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Financial Openness, External Finance Dependence, and Firms' Financing Costs: Evidence from Chinese A-Share Listed Firms

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Abstract

Based on firm-year panel data of Chinese A-share listed firms from 2007 to 2017, this paper examines the relationship among financial openness, external finance dependence, and firms' financing costs. The results show that the interaction term between financial openness and external finance dependence significantly reduces firms' financing costs. This indicates that the financing cost effect of fi-nancial openness is not simply reflected in a general decline in average terms, but is closely related to the degree of firms' dependence on external finance. Further subsample tests show that the interaction term is significantly negative for firms with high external finance dependence, while the estimated direction is opposite for firms with low external finance dependence. This suggests that the effect of financial openness on firms' financing costs is conditional and asymmetric. The main conclusion remains valid after replacing the measure of financial openness, using the share of foreign banks, excluding the financial crisis years, controlling for internal finance dependence, and excluding the leverage control variable. This paper adds to the literature on the microeconomic effects of financial openness from the perspective of firms' financing costs. It also highlights that firms' financ-ing structure is an important dimension for understanding the effects of financial openness policies.

Keywords

Financial Openness; External Finance Dependence; Financing Costs; Asymmetric Effects; Listed Firms

1. Introduction

Financial openness is an important part of China's financial system reform and high-level opening-up. Existing studies mainly examine the economic effects of financial openness from the perspectives of capital flows, competition among financial institutions, corporate investment, and trade performance. From the perspective of real-sector firms, financial openness is not only a macro-level institutional arrangement. It may also change firms' financing conditions by

affecting the supply of financial resources, competition among financial institutions, and access to cross-border financial services. Financing costs are directly related to firms' capital use efficiency and business decisions. They therefore provide an important perspective for examining the microeconomic effects of financial openness.

Changes in firms' financing costs may also have broader business consequences. Firms need continuous financial support in production expansion, technological upgrading, market development, and international business. Therefore, better financing conditions may affect firms' subsequent performance. This paper recognizes that financing costs may be related to business outcomes such as exports. However, it does not treat export scale as the core mechanism. Instead, it focuses on how financial openness affects firms' financing costs and how this effect varies across firms.

External finance dependence is an important firm characteristic for understanding the heterogeneous effects of financial openness. Firms differ greatly in their dependence on external funds. Some firms have sufficient internal cash flow and rely less on bank loans or external capital markets. Other firms need more external funds because of their industry characteristics, production cycles, or growth stages. The expansion of financial resources and the strengthening of competition brought by financial openness may have a stronger effect on firms with higher external finance dependence. In other words, the same change in the financial openness environment may have different effects on firms' financing costs, depending on their financing structures.

Based on this logic, this paper focuses on firms' financing costs. It examines the effect of financial openness on firms' financing costs and the moderating role of external finance dependence. The empirical model controls for firm fixed effects and year fixed effects to account for time-invariant firm characteristics and common year shocks. Standard errors are clustered at the firm level. Compared with studies that directly examine firms' export scale, this paper focuses more on financing costs as a basic financial outcome. It emphasizes that the microeconomic effects of financial openness should be understood in relation to firms' financing structures.

The marginal contributions of this paper are reflected in three aspects. First, this paper discusses the microeconomic effects of financial openness from the perspective of firms' financing costs. It complements studies that focus mainly on macro-level financial openness or trade outcomes. Second, this paper emphasizes the moderating role of external finance dependence. It shows that the effect of financial openness on firms' financing costs is not homogeneous, but is closely related to firms' financing needs and financing structures. Third, this paper further reveals the asymmetric effects between firms with high and low external finance dependence. This suggests that the reallocation of financial resources caused by financial openness may lead firms with different financing structures to face

different financing conditions. It should be noted that this paper mainly uses a two-way fixed effects model to identify empirical relationships among variables. The conclusions therefore focus on the statistical association between financial openness and firms' financing costs, as well as its heterogeneous features.

2. Theoretical Analysis and Research Hypotheses

Financial openness may affect firms' financing costs through several channels. First, financial openness expands the supply of financial services and promotes competition among financial institutions. This helps reduce the transaction costs and risk premiums that firms face when obtaining external funds. Second, financial openness may bring more financial products and risk management tools. As a result, firms may have more choices in loans, settlement, and cross-border financing. Third, financial openness can improve the efficiency of financial resource allocation. It may guide funds toward firms with stronger operating capacity and higher growth potential. For firms with higher external finance dependence, these changes are more likely to be reflected in a decline in financing costs.

Existing studies also provide support for this logic. Rajan and Zingales (1998) explain the relationship between financial development and industry growth from the perspective of external finance dependence. They show that sectors with greater external financing needs are more likely to be affected by changes in the financial environment. In the context of financial openness, foreign bank entry may also affect firms' financing costs by increasing banking competition and changing the efficiency of financial institutions and the structure of credit supply (Claessens et al., 2001). Based on this, this paper proposes Hypothesis 1.

Hypothesis 1: Financial openness can reduce firms' financing costs, and this effect is more pronounced for firms with higher external finance dependence.

The effect of financial openness on firms' financing costs may also be asymmetric. On the one hand, financial openness expands the supply of financial services and strengthens competition among financial institutions. This may make it easier for firms with higher external finance dependence to obtain low-cost funds. On the other hand, financial openness may also change the direction of financial resource allocation and the way risks are priced. Firms with different financing structures may therefore face different financing conditions. For firms with lower external finance dependence, their funding needs, financing channels, and demand for financial services differ from those of highly dependent firms. Financial openness may therefore not lead to a homogeneous decline in financing costs for all firms.

Hypothesis 2: The effect of financial openness on firms' financing costs differs between firms with high and low external finance dependence.

Based on the above logic, the theoretical argument of this paper can be summarized in two aspects. First, financial openness may reduce firms' financing costs by expanding the supply of financial resources, increasing competition in financial

markets, and improving access to financial services. This effect is more likely to be observed among firms with higher external finance dependence. Second, financial openness does not necessarily have a homogeneous effect on all firms. The reallocation of financial resources, changes in risk pricing, and differences in financing needs may lead to structural differences in the financing cost responses of firms with high and low external finance dependence. The empirical analysis of this paper is therefore built around the relationship among financial openness, external finance dependence, and firms' financing costs.

3. Research Design

3.1. Model Specification

To examine the effect of financial openness and external finance dependence on firms' financing costs, this paper specifies the following baseline model:

$$Fincost_{it} = \alpha + \beta 1\ FO_EFD_{it} + \gamma\ Controls_{i,t-1} + \mu_i + \lambda_t + \varepsilon_{it}$$

where ($Fincost_{it}$) denotes the financing cost of firm (i) in year (t). (FO_EFD_{it}) is the interaction term between financial openness and lagged external finance dependence. It is the core explanatory variable in this paper. ($Controls_{i,t-1}$) represents lagged firm-level control variables. (μ_i) denotes firm fixed effects, (λ_t) denotes year fixed effects, and (ε_{it}) is the error term. The core coefficient ($\beta 1$) captures the effect of financial openness on firms' financing costs under different levels of external finance dependence.

3.2. Variable Definitions

The dependent variable is firms' financing costs, denoted by (Fincost). The core explanatory variable is (FO_EFD), which is the interaction term between centered financial openness, (c_FO), and lagged centered external finance dependence, (lc_EFD). The control variables include lagged firm size, leverage, firm age, return on equity, capital intensity, and ownership type. In the robustness checks, this paper uses the interaction term between (FO_bop) and external finance dependence, and the interaction term between the share of foreign banks and external finance dependence, as alternative measures of financial openness. It also excludes the financial crisis years, controls for internal finance dependence, and excludes the leverage control variable.

3.3. Sample Selection and Data Description

This paper uses firm-year panel data of Chinese A-share listed firms from 2007 to 2017. The sample keeps observations with available information on financing costs, external finance dependence, financial openness measures, and main control variables. After excluding observations with missing values in the core variables and control variables, the final sample contains 9,590 firm-year observations. To reduce the influence of outliers, this paper winsorizes the main continuous variables at the

1st and 99th percentiles.

In terms of estimation method, firm fixed effects are used to control for time-invariant firm characteristics, such as corporate governance conditions, long-term operating capacity, and relatively stable local institutional environments. Year fixed effects are used to control for macroeconomic cycles, changes in the policy environment, and common shocks. Since the error terms of the same firm may be correlated across years, standard errors are clustered at the firm level to improve the reliability of statistical inference. It should be noted that the fixed effects model mainly controls for observable and unobservable stable differences. It cannot fully rule out potential omitted variables or reverse causality. Therefore, this paper remains cautious in making causal interpretations.

4. Empirical Results and Analysis

4.1. Descriptive Statistics

Table 1. Descriptive Statistics of Main Variables

Variable	Definition	Observations	Mean	Standard deviation	Minimum	Maximum
Fincost	Firm financing cost	9590	0.012	0.025	-0.065	0.102
FO	Financial openness	9590	1.041	0.048	0.976	1.122
EFD	External finance dependence	9590	0.296	0.385	0.000	3.650
lc_EFD	Lagged centeredexternal finance dependence	9590	-0.124	0.315	-0.398	1.207
c_FO	Centered financial openness	9590	-0.002	0.048	-0.066	0.079
FO_EFD	Financial openness × external finance dependence	9590	0.001	0.015	-0.042	0.039
lScale	Lagged firm size	9590	21.717	1.139	19.742	25.393
lLev	Lagged leverage	9590	0.406	0.201	0.048	0.838
lAge	Lagged firm age	9590	13.972	5.108	3.540	27.688
lROE	Lagged return on equity	9590	0.073	0.086	-0.301	0.308
lKL	Lagged capital intensity	9590	38.308	43.028	2.439	271.584
lSOE	Lagged ownership type	9590	0.353	0.478	0.000	1.000
Fbank	Share of foreign banks	9590	0.016	0.002	0.013	0.021

Note: The variables are calculated based on the final regression sample. Continuous variables are winsorized at the 1st and 99th percentiles before regression.

Table 1 reports the descriptive statistics of the main variables. The final sample contains 9,590 firm-year observations. The mean value of firms' financing costs is about 0.012. The mean value of financial openness is about 1.041, and the mean value of external finance dependence is about 0.296. The standard deviations and ranges of the variables show that sample firms differ in financing costs, exposure to financial openness, external finance dependence, and financial characteristics. These differences provide a basis for the following fixed effects regressions and heterogeneity analysis.

4.2. Baseline Regression Results

Table 2. The Effect of Financial Openness on Firms' Financing Costs: Baseline Regression

Variable	(1)	(2)	(3)
Financial openness × external finance dependence	-0.058***	-0.060***	-0.060***
	(-4.142)	(-4.430)	(-4.375)
Lagged external finance dependence	0.025***	0.010***	0.011***
	(11.905)	(5.336)	(6.386)
Current external finance dependence		0.030***	0.030***
		(20.187)	(21.643)
Current external finance dependence	0.001	-0.000	-0.000
	(1.164)	(-0.334)	(-0.455)
Leverage	0.037***	0.037***	0.036***
	(12.007)	(13.420)	(14.512)
Firm age	0.000	-0.000	-0.000
	(0.021)	(-0.031)	(-0.324)
Return on equity	-0.022***	-0.022***	-0.021***
	(-7.671)	(-8.020)	(-8.049)
Capital intensity	0.000***	0.000***	0.000***
	(3.935)	(5.173)	(5.252)
Ownership type	0.003	0.003	0.002
	(1.120)	(1.235)	(0.923)
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	9590	9590	9590
Within R-squared	0.320	0.430	0.443

Note: The values in parentheses are firm-level cluster-robust t-statistics. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. All regressions control for firm fixed effects and year fixed effects.

Table 2 reports the baseline regression results for the effect of financial openness on firms' financing costs. In all three columns, the estimated coefficients of (FO_EFD) are significantly negative. This suggests that a higher interaction between financial openness and external finance dependence is associated with lower financing costs. The result supports the view that financial openness affects firms' financing conditions through the channel of external finance dependence. For the control variables, the coefficient of leverage is significantly positive, indicating that firms with higher leverage tend to face higher financing costs. The coefficient of return on equity is significantly negative, suggesting that more profitable firms tend to have lower financing costs. These results are broadly consistent with standard financial logic.

It should be noted that financial openness itself mainly varies over time. After controlling for year fixed effects, its separate effect is difficult to identify. Therefore, this paper focuses on the interaction term between financial openness and firms' external finance dependence. The significantly negative coefficient of the interaction term indicates that changes in the financing environment brought by financial openness are mainly reflected through differences in firms' external finance dependence. It does not imply that financial openness has the same average effect on all firms.

4.3. Asymmetric Effects across External Finance Dependence

Table 3. Asymmetric Effects across External Finance Dependence

Variable	High-EFD group	Low-EFD group
Financial openness × external finance dependence	-0.089***	0.135**
	(-4.198)	(2.037)
Lagged external finance dependence	0.022***	0.030***
	(8.505)	(3.846)
Firm size	0.002**	-0.000
	(2.026)	(-0.432)
Leverage	0.036***	0.033***
	(8.408)	(5.635)
Firm age	-0.001	0.000
	(-0.883)	(0.120)
Return on equity	-0.025***	-0.013***
	(-6.589)	(-2.912)
Capital intensity	0.000**	0.000***
	(2.437)	(3.742)
Ownership type	0.007*	-0.005*
	(1.929)	(-1.708)
Firm fixed effects	Yes	control
Year fixed effects	Yes	control
Observations	4795	4795
Within R-squared	0.294	0.200

Note: Robust stanNote: The values in parentheses are firm-level cluster-robust t-statistics. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. All regressions control for firm fixed effects and year fixed effects.

Table 3 divides firms into a high external finance dependence group and a low external finance dependence group based on the sample median. This is used to examine whether the financing cost effect of financial openness differs across firms. The results show that the coefficient of (FO_EFD) is significantly negative in the high-EFD group. This indicates that financial openness significantly reduces the financing costs of firms with high external finance dependence. This result is consistent with Hypothesis 1. It suggests that firms with stronger external financing needs are more likely to benefit from the expansion of financial resources and the increase in financial service competition brought by financial openness.

In the low-EFD group, the coefficient of (FO_EFD) is positive and significant. This suggests that the effect of financial openness on financing costs is not homogeneous. This result should not be simply interpreted as evidence that financial openness raises the financing costs of low-EFD firms. A more cautious explanation is that financial openness may lead to the reallocation of financial resources, changes in risk pricing, and adjustments in the structure of financial services. These changes may cause firms with different financing structures to face different financing conditions. Firms with low external finance dependence have weaker demand for external financial resources. Therefore, the direction of changes in their financing costs may differ from that of highly dependent firms.

Therefore, the positive result in the low-EFD group is not a weakness of this paper's conclusion. Instead, it suggests that the microeconomic effects of financial openness

are conditional and structurally different across firms. This result supports Hypothesis 2, which states that the effect of financial openness on firms' financing costs differs between firms with high and low external finance dependence.

4.4. Robustness Checks

Table 4. Robustness Checks

Variable	Replacing with FO_bop	Replacing with Fbank	Excluding crisis years	Controlling for IFD	Excluding lLev
FO_bop × external finance dependence	-0.075***				
	(-5.321)				
Share of foreign banks × external finance dependence		-1.333***			
		(-3.443)			
Financial openness × external finance dependence			-0.048***	-0.059***	-0.059***
			(-2.682)	(-4.248)	(-4.127)
Lagged external finance dependence	0.024***	0.025***	0.024***	0.025***	0.020***
	(11.687)	(11.924)	(10.995)	(11.901)	(11.958)
Internal finance dependence				0.004***	
				(4.868)	
Firm size	0.001	0.001	0.001	-0.000	0.001
	(1.230)	(1.186)	(1.279)	(-0.024)	(1.257)
Leverage	0.037***	0.037***	0.039***	0.040***	
	(12.033)	(12.011)	(11.934)	(12.605)	
Firm age	-0.000	-0.000	0.000	0.000	-0.000
	(-0.214)	(-0.056)	(0.081)	(0.184)	(-0.627)
Return on equity	-0.021***	-0.021***	-0.022***	-0.019***	-0.017***
	(-7.443)	(-7.428)	(-6.926)	(-6.761)	(-6.087)
Capital intensity	0.000***	0.000***	0.000***	0.000***	0.000***
	(3.710)	(3.887)	(4.047)	(4.016)	(5.285)
Ownership type	0.003	0.003	0.002	0.002	0.004
	(1.210)	(1.170)	(0.749)	(0.973)	(1.324)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	9590	9590	8532	9590	9590
Within R-squared	0.324	0.320	0.310	0.326	0.396

Note: The values in parentheses are firm-level cluster-robust t-statistics. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. All regressions control for firm fixed effects and year fixed effects.

Table 4 reports the results of the robustness checks. Column (1) uses (FO_bop) to construct an alternative measure of financial openness. Column (2) uses the share of foreign banks to construct an alternative interaction term. Column (3) excludes the global financial crisis years of 2008 and 2009. Column (4) controls for internal finance dependence. Column (5) excludes the leverage control variable to address the concern that leverage may be mechanically related to financing costs. The results show that the core interaction term remains significantly negative after replacing the key measures, excluding special years, adding control variables, and adjusting the set of control variables. This indicates that the conclusion that financial openness reduces firms' financing costs through the channel of external finance dependence is robust.

At the same time, the empirical results also suggest that the conclusions should be

understood in relation to firm heterogeneity. The interaction term has a different direction in the low external finance dependence group. This suggests that financial openness does not have a homogeneous effect on all firms. For firms with weaker financing needs or more sufficient internal funds, the competition and resource reallocation brought by financial openness may change their financing choices. As a result, their financing costs may change in a different direction. Therefore, this paper emphasizes that the effect of financial openness on firms' financing costs is conditional. It should not be simply understood as a general reduction in financing costs for all firms.

Overall, the empirical results provide relatively consistent evidence on firms' financing costs. The descriptive statistics show that sample firms differ in financing costs, external finance dependence, and main financial characteristics. The baseline regression results show that the interaction term between financial openness and external finance dependence significantly reduces firms' financing costs. This indicates that the effect of financial openness on firms' financing costs is closely related to the degree of firms' external finance dependence. The subsample results further show that firms with high and low external finance dependence face asymmetric changes in financing costs under financial openness. The robustness checks show that the main conclusion remains valid after replacing the measure of financial openness, excluding the global financial crisis years, controlling for internal finance dependence, and excluding leverage.

5. Conclusions and Policy Implications

Based on firm-year panel data of Chinese A-share listed firms from 2007 to 2017, this paper examines the relationship among financial openness, external finance dependence, and firms' financing costs. The main conclusions are as follows. First, the interaction term between financial openness and external finance dependence is significantly negative in the baseline regressions. This suggests that financial openness can reduce firms' financing costs through differences in external finance dependence. Second, this effect is mainly observed among firms with high external finance dependence. This indicates that firms' financing structure is an important dimension for understanding the microeconomic effects of financial openness. Third, the estimated direction is opposite in the low external finance dependence group. This suggests that the effect of financial openness on firms' financing costs is conditional and asymmetric. It may also reflect the heterogeneous influence of financial resource reallocation on firms with different financing structures.

These findings have several policy implications. First, financial openness should be promoted in a steady manner to improve the efficiency of financial resource allocation and allow financial openness to better serve real-sector firms. Second, more attention should be paid to the financing needs of firms with high external finance dependence. Their access to finance and financing cost conditions should be

improved. Third, under financial openness, financial support mechanisms for real-sector firms should be further improved. Financial resources should be guided toward firms with real business needs and growth potential.

This paper still has several limitations. First, it mainly uses a two-way fixed effects model to control for time-invariant firm characteristics and common year shocks. However, it cannot fully rule out potential omitted variables or reverse causality. Second, the measure of financing costs may be affected by firms' leverage structure, debt maturity structure, and accounting standards. Although this paper adds a robustness check that excludes leverage, future studies can further use alternative measures such as the interest coverage ratio, operating cash flow ratio, and debt maturity structure. Third, the sample mainly consists of listed firms. Whether the findings apply to unlisted firms, especially small and medium-sized enterprises, remains to be further examined. Future research can use more detailed data on financing channels, banking competition, or quasi-natural experimental designs to further examine the mechanisms through which financial openness affects firms' financing costs.

Overall, this paper examines the microeconomic effects of financial openness from the perspective of firms' financing costs. The results show that the financing cost effect of financial openness is closely related to firms' external finance dependence. They also show clear conditional and asymmetric features. Future studies can introduce stricter identification strategies, more alternative measures of financing costs, and samples of unlisted firms to test whether the conclusions have broader applicability.

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