



Research article

Does corporate financialization affect EVA? Early evidence from China

Manrui Xu¹, Khaldoon Albitar² and Zhenghui Li^{3,*}

¹ School of Economics and Statistics, Guangzhou University, Guangzhou, China

² Faculty of Business and Law, University of Portsmouth, Portsmouth, United Kingdom

³ Guangzhou Institute of International Finance and Guangzhou University, Guangzhou, China

* **Correspondence:** Email: lizh@gzhu.edu.cn.

Abstract: This paper aims to examine the impact of corporate financialization on economic value added (EVA). The panel regression model and threshold effect model are used based on data from 913 Chinese A-share listed companies between 2007 and 2016. The results show that the proportion of financial channel profit has a significant negative effect on EVA. Furthermore, the moderate range in the impact of the corporate financialization level on EVA is also captured. Besides, the impact of corporate financialization on EVA is heterogeneous among industries with intensity factor differences. The results of this study are very relevant to investors and managers. For instance, corporate financial management can be adjusted and supervised according to the moderate range and direction. The government should combine industry characteristics to create different support policies.

Keywords: financialization; EVA; moderate range; threshold effect; heterogeneity

JEL Codes: G31, G38, M14

1. Introduction

EVA (economic value added) plays a crucial role in corporate sustainable development, and the impact of corporate financialization on EVA is very complicated, and previous literature has not reached a consensus on the direction of the impact. One view is that holding financial assets or making a profit through financial channels would have a positive impact on promoting corporate long-term development (Smith & Stulz, 1985; Stulz, 1996; Han & Qiu, 2007; Brown & Petersen, 2011). The “reservoir” theory points out that the purpose of holding financial assets is to prevent the capital disruption caused by cash flow shocks adversely affecting business operations (Kliman & Williams, 2015; Hu et al., 2017). The

liquidity of financial assets is stronger than that of fixed assets. When corporates encounter financial difficulties, they can sell financial assets to obtain liquidity in time, thereby alleviating the capital pressure (Ding, 2013; Renneboog & Szilagyi, 2015; Dai et al., 2018). Participating in financial investment activities can alleviate the financing constraints faced by corporates and help promote corporates' R&D and innovation activities (Almeida et al., 2004; Brown & Petersen, 2011; Liu, 2017), thereby helping to upgrade the physical industry. Investing the remaining funds into financial markets with high returns can optimize the resource allocation of corporates (Corpataux et al., 2009). It can also improve investment efficiency and promote the rapid development of modern entity corporates. Another view is that financialization hurts corporate long-term development. The crowding-out effect believes that the purpose of corporate financialization is to maximize profits. When the rate of return on financial investment is higher than the real economy, corporates will replace financial asset investment in real economic investment (Orhangazi, 2008; Demir, 2009). Some contributors emphasized that high returns in the financial market will induce corporate managers to prefer financial activities to real industries when making investment decisions (Seo et al., 2012; Shin, 2012; Akkemik & Özen, 2013). This will lead to insufficient investment in business operations, which is not conducive to corporate long-term sustainable development. To pursuit excess returns on financial investment, corporations will significantly reduce the investment in R&D and innovation and other operational activities, and problems such as capital mismatch and investment efficiency decline will occur. Financialization will change corporate investment preference and management mode, causing companies to lose their enthusiasm for operating activities such as opening markets, improving product quality, strengthening technology research and development, and improving operating management systems. It inhibits the production efficiency of operational businesses (Tori & Onaran, 2017) and ultimately restricts the improvement of corporate value and competitiveness.

Corporate financialization has dual preventive and alternative goals. The preventive goal is more likely to show the positive effect of corporate financialization on EVA. The preventive goal is related to financial assets allocation through financialization to cope with potential problems such as insufficient liquidity in the future. Holding financial assets can help corporations reduce the high adjustment costs, thereby smoothing physical investment and R&D innovation activities (Stulz, 1984; Kim et al., 1998; Opler et al., 1999; Almeida et al., 2004; Brown & Petersen, 2011; Liu, 2017). Almeida et al. (2004) found that corporations will also prefer to "hold cash and move" when they may face macroeconomic uncertainties or potential investment opportunities in the future. Similarly, the preventive goal considers that necessary corporate financial asset investment can alleviate liquidity risks, promote the growth of corporate economic value added, and maintain the real economy. "Alternative" goal is a mode in which the corporate manager and corporate goals restrict their decision-making behavior. According to the resource allocation theory, an increase in the share of financial asset holdings indicates a decrease in the proportion of tangible assets (Tornell, 1990; Demir, 2009). Given the funds used for investment, the decision of a company to invest in financial assets and to invest in entities depends on how much profit can be made. Facing the investment yield gap, the continuous integration of financial resources will exacerbate the yield gap between real economy investment and productive investment, and weaken real economy investment. In other words, the "alternative" goal thinks that the goal of shareholder value maximization will lead companies to pay more attention to short-term interests, and crowd out the company's industrial investment resources, and is not conducive to the increase of corporate economic value added.

Due to the dual goals of financialization, corporate financialization has a positive effect on EVA when corporate financialization is in a moderate range. However, too low a level of financialization is not conducive to alleviating the corporate liquidity risk and developing the real economy. When companies face favorable investment projects, increasing financial asset investment to obtain economic benefits can provide strong financial support for the real industry (Corpataux et al., 2009) and achieve a short-term increase in the corporate economic value added. It is a kind of capital reserve behavior for companies to allocate financial assets for fund management to obtain high financial returns, which is conducive to the corporate operation and sustainable development. However, excessive investment in financial assets will lead to insufficient industrial capital supply, increase the corporate business risk, and affect the long-term increase of the corporate economic value added. Excessive financialization driven by profit motive will also severely squeeze physical investment, and this squeezing effect will be enhanced with the increase of financialization (Zhang and Zhang, 2016; Hu et al., 2017). Moderate financialization can improve corporate profitability. Excessive financialization indicates a short-sighted investment tendency in the process of business operations. Lack of focus on the development of physical business is bound to hurt the long-term development of the company.

Non-financial companies have a significant difference in the character of the industry capital intensiveness. There are also significant differences in preventive target needs. Thus, the moderate range of the positive effects is heterogeneous among industries. Industry characteristics lead to differences in the degree of corporate financialization. In other words, the same external economic environment has different effects on companies in different industries. Roy (2020) pointed out financialization is particularly unfavorable to the capital accumulation of companies dominated by the stock market by dividing companies into dominated by the stock market and other manufacturing industries. The level of industrial productivity will affect the preference of companies for production investment and financial investment (Lei et al., 2020). When non-financial companies have a higher return on their main business in the industry, they will have more willingness to develop the main business, thereby reducing investment in finance. The different capital intensities of companies will lead to their different capital needs. The more capital-intensive industries need to invest more capital, the funds used for physical assets will be crowded out. Companies with high capital intensity have less incentive to hold financial assets.

This study contributes to the extant literature in the following ways. First, this paper identifies corporate financialization has a significant impact on EVA. Although there are differences in the impact of corporate financialization on EVA, our analysis exploits the proportion of financial channel profit has a significant negative effect on EVA, that is, the higher the degree of corporate financialization, the lower the EVA. Second, the impact of corporate financialization on EVA is non-linear, and there is a threshold effect. The existing literature mainly focuses on whether the impact of corporate financialization on EVA is to promote or inhibit and lacks an in-depth study of the dynamic impact of this. Therefore, by examining the threshold effect of corporate financialization on EVA, this paper provides evidence that the impact of corporate financialization level on EVA has a moderate range. Third, the analysis highlights that, in particular, there is a heterogeneity in the impact of corporate financialization on EVA of factor intensity. By dividing companies into three categories namely labor-intensive, capital-intensive, and technology-intensive companies according to their factor intensity, this paper finds that the impact of corporate financialization on EVA is heterogeneous.

The paper is organized as follows. Section 2 describes the theoretical model and data. Section 3 discusses the panel effect and threshold effect of corporate financialization impact on EVA. Section 4

presents the impact of corporate financialization on EVA has heterogeneity from the perspective of different factor intensity. Finally, Section 5 summarizes the main conclusions and implications of this paper.

2. Models construction and variables selection

2.1. Hypotheses and models

The starting point and endpoint of corporate economic behavior are to create and realize value. From the perspective of entity companies' investment in financial assets, there are preventive and alternative motivations. Preventive motivation is that companies increase capital reserves by allocating financial assets to smooth their capital needs and maintain certain liquidity to cope with emergencies. If companies hold financial assets for preventive motivation, then financialization can ease the pressure of financial difficulties, solve the problem of insufficient investment in business operations, and promote the increase of corporate economic added value. The alternative motivation is that business operators invest a large number of funds into the financial market to obtain high returns from financial investments. If companies hold financial assets for alternative motivation, then financialization can inhibit the investment in business activities to some extent, hinder the improvement of operating efficiency, and thus restrict the corporate economic added value. Regardless of corporate financialization goals, financialization will have a significant impact on EVA. Besides, this paper also compares the measurement indicators of the level of corporate financialization. Based on this, we provide the following hypothesis 1.

Hypothesis 1. Corporate financialization has a significant effect on EVA based on both FA and FC indicators.

According to data availability, this paper uses panel data analysis to test the previous two indicators. The initial sample of this paper includes 913 China A-share listed companies from 2007 to 2016. Panel regression models have been used as follows:

$$EVA_{it} = \alpha + \beta_1 FC_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 Growth_{it} + \beta_5 LEV_{it} + u_i + \gamma_t + \varepsilon_{it} \quad (1)$$

$$EVA_{it} = \alpha + \beta_1 FA_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 Growth_{it} + \beta_5 LEV_{it} + u_i + \gamma_t + \varepsilon_{it} \quad (2)$$

In the models, the subscript i and t represent the firm and time respectively; FC represents the profit from the financial channel, FA expresses the proportion of financial assets, and we also include the following control variables, firm size (SIZE), profitability (ROA), Growth, and leverage ratio (LEV), we also control of industry fixed effect u_i and time fixed effect γ_t .

The dual goal of corporate financialization makes the level of financialization has a positive effect on EVA with a moderate range. when non-financial companies use part of their idle funds to make short-term financial investments, they can improve the efficiency of the use of funds, activate funds, and achieve the purpose of capital preservation and appreciation. To some extent, this can prevent the shortage of funds for future main business investment, promote the development of the main business, and have a positive effect on the corporate economic added value. The operation of an entity company can be regarded as an "investment portfolio". When the company makes profits through the main operating is weaker than through investment in financial assets, the company will increase the investment in financial assets and reduce the investment in the entity industry. From a short-term

perspective, the high returns of financial assets can achieve a short-term increase in the corporate economic added value. However, excessive investment in financial assets will cause companies to lack sufficient funds for equipment upgrades and product R&D innovations (Tori & Onaran, 2017). This will break away from the long-term competitive operations and lead to low operating efficiency, which often hurts corporate EVA. In short, moderate financialization can improve the operating conditions of companies. Excessive financialization will lead to insufficient fund supply in the entity industry, increase the operating risks, and affect the increase in the corporate economic added value. Based on this, we provide the following hypothesis 2.

Hypothesis 2. The positive effect of corporate financialization on EVA is dynamic and there is a moderate range.

The moderate interval reflects the threshold effect in the measurement method. So when studying the moderate range of the positive effect of financialization on EVA, we build a threshold panel data models. The main threshold models are as follows:

$$EVA_{it} = \alpha + \lambda_1 FC_{it} I(g_{it} \leq \eta) + \lambda_2 FC_{it} I(g_{it} > \eta) + \delta_1 SIZE_{it} + \delta_2 ROA_{it} + \delta_3 Growth_{it} + \delta_4 LEV_{it} + \varepsilon_{it} \quad (3)$$

where g_{it} is the threshold variable and is the threshold value.

Given that there might be multiple thresholds for moderate intervals. Thus, we consider the existence of multiple thresholds, in further setting, we use a double threshold as follows:

$$EVA_{it} = \alpha + \lambda_1 FC_{it} I(g_{it} \leq \eta_1) + \lambda_2 FC_{it} I(\eta_1 < g_{it} \leq \eta_2) + \lambda_3 FC_{it} I(g_{it} > \eta_2) + \delta_1 SIZE_{it} + \delta_2 ROA_{it} + \delta_3 Growth_{it} + \delta_4 LEV_{it} + \varepsilon_{it} \quad (4)$$

2.2. Corporate financialization measurement and variables selection

2.2.1. Corporate financialization measurement

Existing literature mainly use two methods to measure corporate financialization. The first method is based on accounting subject which includes asset and profit accounts. According to this method, corporate financialization level can be obtained by comparing financial assets with firm total assets (Demir, 2009; Liu et al., 2014) to obtain financial assets proportion (FA). To measure financialization from a profit perspective, we can mainly examine the proportion of profit from financialization to obtain the proportion of profit from financial channels (FC). These measurements only differ in the caliber of financial assets. The second method is based on measuring the correlation between assets and liabilities (Shin & Zhao, 2013; Wang et al., 2015). Based on the pecking order theory (Myers, 1984), optimal capital structure is driven by companies' preferences for different types of financing and companies will prefer lower-cost internal financing comparing with external financing. Therefore, financial assets and financial liabilities are moving in opposite directions. However, when a company borrows funds from a financial institution as a source of finance to engage in financial investment both financial liabilities and financial assets will rise and thus the correlation between them will be used to measure and identify corporate financialization. However, it is difficult to give specific measurement for the level of

financialization when measuring financialization based on assets-liabilities correlation. Therefore, the majority of previous literature use the first method to measure corporate financialization.

Measuring the level of Financialization based on financial statements includes two channels that depend on two aspects: assets and profits. Corporate financialization measured by assets is the investment structure before the return is realized, which reflects the subjective wishes of companies. However, corporate financialization measured by profits is the investment structure after the return is realized, which includes market prices, risks, and other factors. Two different measurements of financialization can be obtained from those two channels. Previous literature has some differences in the caliber of the two indicators (Demir, 2009; Xie et al., 2014; Liu et al., 2014). The two indicators which used in this paper are summarized and the data processing methods are shown in Table 1.

Table 1. Comparison of financialization level indicators.

Index	Calculation method	Molecular caliber	Denominator caliber or special treatment
Proportion of financial assets (FA)	Financial assets/total assets	Sum of monetary funds, trading financial assets, available-for-sale financial assets, long-term equity investment and real estate investment.	Total assets
Proportion of financial channels profit (FC)	Profit from financial channels Minus operating profit/ <i> Operating Profit </i>	Investment income, profit and loss from changes in fair value and other comprehensive income and other financial channels minus investment income from associates and joint ventures	When the company does not make profits through financial channels, the value is -1. The value is greater than -1 means that the company makes profits through investment in financial assets. Less than -1 indicates that the company has loss through investment in financial assets

It should be noted that when the corporate financialization is measured from the perspective of financial profit channels, as the operating profit is negative, this paper uses the absolute value of operating profit for standardization. The specific method is the profit from financial channels minus the main operating profit divided by the absolute value of the main operating profit. In other words, when the value of the proportion of financial channels profit is greater than -1, it means that the company can achieve profit by investing in financial assets, and when the value of the proportion of financial channels profit is less than -1, it means that the company losses by investing in financial assets.

2.2.2. Explained and control variables

Economic value added (EVA) is a kind of residual income, which takes into account the cost of capital in the course of operations. According to the theory of EVA, the value of economic added value created by a corporate is the net operating profit after tax minus the total cost of capital. Considering the capital cost of equity, it is believed that only when the economic added value is greater than zero can a corporate truly obtain benefits. EVA can meet the needs of stakeholders, seek sustainable development strategies based on the corporate's realization of its own interests, and ultimately achieve the purpose of corporate value maximization, shareholder maximization, and operator wealth maximization.

There are many factors that affect EVA in model construction. According to relevant theories and the empirical studies of many scholars (Lin et al., 2010; Ehie & Olibe, 2010; Liu & Wang, 2017), other variables that affect EVA include corporate size and profitability, etc. When studying the impact of corporate financialization on EVA, it is necessary to assume that other influencing factors remain unchanged, that is, other main influencing factors need to be controlled and set as control variables in the measurement test. Based on systematically summarizing the relevant literature and combining the characteristics of Chinese listed companies, this paper selects four control variables, namely: 1) Corporate size (SIZE), is measure as the natural logarithm of total assets at the end of the fiscal year; 2) Profitability (ROA), is calculated as return on assets; 3) corporate growth (Growth), is defined as the annual growth rate of total assets; 4) Leverage (LEV), is calculated as total debt divided by total assets.

2.3. Data and descriptive statistics

The initial sample of this study employs all nonfinancial corporations listed on the A-share from China Security Market from 2007 to 2016. All financial data has been collected from the China Stock Market & Accounting Research (CSMAR) database. Database and sample selection are based on the following criteria. First, we exclude companies from financial, insurance, and real estate industries, as well as ST and PT. The reason for excluding financial, insurance, and real estate listed corporations is that the main business of such corporations is a financial industry or a quasi-financial industry, and the proportion of financial assets in total assets is significantly different from that of nonfinancial corporations. For ST and PT, these two types of corporations with continuous losses and insufficient sustained operating capacity, which do not have the characteristics of allocating financial assets. Second, we also exclude companies with a missing data rate of more than 50%.

A total of 9130 firm-year observations were finally obtained after removing the outliers and missing values. After obtaining the sample data, we use the winsorize method to deal with continuous values among independent variables and dependent variables at the 1% levels to mitigate the effects of outliers. Descriptive statistics for key variables used in the study are summarized in Table 2.

Table 2. Descriptive statistics of variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
EVA	9,130	0.594	4.833	-14.170	29.445
FA	9,130	0.248	0.164	0.020	0.791
FC	9,130	-0.250	1.675	-2.264	10.270
SIZE	9,130	9.539	0.542	8.299	11.022
ROA	9,130	0.041	0.064	-0.180	0.261
Growth	9,130	0.135	0.251	-0.347	1.342
LEV	9,130	0.494	0.206	0.073	1.136

Table 2 shows the number of observations, mean, standard deviation, minimum, and maximum value of each variable. The minimum value of EVA is -14.17, the maximum value is about 29.445, and the mean value is about 0.594. It indicates that the overall level of the corporate economic added value is not high. In the aspect of corporate financialization, the mean value of financial assets (FA) is about 0.248, the minimum is 0.02, and the maximum is 0.791. It means that the proportion of financial assets of different non-financial companies are quite different and the level of financialization of some companies is higher. It also means that financial assets have an important position in the company's total assets, and financial asset investment has become the main content of the investment activities in most entities companies. The mean of financial channel profit (FC) is about -0.25, the minimum is about -2.264, and the maximum is 10.27. However, according to the previous explanation and the corresponding indicator processing process, the mean value greater than -1 indicates that the contribution of financial channel profits to corporate value is positive. This shows that on the whole, companies can make profits through financial investment.

To examine the impact of corporate financialization on EVA, it is necessary to observe the correlation of various variables to avoid the problem of multicollinearity.

Table 3. Correlation matrix.

	EVA	FA	FC	SIZE	ROA	Growth	LEV
EVA	1.000						
FA	0.098	1.000					
FC	-0.182	0.038	1.000				
SIZE	0.230	-0.112	-0.077	1.000			
ROA	0.460	0.214	-0.316	0.042	1.000		
Growth	0.137	0.088	-0.136	0.107	0.283	1.000	
LEV	-0.101	-0.329	0.153	0.245	-0.360	-0.054	1.000

Table 3 presents a correlation matrix of the variables. The results show that the explained variable, corporate economic value added (EVA), is positively correlated with FA (0.098), SIZE (0.230), ROA (0.460), Growth (0.137), respectively, indicating that proportion of financial assets, corporate size, profitability, and corporate growth are positively associated with EVA. On the other hand, EVA is negatively correlated with FC (-0.182) and LEV (-0.101). This indicates that proportion of profit from

financial channels and corporate leverage may have a negative impact on corporate economic value added. Besides, none of the correlations among independent variables are high enough to cause concern, and the analysis of variance inflation factors associated with our regressions do not suggest that multicollinearity is a concern.

3. Empirical results

3.1. Regression results for the panel model

Based on the Hypothesis 1 that corporate financialization has a significant effect on EVA, this paper conducts an empirical test on the different indicators of financialization lever obtained from the two channels of assets and financial profit, and selects an appropriate financialization level measurement indicator based on the empirical results. According to the set test model and sample data, the parameters of models (1) and (2) are respectively estimated, and the parameter estimation results are shown in Table 4.

Table 4. The impact of corporate financialization on EVA.

Variable	Profits from financial channels		Variable	Financial assets divided by total assets	
	FE	RE		FE	RE
	Model (1)	Model (2)		Model (3)	Model (4)
FC	-0.059* (0.033)	-0.064** (0.032)	FA	0.477 (0.588)	0.834 (0.508)
SIZE	1.018*** (0.387)	1.568*** (0.284)		1.081*** (0.390)	1.621*** (0.287)
ROA	29.583*** (2.177)	30.794*** (2.106)		29.827*** (2.165)	31.025*** (2.088)
Growth	0.116 (0.230)	-0.049 (0.233)		0.092 (0.237)	-0.082*** (0.238)
LEV	0.487 (0.533)	0.364 (0.418)		0.524 (0.552)	0.481 (0.444)
Cons.	-10.714*** (3.617)	-16.071*** (2.635)		-11.421*** (3.677)	-16.843*** (2.721)
Industry effect	Yes	Yes		Yes	Yes
Time-effect	Yes	Yes		Yes	Yes
Obs	9130	9130		9130	9130
R ²	0.176	0.175		0.175	0.175

Note: FE and RE represent fixed effect and random effect respectively; GLS; robust standard error in parentheses; *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

Financial channel profit refers to the composition of the source of corporate profits, which reflects the proportion of profits earned that companies invest in financial assets. It is a structured indicator of flow nature, which is more likely to show corporate speculative behavior. The profitability of companies through financial investment is more of a capital-seeking behavior for profit maximization. Financial assets refer to the distribution of assets of a company, reflecting the share of financial assets

in the total assets of a company. It is a structural indicator of stock nature, and more shows the saving motive of a company. Holding financial assets more describes the resource reserve behavior of companies for sustainable development. From the results of parameter estimation in Table 4, the coefficient of the financial channel profit (FC) is -0.059 ($P < 0.1$), and the coefficient of the financial asset is 0.477 . This paper also provides the estimation results of the random-effects model to support it. It can be seen from regression results that both of fixed-effect model or a random-effect model show that the regression coefficient of the proportion of financial channel profits has passed the significance level of 10%, and both harm EVA. The regression coefficients of the proportion of financial assets all show a positive effect on EVA. The empirical results confirm that financial assets play a “reservoir” role, and financial channel profits are more of a “substitute” role. Based on the mechanism of financial channel profit and financial assets, combined with Hypothesis1, comparing the two indicators, it can be considered that financial channel profit (FC) is an effective indicator to measure the level of financialization. The higher the proportion of financial channel profits, the less the economic added value of the corporate will be.

3.2. Regression results for the threshold effect model

3.2.1. Threshold effect test

As mentioned earlier in section 3.1, empirical results show that financial channel profit (FC) is an effective measurement for the level of financialization. Therefore, the next step is a further investigation to determine which of Model 1 or Model 2 should be used. The Husman test was used and we found that the fixed-effects model is more appropriate than the random-effects model (P-value equals 0.0000). Therefore, a two-way fixed effect model is used for the estimation. Model 1 results are reported in Table 4. Before looking for the moderate threshold, it is necessary to test whether there is a threshold effect and whether it is a single threshold or multiple thresholds. Then, we use the Bootstrap method of Hansen (1996, 2000) to obtain the P-value of this test in order to determine whether there is a threshold effect or not. The results of the self-sampling inspection are shown in Table 5.

Table 5 shows that both of the single-threshold effect and the double-threshold effect are significant at 1% but the three-threshold effect is not significant. Combined with the goal of financialization. An appropriate interval of corporate financialization level leads to the optimal allocation of firm financial resources. Therefore, we can conclude that there is a nonlinear double-threshold effect of corporate financialization on EVA.

Table 5. Threshold self-sampling test.

Threshold model	F-statistics	P-value	10%	5%	1%
Single	55.84***	0.000	9.334	11.887	14.419
Double	87.17***	0.000	14.385	19.693	19.693
Triple	8.92	0.437	17.809	21.237	27.500

Note: *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively; both p-value and the critical value are obtained from the results after 300 times of simulation using the Bootstrap method.

3.2.2. The moderate range of the impact of financialization on EVA

Parameters estimation of the double threshold model is reported in Table 6.

Table 6. Threshold estimation results.

Threshold	Estimated value	95% confidence interval
First	-1.0885	[-1.2524, -1.0598]
Second	1.5225	[1.2792, 1.8778]

Table 6 shows the first and second thresholds estimations and their 95% confidence intervals for financialization level. Results in Table 6 show points' values estimates for first and second thresholds which are -1.0885 and 1.5225 respectively. In addition, interval estimates for each threshold are presented at a 95% confidence level. The first threshold estimations are in the [-1.2524, -1.0598] interval and the second threshold estimations are in the [1.2792, 1.8778] interval.

Further, we use a fixed-effect double threshold model in order to further investigate the impact of financialization on EVA in the intervals formed by different thresholds and based on the obtained thresholds. Parameter estimation results are shown in Table 7.

Table 7. Regression results for threshold effect model.

EVA	coefficient	Standard deviation	T statistics	P-value
SIZE	1.2700	0.1470	8.64	0.000
ROA	26.0294	0.8526	30.53	0.000
Growth	-0.1480	0.1612	-0.92	0.358
LEV	0.4669	0.3396	1.38	0.169
FC<-1.0885	0.5763	0.1128	5.11	0.000
-1.0885<FC<1.5225	-0.6639	0.0677	-9.81	0.000
FC>1.5225	-0.0030	0.0287	-0.11	0.916
Cons.	-13.0562	1.4088	-9.27	0.000

Tables 7 shows that the effect of corporate financialization on EVA varies significantly at different levels. When financialization level is less than -1.0885, corporate financialization has a significant positive impact on EVA, with a coefficient of 0.5763. However, when the level of financialization is between [-1.0885 -1.5225], corporate financialization has a significant negative impact on EVA, with a coefficient of -0.6639. Also, when the level of financialization is more than 1.5225, corporate financialization has a negative impact on EVA but it is not significant.

The influence of threshold parameter estimation results was obtained from including the entire sample. According to the empirical results, the level of financialization has a significant positive effect on EVA when the financial channel profit is less than a certain level. One reason for this would be that the goal of non-financial companies' financing is to focus on the company's main business. In the process of optimal financial allocation, certain financial assets need to be allocated due to liquidity requirements. These financial assets can obtain certain financial profits through financial management and other methods but these profits should only cover the cost of financing. Therefore, when the financial channel profits are at a negative value which is less than the threshold, the level of

financialization has a positive effect on EVA. When the financial channel profit is in the range of $[-0.6639, 1.5225]$. This indicates that non-financial companies tend to use financing funds for financial investment, and the investment goal is to achieve more investment income. At this level, the goal of the company is to pursue the maximum profit and ignores the company's long-term development goals. Thus, financial channel profit has a negative effect on EVA. However, when the financial channel profit exceeds the threshold of 1.5225, non-financial companies are more inclined to profit from the financial channel to increase their financial income and thus, somehow will deviate business direction. This effect is negative but not significant which indicates that the essential attributes of the sample type have changed.

4. The heterogeneity of the impact of corporate financialization on EVA

4.1. The impact of industry classification differences on corporate financialization level

One important objective of the financialization goals is to achieve optimal capital allocation but due to the huge differences in the use of funds by different industries, for example, labor-intensive industries such as construction require relatively few liquid funds and relatively thus it has weak sensitivity to funds. Thus, when labor-intensive industries demand liquidity, they can often solve part of the problem by communicating with upstream and downstream. Capital-intensive industries such as electric power and heating require more liquid funds than labor-intensive industries. Moreover, the liquidity of the funds is strong and the greater allocation of capital to finance lies in optimizing capital allocation. Technology-intensive industries as electronic devices require large amounts of funds for R&D and innovation and the need for liquidity is highly correlated with R&D progress.

Thus, financialization in these industries has to be combined with specific implementation projects, and the liquidity demand changes relatively large. Based on this, non-financial firms have a significant difference in the concentration of production factors. There are also significant differences in the allocation of funds, which in turn makes this different from the heterogeneity of the impact of corporate financialization in different industries. Therefore, based on the further classification method of non-financial corporates by Lu and Dang (2014), combined with the China Securities Regulatory Commission, industry classification of the national economy, and classification of factor density, this paper divides the sample according to the standards of different industrial inputs and dominant factors. According to the relative intensity of the three production factors of labor, technology, and capital in each industry, they are divided into labor-intensive, capital-intensive, and technology-intensive. Labor-intensive industries use labor as the main production structure and have a relatively low dependence on technology and equipment. They generally refer to industries such as agriculture, forestry, textile, and other industries. Technology-intensive industries are high-tech industries with a high demand for technical knowledge, and R&D expenditures are much higher than employee salaries. They usually include the electronics industry, the modern pharmaceutical industry, the information technology industry, and so on. Capital-intensive industries rely on capital, and the proportion of fixed assets in production factors is relatively large, which mainly refers to the transportation equipment manufacturing industry and the electric power industry. This classification is shown in Table 8.

Table 8. Factor intensity classification results.

Labor-intensive	Capital-intensive	Technology-intensive
A (agriculture, forestry, animal husbandry, fishery), B (mining industry), C0 (food, beverage), C1 (textile, clothing, fur), C2 (wood, furniture), C9 (Other manufacturing), E (construction industry), F (wholesale and retail), H (Accommodation and Catering), L (leasing and business services), N (water conservancy, environment and public facilities management), P (education), Q (health and social work), R (culture, sports and entertainment), S(synthesize)	C3 (paper, printing, culture and education), C4 (petroleum, chemical, plastics and plastics), C6 (non-metal, metal), D (electricity, heat, gas and water production and supply), G (transportation, storage and post industry)	C5 (electronics), C7 (machinery, equipment, instrumentation), C8 (medicine, biological products), M (scientific research and technical service industry), I (information transmission, software and information technology industry)

4.2. Threshold estimates by industry classification

Table 8 shows sample classification by industry. Industry classification results have been taken as sub-samples and we also use the threshold effect model from the previous empirical test to study the impact of corporate financialization on EVA. The threshold test was performed and we find that each sub-sample has passed the double threshold test and the threshold value was estimated by the model. The results are reported in Table 9.

Table 9. Results of threshold estimates by industry classification.

Industry	Threshold	Estimated value	95% confidence interval
Labor-intensive	First	-1.0857	[-1.1918, -1.0549]
	Second	2.4935	[1.4974, 3.0997]
Capital-intensive	First	-1.5754	[-2.3593, -1.2585]
	Second	1.9979	[1.3752, 2.4445]
Technology-intensive	First	-1.1094	[-1.3200, -1.0735]
	Second	1.1283	[0.1881, 1.2588]

From the full sample and the subsample, the impact of financialization level on EVA shows a significant change at the first threshold. Therefore, we focus on analyzing the interval formed by the first threshold and the second threshold in Table 9 and analyze the heterogeneity of the impact of different industries through the overlap of this interval. The overlapping interval between labor-intensive industries and capital-intensive industries is [-1.0857, 1.9979], and the total interval length is [-1.5754, 2.4935]. Thus, the interval overlap ratio can be calculated and it is 60.83%. In the same way, the interval overlap ratio between labor-intensive industries and technology-intensive industries is 61.45%. The technology-intensive industries are formed by a subset of the capital-intensive industries and the overlapping interval

ratio is 61.12%. Based on this, we can say that industries with different levels of factor density have significant differences in thresholds. Specifically, capital-intensive and technology-intensive require higher capital and more liquidity while labor-intensive industries require relatively low liquidity in capital allocation. Comparing technology-intensive and capital-intensive, the technology-intensive allocation of funds for R&D and other activities is relatively high but the R&D and innovation funding allocation cycle is relatively long. Therefore, the range of the corresponding threshold is narrower and thus non-financial companies are easier to operate in terms of capital allocation.

4.3. Regression results for the threshold effect model by industry classification

We use the threshold effect model to study the impact of corporate financialization on EVA parameter estimation by industry. Parameter estimation results are shown in Table 10.

Table 10. Regression results for threshold estimations by industry.

Threshold interval	Labor-intensive	Capital-intensive	Technology-intensive
1	0.5336***	0.9010**	0.7962***
2	-0.3249***	-1.5497***	-0.3845***
3	-0.00285	0.0322	0.0010
Control variables	Yes	Yes	Yes
Obs	2900	2820	3410
R ²	0.2167	0.1655	0.2119

Note: *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively.

We call the interval formed by financialization level that is less than the first threshold value by the first interval and use “1” to represent it. The interval that is greater than the first threshold and less than the second threshold is called the second interval and represents by “2”. The interval that is greater than the second threshold is called the third interval and represents by “3”.

As can be seen from Table 10, the results of interval 3 are not significant thus we focus on the results of interval 1 and interval 2. The results of interval 1 and interval 2 are totally opposite in the direction. The main reason is exactly the same as that of the full sample. For interval 1, in the three different industries, financialization has a significant positive impact on EVA. This impact varies from high to low impact and industries can be arranged according to their effect as a capital-intensive industry, technology-intensive industry, and labor-intensive industry with coefficients of 0.9010, 0.7962 and 0.5336 respectively. In the second interval, the financialization of capital-intensive companies has a much stronger negative impact on EVA compared with labor-intensive and technology-intensive companies. In addition to this, capital-intensive companies have higher requirements for the fixed capital and working capital of each worker compared with labor-intensive and technology-intensive companies. If a company invests too much in finance and real estate which causing a lack of sufficient funds to carry out the physical investing which will inhibit the development of the main business of non-financial companies. This will also significantly reduce the profitability of the company.

5. Conclusion

The paper aims to investigate the impact of corporate financialization on EVA through panel models and threshold effect models over the period 2007–2016 for Chinese A-share listed companies. First of all, the results show that corporate financialization has a significant impact on EVA. Through the empirical study of the fixed-effect model and random-effect model, this study found that the proportion of financial channel profit has a significant negative effect on EVA, that is, the higher the degree of corporate financialization, the lower the EVA. Such short-term profit-making behavior changes the corporate investment preferences, inhibits the growth of economic value added, and is not conducive to sustainable development. Secondly, the impact of corporate financialization on EVA is non-linear, and there may have both positive and negative effects. When the level of financialization is less than -1.0885 , its coefficient is 0.5763 and the impact of corporate financialization on EVA is significantly promoted. However, when the level of financialization is in the range of $[-0.6639, 1.5225]$, its coefficient is -0.6639 which means corporate financialization has an inhibitory effect on EVA. Moreover, we found that under the circumstances that the profitability of financial channels tends to cope with liquidity allocation, financialization has a positive effect on EVA. Non-financial companies hold financial assets and make profits through financial management and other methods but the profit of such financial channel only make up the cost of financing and respond to liquidity needs. The main purpose is to achieve optimal financial allocation on the company's main business and the impact of corporate financialization on EVA is positive. Furthermore, the results show that the impact of corporate financialization on EVA is heterogeneous among industries with factor intensity differences. Financialization level in interval 1, the degree of the positive impact of financialization on EVA gradually decreased for capital-intensive, technology-intensive, and labor-intensive companies. Financialization level in interval 2, the financialization of capital-intensive companies has a stronger negative impact on EVA than technology-intensive and labor-intensive companies.

Combined with the estimation of the whole sample, the conclusion has certain policy implications. The financialization of Chinese listed companies reduces EVA. The results of this study are of interest to investors and managers in that they improve our understanding of the corporate financialization affects the economic value added. On the one hand, it is necessary to regulate the financial asset allocation behaviors of corporates to guide long-term sustainable development. On the other hand, it is necessary to narrow the gap between the profits of financial channels and the real economy, and further promote financial services to the real economy. The results show that corporate financial management can be adjusted and supervised according to the moderate range and direction. This study also suggests that corporates can use liquid funds for financial business in the course of operation, but the primary goal is to meet the liquidity demand. By concentrating on the main business, we can avoid the deindustrialization and industrial hollowing caused by excessive financialization. The findings also highlight the differentiation strategies of different corporates. Based on the financialization caused by the different industry classification, the government should combine the industry characteristics to formulate differentiated support policies.

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Conflict of interest

The authors declare that there are no competing interests.

References

- Almeida H, Campello M, Weisbach MS (2004) The cash flow sensitivity of cash. *J Financ* 59: 1777–1804.
- Akkemik KA, Özen Ş (2013) Macroeconomic and institutional determinants of financialisation of non-financial firms: Case study of Turkey. *Socio-Econ Rev* 12: 71–98.
- Brown JR, Petersen BC (2011) Cash holdings and R&D smoothing. *J Corp Financ* 17: 694–709.
- Corpataux J, Crevoisier O, Theurillat T (2009) The expansion of the finance industry and its impact on the economy: a territorial approach based on Swiss pension funds. *Econ Geogr* 85: 313–334.
- Demir F (2009) Financial liberalization, private investment and portfolio choice: Financialization of real sectors in emerging markets. *J Dev Econ* 88: 314–324.
- Ding S, Guariglia A, Knight J (2013) Investment and financing constraints in China: does working capital management make a difference? *J Bank Financ* 37: 1490–1507.
- Dai Z, Peng Y, Ma S (2018) Understanding the Economic Shifting “from Real to Virtual” from the Micro Perspective: A Literature Review of Corporate Financialization. *Foreign Econ Manage* 40: 31–43.
- Ehie IC, Olibe K (2010) The effect of R&D investment on firm value: An examination of US manufacturing and service industries. *Int J Prod Econ* 128: 127–135.
- Fiordelisi F, Renneboog L, Ricci O, et al. (2019) Creative corporate culture and innovation. *J Int Financ Mark Inst Money* 63: 101137.
- Han S, Qiu J (2007) Corporate precautionary cash holdings. *J Corp Financ* 13: 43–57.
- Hu Y, Wang X, Zhang J (2017) The Motivation for Financial Asset Allocation: Reservoir or Substitution: Evidence from Chinese Listed Companies. *Econ Res J* 52: 181–194.
- Kim CS, Mauer DC, Sherman AE (1998) The determinants of corporate liquidity: Theory and evidence. *J Financ Quant Anal* 33: 335–359.
- Kliman A, Williams SD (2015) Why ‘financialisation’ hasn’t depressed US productive investment. *Cambr J Econ* 39: 67–92.
- Lin Chen, Qiao ZL (2010) What influence the company’s economic value added? empirical evidence from china’s securities market. *Manage Sci Eng* 2: 67–76.
- Liu J, Sheng H, Ma Y (2014) The Mechanism of Corporate Enterprises Participating in Shadow Banking Businesses and Its Model Analysis of Social—Welfare Net Loss. *J Financ Res* 5: 96–109.
- Lu T, Dang Y (2014) Corporate Governance and Innovation: Differences among Industry Categories. *Econ Res J* 49: 115–128.
- Liu G (2017) Financial Asset Allocations and the Firms’ R&D Activity in China: Crowding-out or Crowding-in? *Stat Res* 34: 49–61.
- Liu ZJ, Wang YS (2017) Effect of earnings management on economic value added: G20 and African countries study. *S Afr J Econ Manag Sci* 20: 1–9.
- Lei X, Zhu R, Huang Y (2020) Research on the Financial Degree of Enterprises, Its Precipitating Factors and Economic Consequences. *East China Econ Manage* 34: 76–85.
- Myers SC, Majluf NS (1984) Corporate financing and investment decisions when firms have information that investors do not have (No. w1396). NBER working paper series.

- Opler T, Pinkowitz L, Stulz R, et al. (1999) The determinants and implications of corporate cash holdings. *J Financ Econ* 52: 3–46.
- Orhangazi O (2008) Financialisation and capital accumulation in the non-financial corporate sector: a theoretical and empirical investigation on the us economy: 1973–2003. *Cambr J Econ* 32: 863–886.
- Renneboog L, Szilagyi PG (2015) How relevant is dividend policy under low shareholder protection? *J Int Financ Mark Inst Money* 64: 100776.
- Roy Trivedi S (2020) Impact on Financialisation on Accumulation: Evidence from India. *Econ Pap* 39: 89–100.
- Stulz RM (1984) Optimal hedging policies. *J Financ Quant Anal* 19: 127–140.
- Smith CW, Stulz RM (1985) The determinants of firms' hedging policies. *J Financ Quant Anal* 20: 391–405.
- Stulz RM (1996) Rethinking risk management. *J Appl Corp Financ* 9: 8–25.
- Seo HJ, Kim HS, Kim YC (2012) Financialization and the Slowdown in Korean Firms' R&D Investment. *Asian Econ Pap* 11: 35–49.
- Shin HY (2012) Financialization and Stagnant Corporate Investment in Korea Since the Asian Financial Crisis. Available at SSRN 2156502.
- Shin HS, Zhao L (2013) Firms as surrogate intermediaries: evidence from emerging economies. *Asian Dev Bank*.
- Silvennoinen A, Thorp S (2013) Financialization, crisis and commodity correlation dynamics. *J Int Financ Mark Inst Money* 24: 42–65.
- Tornell A (1990) Real vs. financial investment can Tobin taxes eliminate the irreversibility distortion? *J Dev Econ* 32: 419–444.
- Tori D, Onaran O (2017) The effects of financialisation and financial development on investment: Evidence from firm-level data in Europe. Available from: <https://ssrn.com/abstract=3064062> or <http://dx.doi.org/10.2139/ssrn.3064062>.
- Wang Y, Liu Z, Li C, et al. (2015) Identify shadow banking activities of Chinese non-financial companies: Evidence from the consolidated balance sheet. *Manage World* 12: 24–40.
- Xie J, Wang W, Jiang Y (2014) Manufacturing Financialization, Government Control and Technology Innovation. *Econ Perspect* 11: 78–88.
- Zhang C, Zhang B (2016) The Falling Real Investment Puzzle: A View from Financialization. *Econ Res J* 51: 32–46.



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