434	0.425	0.061	0.908	0.206
<i>ROE_{i,t}</i>	9,846	0.052	0.064	-0.814	0.358	0.144
<i>Fixasset_{i,t}</i>	9,846	0.210	0.173	0.001	0.703	0.164
<i>Cash_{i,t}</i>	9,846	0.045	0.044	-0.162	0.242	0.068
<i>SOE_{i,t}</i>	9,846	0.362	0.000	0.000	1.000	0.481
<i>Inst_{i,t}</i>	9,846	0.424	0.441	0.004	0.898	0.234
<i>Board_{i,t}</i>	9,846	0.377	0.364	0.231	0.800	0.057
<i>Dual_{i,t}</i>	9,846	0.251	0.000	0.000	1.000	0.434
<i>Bank_{i,t}</i>	9,846	9.098	9.180	7.988	9.786	0.524

5.2. Main empirical results

5.2.1. Passageway business regulation and bank loan financing

Table 4 reports the empirical results for the hypothesis in our study. In column (1), the dependent variable is the loans newly obtained from commercial banks divided by total assets at the beginning of the year. The coefficient of $Treat \times Post$ is 0.017, which is significantly positive at the 1% level. The result indicates that after the issuance of the NAMRs, the total bank loans obtained by firms that previously used passageway financing increased by 16.04% (0.017/0.106). Furthermore, we divide $Loan$ into loans from state-owned commercial banks (SOE_Loan) and loans from other commercial banks ($Other_Loan$). Columns (2) and (3) examine the specific types of bank loans that firms turn to after the tightening of regulation on the passageway business. In column (2), the coefficient of $Treat \times Post$ is 0.008 and significant at the 5% level, showing that firms are able to receive more loans from state-owned commercial banks after the introduction of the NAMRs. The coefficient of $Treat \times Post$ is also significantly positive in column (3), which means that the treatment group also receives more loans from other commercial banks after the regulation. The above results validate the hypothesis of our study: that is, in the context of the issuance of the NAMRs and the intensified regulation of the passageway business, firms that previously used passageway financing will shift towards bank loan financing.

Table 4. Passageway business supervision and bank loan financing.

Variables	$Loan_{i,t}$ (1)	$SOE_Loan_{i,t}$ (2)	$Other_Loan_{i,t}$ (3)
$Treat_i \times Post_t$	0.017*** (2.81)	0.008** (2.02)	0.008** (1.98)
$Size_{i,t}$	-0.005 (-0.73)	-0.002 (-0.72)	-0.000 (-0.09)
$Lev_{i,t}$	0.097*** (4.22)	0.047*** (3.62)	0.043*** (2.83)
$ROE_{i,t}$	0.029** (2.41)	0.014* (1.86)	0.014* (1.69)
$Fixasset_{i,t}$	-0.053** (-2.04)	-0.021 (-1.26)	-0.027 (-1.53)
$Cash_{i,t}$	-0.077*** (-2.78)	0.001 (0.06)	-0.081*** (-4.03)
$SOE_{i,t}$	-0.024* (-1.66)	-0.010 (-1.26)	-0.014 (-1.32)
$Inst_{i,t}$	-0.017 (-0.77)	-0.009 (-0.80)	-0.011 (-0.74)
$Board_{i,t}$	0.006 (0.14)	0.000 (0.02)	-0.005 (-0.18)
$Dual_{i,t}$	0.000 (0.08)	-0.000 (-0.05)	0.002 (0.52)
$Bank_{i,t}$	0.016 (0.94)	0.005 (0.47)	0.008 (0.64)
Firm fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	9,846	9,846	9,846
Adj. R ²	0.013	0.006	0.011

T-statistics shown in parentheses are based on standard errors adjusted by heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

With regard to the control variables, *Lev* and *ROE* are significantly positively correlated with bank loan financing, and *Cash* is negatively correlated with loan indicators, which is consistent with the findings of Lu et al. (2008).

To validate the assumptions made in the DiD estimations, we conduct a parallel trend analysis by decomposing the interaction term $Treat \times Post$ into several interactions that track the impact of the NAMRs. Specifically, we replace the variable *Post* with six timing dummies corresponding to the years surrounding the issuance of the NAMRs, namely, *Y2014*, *Y2015*, *Y2016*, *Y2017*, *Y2018*, and *Y2019*. We use 2016 as the benchmark year, so we do not include any interactions related to 2016. The results in Table 5 show that when the dependent variables are *Loan*, *SOE_Loan*, and *Other_Loan*, the coefficients of $Treat \times Y2014$ and $Treat \times Y2015$ are not significant but the coefficients of $Treat \times Y2018$ and $Treat \times Y2019$ are significantly positive. The results show that the difference between the treatment and control groups is stable in the two years leading up to the exogenous shock, suggesting that there are no pre-trends for bank loan financing. However, after the regulation, the loan amount received by the treatment group increased remarkably. Overall, the parallel trend assumption is satisfied.

5.2.2. Bank adjustments, firm adjustments and the obtaining of bank loans

On the basis of the theoretical analysis, we examine the specific mechanisms by which firms obtain bank loans from state-owned banks and other commercial banks.

As a reflection of national development strategies and reform directions, industrial policies can guide the flow of resources. State-owned commercial banks need to allocate credit resources to industries in line with industrial policy guidelines. After the issuance of the NAMRs, firms that were involved in passageway financing could change their business to directions supported by industrial policies in order to survive and obtain loans from state-owned commercial banks. We capture business adjustment towards the directions supported by industrial policies through M&A and technology introduction (*IPDirection*). On the one hand, we focus on whether firms enter fields supported by industrial policies by acquiring firms in these fields through M&A. Specifically, we read the government's

Table 5. Parallel trend tests.

Variables	<i>Loan</i> _{<i>i,t</i>} (1)	<i>SOE_Loan</i> _{<i>i,t</i>} (2)	<i>Other_Loan</i> _{<i>i,t</i>} (3)
$Treat_t \times Y2014$	-0.011 (-1.31)	-0.005 (-1.07)	-0.007 (-1.18)
$Treat_t \times Y2015$	0.004 (0.49)	0.005 (1.01)	-0.002 (-0.40)
$Treat_t \times Y2017$	-0.000 (-0.05)	0.000 (0.04)	-0.002 (-0.42)
$Treat_t \times Y2018$	0.015* (1.94)	0.009* (1.83)	0.005 (0.94)
$Treat_t \times Y2019$	0.030*** (3.55)	0.014*** (2.60)	0.012** (2.13)
Control variables	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	9,846	9,846	9,846
Adj. R ²	0.014	0.007	0.011

Note: T-statistics shown in parentheses are based on standard errors adjusted by heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

five-year plan documents and identify the industries supported by industrial policies. Then, we search and download relevant documents from the websites of the National Development and Reform Commission, the Ministry of Industry and Information Technology, the Ministry of Transport and so on. We extract keywords (such as chips, energy conservation, artificial intelligence, etc.) for the supporting directions from policy documents through manual reading and machine learning. If a listed firm conducts M&A where industrial policies are supportive of the acquiree's industry or business scope, it is considered that the firm transforms its business towards the directions supported by policies through M&A. Consequently, the value of 1 is assigned to *IPM&A*. If there is no M&A or the M&A does not involve industries or projects supported by industrial policies, the value of *IPM&A* is 0. On the other hand, we also focus on whether firms enter the fields of industrial policy support through technology introduction. We retrieve the purchased technology, processes, and patents from the notes on intangible assets. If the name or description relates to policy-supporting projects, meaning that the firm changes its business scope through technology introduction, *IPTech* is defined as 1. If firm does not purchase or the purchase excludes policy-supporting projects, the value of *IPTech* is 0.

In Table 6, we examine the impact of M&A and technology introduction on firms obtaining loans from state-owned commercial banks after passageway business is restricted. The dependent variable is the ratio of newly received loans from state-owned commercial banks to total assets at the beginning of the year. The result in column (1) shows that the coefficient of $Treat \times Post \times IPDirection$ is 0.015, which is significant at the 5% level. The result in column (2) shows that when firms transform their business towards directions supported by industrial policies through technology introduction, the coefficient of $Treat \times Post \times IPDirection$ is 0.012, which is significant at the 10% level. The above results indicate that after the introduction of the NAMRs, the political objectives of state-owned commercial banks make them more willing to allocate credit resources to firms that have shifted their business towards the directions supported by industrial policies. To adapt to changes in the institutional environment, firms will adjust their

Table 6. Specific mechanism for firms to obtain loans from state-owned commercial banks.

Variables	$SOE_Loan_{i,t}$	$SOE_Loan_{i,t}$
	$IPDirection = IPM\&A$	$IPDirection = IPTech$
	(1)	(2)
$Treat_i \times Post_t \times IPDirection_{i,t}$	0.015** (2.07)	0.012* (1.77)
$Treat_i \times Post_t$	0.004 (0.92)	0.003 (0.76)
$Treat_i \times IPDirection$	-0.009* (-1.77)	-0.009 (-1.60)
$Post_t \times IPDirection$	-0.012*** (-2.69)	-0.006 (-1.47)
$IPDirection$	0.008** (2.27)	0.003 (1.01)
Control Variables	Yes	Yes
Firm fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
N	9,846	9,846
Adj. R ²	0.009	0.008

T-statistics shown in parentheses are based on standard errors adjusted by heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

business in line with policy support. The efforts of the two sides determine that firms can obtain more loans from state-owned commercial banks after the tightening of shadow banking regulation.

Other commercial banks pursue the maximisation of economic benefits and shoulder the responsibility of improving the efficiency of resource allocation in the financial market. The performance of firms is a key indicator that these banks focus on. Specifically, the favourable prospects of firms ensure the effective utilisation of bank loans, which not only improves bank profits but also drives local economic development. The repayment ability of firms makes sure that bank loans can be reimbursed on time, reducing the risk of default. According to the theoretical analysis, as the NAMRs restrain passageway financing, survival pressure may force firms to optimise their management and performance in order to gain favour from other commercial banks. To test this mechanism, following Biddle et al. (2009), Jin et al. (2015), and Ding et al. (2021), we use the growth rate of revenue and the change in interest rates to measure the improvement of corporate performance (*Improvement*). The growth rate of revenue is calculated by (revenue in the current year – revenue in the previous year)/revenue in the previous year. If the firm's revenue growth rate is greater than 0, we define *Growth* as 1; otherwise, we define *Growth* as 0. The change in interest rates characterises the borrower's evaluation of the firm's repayment ability, which is calculated by financial expenses/(long-term borrowing + short-term borrowing + non-current liabilities maturing within one year + payable bonds). If the firm's interest rate decreases compared to the previous year, *Solvency* is defined as 1, indicating an improvement in debt-paying ability; otherwise, *Solvency* is defined as 0.

In Table 7, the dependent variable is the ratio of newly received loans from other commercial banks to total assets at the beginning of the year. The result in column (1) shows that when firms' growth ability is improved, the coefficient of *Treat* × *Post* × *Improvement* is 0.017, which is significant at the 5% level. Column (2) also shows that the coefficient of *Treat* × *Post* × *Improvement* is significantly positive. The results in Table 7 indicate that other commercial banks are more willing to allocate loan resources to firms with improved performance. The increasing survival pressure may force firms to optimise their management and performance in order to meet the requirements of other commercial banks.

5.3. Robustness tests

5.3.1. Alternative definition of the treatment group and dependent variables

In the baseline regression results, we identify the treatment and control groups on the basis of passageway capital shareholdings and test the difference in CARs between the two groups during several event windows. Although the average CARs of the treatment group are negative, there are still a few firms in this group with higher abnormal returns when the policy was issued in 2017, indicating that such firms may not be involved in the passageway business. To reduce noise in our paper, we exclude the treatment firms with significantly positive CARs in different event windows.⁴ The results in columns (1) to (3) of

⁴The significance of CAR is calculated on the basis of $\frac{1/\sqrt{n}}{sd(CAR)}$ CAR. If the value is greater than 1.65, it is considered that the CAR is significantly positive.

Table 7. Specific mechanism for firms to obtain loans from other commercial banks.

Variables	<i>Other_Loan_{i,t}</i> <i>Improvement = Growth</i>	<i>Other_Loan_{i,t}</i> <i>Improvement = Solvency</i>
	(1)	(2)
<i>Treat_t × Post_t × Improvement_{i,t}</i>	0.017** (2.10)	0.012* (1.73)
<i>Treat_t × Post_t</i>	-0.003 (-0.51)	0.003 (0.65)
<i>Treat_t × Improvement</i>	-0.011* (-1.79)	-0.003 (-0.53)
<i>Post_t × Improvement</i>	-0.009* (-1.76)	-0.004 (-0.78)
<i>Improvement</i>	0.010** (2.46)	0.001 (0.34)
Control Variables	Yes	Yes
Firm fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
N	9,846	9,846
Adj. R ²	0.012	0.011

T-statistics shown in parentheses are based on standard errors adjusted by heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 8. Alternative definition of treatment group and dependent variables.

Variables	Excluding treatment firms with significantly positive CARs			Treating the dependent variable one year in advance		
	<i>Loan_{i,t}</i> (1)	<i>SOE_Loan_{i,t}</i> (2)	<i>Other_Loan_{i,t}</i> (3)	<i>Loan_{i,t+1}</i> (4)	<i>SOE_Loan_{i,t+1}</i> (5)	<i>Other_Loan_{i,t+1}</i> (6)
<i>Treat_t × Post_t</i>	0.017** (2.56)	0.008* (1.94)	0.007* (1.68)	0.024*** (3.45)	0.013*** (3.12)	0.015*** (2.94)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	9,474	9,474	9,474	9,846	9,846	9,846
Adj. R ²	0.013	0.006	0.011	0.016	0.009	0.012

T-statistics shown in parentheses are based on standard errors adjusted by heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 8 show that the coefficients of *Treat × Post* are both significantly positive, which is consistent with the main results in this study. In addition, we also replace the dependent variable for robustness tests. The NAMRs are regulatory policies aimed at financial institutions. Although the scale of two types of passageway businesses showed a downward trend in 2017, it may take some time for the policies to affect corporate financing decisions. Therefore, this paper advances the dependent variables by one year. Columns (4) to (6) of Table 8 show that the coefficients of *Treat × Post* are significantly positive at the 1% level, indicating that the results remain robust after treating the dependent variable one year in advance.

5.3.2. Alleviating concerns about the event year

The draft of the NAMRs was issued on 17 November 2017, and the official policy was issued on 27 April 2018. In previous tests, *Post* equals one if observations fall in the 2017–2019 period and zero otherwise. However, the definition of *Post* may cause the following two concerns. First, in 2016, the media reported the risks of passageway business, and the

CSRC and other regulatory departments also issued relevant policies (e.g. *Provisions on the Administration of Subsidiaries in Securities Investment Companies*). These regulations and policies may have formed society's expectation of the issuance of the NAMRs, leading firms to respond in advance. Second, the purpose of issuing the draft NAMRs at the end of 2017 was mainly to solicit comments, and there are discrepancies between the 2017 draft and the official policy. Consequently, the efficacy of the 2017 draft is worthy of discussion.

To alleviate the above concerns, we adopt two methods. First, we define 2016 as the event year to test whether the policy effects appeared in advance. Specifically, if observations fall in 2016 or later, *Post2* is defined as 1; otherwise, it is defined as 0. To ensure uniformity in duration before and after the event, and to mitigate the influence of the actual timing of the event, we take 2015–2016 as the research period. Second, we delete the observations in 2017 to exclude the impact of the policy issued at the end of the year and the transition period between the draft policy and the official policy. The results in columns (1) to (3) of Table 9 show that the coefficients of *Treat* × *Post2* are insignificant, indicating that firms did not anticipate the issuance of the NAMRs and did not respond in advance. The results in columns (4) to (6) show that after removing the observations in 2017, the coefficients of *Treat* × *Post* are both significantly positive. The issuance time of the NAMRs and the difference between the solicitation draft and the official document do not affect the main conclusions of our study.

5.3.3. Propensity score matching

There may be systematic differences between the treatment group and the control group affecting our study's results. To alleviate this concern, we use propensity score matching (PSM) to address endogeneity concerns stemming from non-random treatment assignments.

In Table 10, referring to Heckman et al. (1997) and Liu and Zhao (2015), we use PSM-DiD for testing. Specifically, we match each treatment firm with a control firm. The matching criteria include the control variables in the year 2016 (i.e. *Size*, *Lev*, *ROE*, *Fixasset*, *Cash*, *SOE*, *Inst*, *Board*, *Dual*, and *Bank*). We then use the nearest neighbour 1:1 matching technique and set the calliper to 0.01. We ultimately obtain 581 treatment firms and 377 control firms and use these firms to run a DiD regression. Panel A shows that after using PSM to find matched firms, there is no significant difference in the control variables between the treatment and control groups. In Panel B, the coefficients of *Treat* × *Post* are significantly positive, and the main results are robust.

Table 9. Alleviating concerns about the event year.

Variables	Taking 2016 as the event year			Deleting observations in 2017		
	<i>Loan_{i,t}</i> (1)	<i>SOE_Loan_{i,t}</i> (2)	<i>Other_Loan_{i,t}</i> (3)	<i>Loan_{i,t}</i> (4)	<i>SOE_Loan_{i,t}</i> (5)	<i>Other_Loan_{i,t}</i> (6)
<i>Treat_i</i> × <i>Post2_t</i>	−0.000 (−0.04)	−0.002 (−0.40)	0.002 (0.41)			
<i>Treat_i</i> × <i>Post_t</i>				0.025*** (3.78)	0.011*** (2.79)	0.012*** (2.66)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	3,282	3,282	3,282	8,205	8,205	8,205
Adj. R ²	0.035	0.041	0.022	0.013	0.007	0.011

T-statistics shown in parentheses are based on standard errors adjusted by heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 10. PSM-DiD analysis.

Variables	Mean of treatment group	Mean of control group	Difference (p value)
Panel A Differences in characteristics between Treatment vs. Control firms in the pre-event period			
<i>Size</i>	22.631	22.646	-0.015 (0.853)
<i>Lev</i>	0.432	0.426	0.006 (0.614)
<i>ROE</i>	0.062	0.051	0.011 (0.108)
<i>Fixasset</i>	0.218	0.214	0.004 (0.667)
<i>Cash</i>	0.048	0.046	0.002 (0.676)
<i>SOE</i>	0.336	0.348	-0.012 (0.667)
<i>Inst</i>	0.439	0.433	0.006 (0.694)
<i>Board</i>	0.382	0.381	0.001 (0.746)
<i>Dual</i>	0.246	0.239	0.007 (0.785)
<i>Bank</i>	9.081	9.078	0.003 (0.912)
Panel B PSM-DiD			
Variables	<i>Loan</i> _{<i>i,t</i>} (1)	<i>SOE_Loan</i> _{<i>i,t</i>} (2)	<i>Other_Loan</i> _{<i>i,t</i>} (3)
<i>Treat_t × Post_t</i>	0.026*** (3.39)	0.010** (2.26)	0.014*** (2.79)
Control Variables	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	5,748	5,748	5,748
Adj. R ²	0.016	0.009	0.013

T-statistics shown in parentheses are based on standard errors adjusted by heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

6. Further analysis

6.1. Changes in the costs of bank loans

According to the above results, we find that after the issuance of the NAMRs, the reallocation of bank loans and the adjustment of corporate behaviours enabled firms that previously used passageway financing to obtain more bank loans. In this section, we further examine what changes occur in the costs of bank loans. Following Francis et al. (2014) and Song et al. (2019), we use the fluctuation of loan interest rates to measure loan costs. The fluctuation is calculated by (interest rate of each loan – benchmark interest rate)/benchmark interest rate. Because our analysis is based on annual financial data, we use the average value of the interest rate fluctuation of loans newly obtained in a year as the costs of bank loans (*LoanCost*)⁵ We also calculate the loan costs of state-owned commercial banks (*SOE_LoanCost*) and other commercial banks (*Other_LoanCost*) according to the type of banks that issue loans. The results with the above indicators as dependent variables are shown in Table 11. In columns (1) to (3), the coefficients of *Treat × Post* are negative. Since the issuance of the NAMRs, firms that previously used passageway financing have been able to meet the requirements of banks by adjusting their business scope and improving their performance. Meanwhile, the default risk is reduced when firms make favourable adjustments. Commercial banks are willing to provide loans to firms at a lower interest rate.

⁵If the firm does not obtain loans in a year, the firm-year observations are not included in the regression. In addition, only a few loan contracts disclose interest rates, so the number of observations in Table 11 is reduced..

Table 11. Passageway business supervision and the costs of bank loans.

Variables	<i>LoanCost_{i,t}</i> (1)	<i>SOE_LoanCost_{i,t}</i> (2)	<i>Other_LoanCost_{i,t}</i> (3)
<i>Treat_i × Post_t</i>	-0.012* (-1.79)	-0.004** (-2.04)	-0.011 (-1.41)
Control Variables	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	3,133	1,523	2,756
Adj. R ²	0.009	0.007	0.011

T-statistics shown in parentheses are based on standard errors adjusted by heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

6.2. Choice of other financing ways

Since the NAMRs prohibited passageway business that evades regulatory requirements, firms have not only been able to turn to bank loans but also to raise funds through seasoned equity offerings (SEOs) and bond issuance. Although SEOs and bond issuance need to be supervised by regulatory departments, these ways of financing can help firms raise a large amount of capital. If firms can relax their financial constraints using other channels at a lower cost, their motivation to obtain bank loans may decrease. To comprehensively evaluate the changes in ways of corporate financing after the introduction of the NAMRs, we examine whether firms adopt more SEOs and bond issuance.

This study defines four variables to capture other financing ways of firms. *If_SEO* is a binary variable for whether the firm adopts an SEO. If a listed firm offers equity in the year, the value of *If_SEO* equals 1; otherwise, it equals 0. Similarly, *If_Bond* is a 0–1 variable to define whether a firm issues bonds. *SEOraised* is calculated by the amount of capital raised from SEOs/total assets at the beginning of the year. *Bondraised* is defined as the amount of capital raised from issuing bonds/total assets at the beginning of the year. We use Logit regression for binary variables and OLS regression for continuous variables. Relevant results are reported in Table 12.

When the dependent variables in columns (1) to (2) are *If_SEO* and *If_Bond*, the coefficients of *Treat × Post* are insignificant. The results indicate that after strengthening the regulation on passageway business, firms that were previously involved in passageway financing do not conduct more SEOs and bond issuance. When using the amount of capital raised by SEOs and bond issuance as dependent variables, the coefficients of *Treat × Post* are also insignificant. We can infer from the results of Tables 4 and 12 that firms are less likely to obtain alternative funds through issuing equity and bonds after the issuance of the NAMRs. Overall, bank loans play an important role in corporate financing in the post-NAMRs period.

6.3. The economic consequences of firms turning to bank loan financing

The previous sections test the specific mechanisms of firms turning to bank loans and find that two types of banks have different preferences when allocating loans. Firms that previously used passageway financing will either transform their business to obtain loans

Table 12. Passageway business supervision and choice of other financing methods for firms.

Variables	<i>If_SEO_{i,t}</i> (1)	<i>If_Bond_{i,t}</i> (2)	<i>SEOraised_{i,t}</i> (3)	<i>Bondraised_{i,t}</i> (4)
<i>Treat_t × Post_t</i>	0.038 (0.43)	0.015 (0.11)	-0.010 (-1.52)	-0.001 (-0.99)
Control Variables	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
N	9,846	9,846	9,846	9,846
Pseudo R ² /Adj. R ²	0.427	0.535	0.119	0.007

T-statistics shown in parentheses are based on standard errors adjusted by heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

from state-owned commercial banks or improve their performance to obtain loans from other commercial banks. In this part, we further examine the economic consequences of changes in firms' financing behaviour and the net effects after deducting adjustment costs. Specifically, we use TFP to measure the overall economic consequences. TFP is the additional productivity achieved under a fixed level of factor input, and its growth comes from the improvement of factor allocation efficiency (Hsieh & Klenow, 2009). Following Lu and Lian (2012) and Yang (2015), we use the OP method to calculate TFP. The specific model is as follows:

$$\begin{aligned} \ln Y_{i,t} = & \alpha + \beta_k \ln K_{i,t} + \beta_l \ln I_{i,t} + \beta_a \text{Age}_{i,t} + \beta_s \text{SOE}_{i,t} + \beta_e \text{Exit}_{i,t} + \sum_m \gamma_m \text{Year} \\ & + \sum_n \delta_n \text{Province} + \sum_k \mu_k \text{Ind} + \varepsilon_{i,t} \end{aligned} \quad (2)$$

In model (2), $\ln Y$ is the natural logarithm of revenue and $\ln K$ is the natural logarithm of the net value of fixed assets. $\ln I$ is the natural logarithm of a firm's capital expenditure. Age is the number of years a firm has been listed. SOE is a binary variable to capture the nature of property rights; it equals one if a firm is state-owned and zero otherwise. Exit refers to whether the firm has withdrawn from the market. If the abbreviation and the industry of the firm change simultaneously, it is considered that the firm has already withdrawn from the market. We adopt the OP semi-parametric estimation method to alleviate the simultaneity bias and sample selection bias. In this model, the state variables are $\ln K$ and Age , the control variable is SOE , the proxy variable is $\ln I$, the exit variable is Exit and the free variables are the dummy variables of year, province and industry. The residual estimated on the basis of the above model is the TFP.

Since firms need to adopt a series of adjustments to obtain bank loans, the adjusting process has factor costs and transaction costs (Mao & Sheng, 2021; Zheng et al., 2013). TFP cannot fully capture the costs brought by the above adjustments, and so we further use EVA and TobinQ to measure net effects after deducting adjustment costs. EVA is calculated as (net operating profit after tax – capital investment \times weighted average cost of capital, WACC)/capital investment. Business or management adjustments will result in changes in capital investment and WACC. Therefore, EVA can largely reflect the net income after deducting adjustment costs. TobinQ is an indicator of the market value of a listed firm. According to the efficient market theory, the market price at least reflects all the historical

information of the firm, so the change in the market value is likely to reflect the cost of adjustments. The regression results using *TFP*, *EVA* and *TobinQ* as dependent variables are shown in Table 13.

In column (1) of Panel A, the coefficient of $Treat \times Post$ is 0.032, indicating an increase in TFP for treatment firms after the issuance of the NAMRs. In columns (2) and (3), we group our sample on the basis of whether the listed firm obtained more bank loans after the regulation. We find that if firms turn to bank loan financing by changing their behaviours, their TFP will significantly improve. However, in the sample of firms that do not obtain bank loans, there is no significant change in the TFP of treatment firms. The results indicate that without considering adjustment costs, the changes guided by the NAMRs for firms to obtain capital from commercial banks can help them to optimise factor allocation efficiency and improve TFP. Panel B examines the changes in net income after deducting adjustment costs. The results show that for all treatment firms, there are no significant changes in *EVA* and *TobinQ* after the introduction of the NAMRs. Further distinguishing whether treatment firms receive more bank loans, there are no significant changes in *EVA* and *TobinQ*.

The results in Panels A and B indicate that after considering adjustment costs, the shift in ways of corporate financing does not change firms' accounting and market performance. Therefore, before the issuance of the NAMRs, firms had no incentive to actively turn to bank loan financing. When the regulation makes firms change their behaviours to meet the requirements of commercial banks, their net income is not damaged. However, passageway business regulation guides bank capital to return from off-balance-sheet transactions to on-balance-sheet assets, reducing the arbitrage of regulation. In addition, turning from passageway funds to bank loans decreases the risk exposure of banks. Our findings provide evidence that passageway business regulation plays a positive role in mitigating financial risks and promoting stable and healthy economic development.

Table 13. The economic consequences of firms turning to bank loan financing.

Variables	All sample		Sample with obtaining bank loans		Sample without obtaining bank loans	
	$TFP_{i,t}$		$TFP_{i,t}$		$TFP_{i,t}$	
	(1)		(2)		(3)	
Panel A Overall economic consequences						
$Treat_i \times Post_t$	0.032*		0.057**		0.030	
	(1.85)		(2.56)		(1.28)	
Control Variables	Yes		Yes		Yes	
Firm fixed effect	Yes		Yes		Yes	
Year fixed effect	Yes		Yes		Yes	
N	8,622		4,013		4,609	
Adj. R ²	0.373		0.415		0.318	
Panel B Net income						
Variables	All sample		Sample with obtaining bank loans		Sample without obtaining bank loans	
	$EVA_{i,t}$	$TobinQ_{i,t}$	$EVA_{i,t}$	$TobinQ_{i,t}$	$EVA_{i,t}$	$TobinQ_{i,t}$
	(1)	(2)	(3)	(4)	(5)	(6)
$Treat_i \times Post_t$	-0.006	0.029	-0.013	-0.053	-0.007	-0.009
	(-1.11)	(0.12)	(-1.36)	(-0.14)	(-1.04)	(-0.03)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	9,846	8,889	4,638	4,180	5,208	4,709
Adj. R ²	0.554	0.203	0.532	0.202	0.628	0.199

T-statistics shown in parentheses are based on standard errors adjusted by heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

7. Conclusion and policy implications

Preventing systemic financial risks is the priority of China's economic development. From 2008 to 2016, the passageway business experienced a rapid increase driven by the efforts of suppliers, demanders and intermediaries. Although this way of financing can alleviate firms' financial constraints, its attribute of bypassing regulation may accumulate systemic risks. In order to curb regulatory arbitrage and reduce financial risks, in November 2017, the PBC, CBIRC, CSRC, and SAFE jointly promulgated the NAMRs, which explicitly require financial institutions not to provide passageway services to bypass regulatory requirements for other financial institutions' AMPs. It is unclear what changes will be made to the loan allocation of commercial banks and what adjustments firms that previously used passageway financing will make to their behaviour under this new regime. Therefore, this study takes the issuance of the NAMRs as a quasi-exogenous event and uses the DiD approach to test whether firms turn to bank loan financing after the passageway business is restricted and how banks and listed firms influence this financing transformation.

Our study produces four main findings. First, since the issuance of the NAMRs, firms that previously used passageway financing have obtained more bank loans from state-owned commercial banks and other commercial banks. Second, banks and firms jointly decided on this financing transformation. State-owned commercial banks mainly allocate loans on the basis of industrial policy guidance. When firms change their business towards the directions supported by industrial policies through M&A and technology introduction, they are more likely to obtain loans from state-owned commercial banks. In addition, other commercial banks mainly decide whether to issue loans on the basis of the performance of listed firms. When firms improve their growth and repayment capabilities, they are more likely to obtain loans from other commercial banks. Third, this paper finds that the costs of bank loans also decrease significantly, but there are no significant changes in other financing behaviours (i.e. SEOs and bond issuance). Fourth, the test of economic consequences shows that after considering adjustment costs, the shift from passageway financing to bank loan financing does not change listed firms' accounting and market performance. However, this shift can guide bank capital from off-balance-sheet transactions to on-balance-sheet assets, which can resolve financial risks and promote stable and healthy economic development.

Our research findings not only answer the debate on the positive and negative effects of shadow banking regulation but also reveal the impact of the NAMRs on enterprises. In addition to reducing financial risks, the regulation has a prominent role in guiding firm transformation and optimisation. The results of this study have the following political implications: When informal financing methods are restricted, commercial banks should play a leading role in the financial system and better support the development of the real economy through reasonable resource allocation and other means. In addition, the government also needs to vigorously develop multi-level financial markets and cooperate with commercial banks to solve the financing difficulties of firms.

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