The Impact of Import Penetration on Corporate Trade Credit

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Abstract. Tariffs play a pivotal role in the economic domain. Against the backdrop of supply chain finance, this paper investigates how import penetration affects corporate trade credit. Utilizing a sample of A - share listed companies from 2012 to 2020 and import data at the HS6 - digit code level obtained from the WITS database, our results demonstrate that the level of import tariffs can enhance corporate trade credit. The reduction in corporate trade credit primarily impacts the supply of trade credit rather than its acquisition, indicating that firms alleviate competitive pressures by extending payment terms to downstream partners. The findings hold robust across a series of robustness tests. We further uncover that import penetration can diminish corporate trade credit through three mechanisms: firm bargaining power, customer dependency, and firm operating efficiency. Ultimately, this paper contributes by integrating tariff-driven competition into the trade credit framework, uncovering the micro-level transmission of macroeconomic policies to corporate financial decisions via supply chains. It offers policy insights for balancing trade openness with financial stability.

Keywords: Tariffs; Import penetration; Trade credit; Firm operation.

1. Introduction

In 2001, China officially acceded to the World Trade Organization (WTO). Against the backdrop of deepening economic globalization, China's trade volume with the international community has continued to expand, and the impact of tariff levels on China's economy has become increasingly pronounced. In recent years, the world economy has encountered numerous difficulties, with the process of economic globalization being obstructed and the rise of trade protectionist forces. In an effort to protect domestic industries and employment, the United States government has implemented heightened tariff measures targeting Chinese and other regions, initiating trade wars with the intention of reducing trade deficits. In particularly, the United States successively introduced a series of policy measures, imposing tariff sanctions on several countries. For instance, on January 31, 2025, the Trump administration confirmed that it would formally begin imposing a 25% tariff rate on imports originating from Mexico and Canada, and a 10% tariff on Chinese products[1]. Meanwhile, tariffs are perceived as closely related to the domestic employment situation, and they are of vital importance to economic development and social stability, occupying a significant position in both social and economic spheres. An increase in import tariffs leads to higher costs and a loss of market share for firms [2], which severely inhibits the development of both firms and industries. Given this context, in the current economic climate, tariffs subtly influence firms' control over their future development directions and provide a new dimension for strategic planning.

At present, China's economic development is confronted with issues of imbalance and insufficiency. The allocation of economic resources is uneven, economic growth is facing downward pressure, industry competition is fierce, and the market outlook is fraught with considerable uncertainty. These factors collectively pose numerous challenges to corporate development. Against this backdrop, financial institutions are exercising caution in their investments in enterprises, with small and medium - sized enterprises (SMEs) encountering particularly pronounced difficulties in financing. Corporate trade credit serves as a vital complementary financing mechanism, partially mitigating financial constraints. Therefore, from the perspective of supply chain finance, corporate trade credit is increasingly drawing attention. Previous literature has discussed the impact of import penetration on executive compensation [3]. However, Current research inadequately examines the

effects of import tariffs on corporate trade credit provision. Thus, this paper's exploration of how tariffs affect trade credit can provide a meaningful addition to the existing body of literature.

This paper examines how import penetration affects corporate trade credit through three mechanisms: customer dependency, bargaining power, and operating efficiency. First, heightened import competition increases customer churn. Firms with high customer concentration raise accounts receivable to retain clients, reducing trade credit (higher dependency lowers credit). Second, weaker-bargaining firms (e.g., small/young firms) increase receivables to sustain partnerships, decreasing credit (stronger bargaining power elevates credit). Third, inefficient firms facing financial strain boost receivables to maintain profitability, suppressing credit (higher efficiency increases credit).

Using China's tariff data and HS6-level import data for A-share firms (2012–2020), we find higher import tariffs correlate with increased corporate trade credit, driven primarily by credit supply rather than acquisition. Results remain robust across alternative specifications, DID, IV, and PSM tests. We empirically confirm import penetration reduces trade credit by weakening bargaining power, intensifying customer dependency, and impairing operating efficiency.

The primary contributions of this paper are as follows: (1) This paper enriches the literature on the impact of tariffs on micro - firms. Prior research has explored the economic implications of tariff shocks[4]. Existing studies have not yet investigated the effects of import penetration on corporate trade credit provision.This study investigates tariff effects on corporate operations through supply chain finance mechanisms, broadening existing research on import penetration's macroeconomic implications. (2) This investigation extends current knowledge regarding the drivers of trade credit. Existing studies on trade credit have predominantly concentrated on the micro - level firm - specific factors[5], but has not examined how macroeconomic factors influence micro - level trade credit. By investigating how tariff shocks affect corporate trade credit and the underlying mechanisms, this paper contributes to the literature on trade credit.

2. Literature Review and Hypothesis Development

2.1.Literature Review

In recent years, numerous studies have demonstrated that import competition influences firm behavior through various mechanisms. Import competition negatively affects corporate ethical behavior by increasing competitive pressure and eroding ethical norms[6]. Regarding market behavior, technological advancement enables firms to offset rivals' advantages through cost reduction[7]. Import competition also impacts innovation: Liu et al. identified mechanisms like resource allocation and technology introduction, while Carlos et al. found innovation capabilities diminish under high import penetration.[8]

For Chinese enterprises, import penetration exerts dual impacts. Amiti et al.observed it promotes export quality upgrading in RCEP countries through learning effects[9].Zhu et al. highlighted coexisting opportunities and challenges through cost and innovation mechanisms.[10]

Studies on trade credit acquisition often overlook accounts receivable's impact. Meltzer et al. revealed larger firms gain advantages during monetary expansion through scale benefits[11]. Trade credit also functions as a transmission mechanism: Petersen et al.emphasized its role in financing and supply chain efficiency[12].

2.2.Hypothesis Development

While the opening of a country's import market holds positive implications for the domestic market, not all firms stand to benefit from it. Helena noted that import tariffs can reduce the fixed costs for foreign products entering the Chinese market, thereby lowering product prices[2]. The homogenization of products in the domestic market leads to competition, and domestic firms' profits and market shares are correspondingly eroded. Tight financial conditions may compel some firms to take measures to retain existing customers and attract potential ones in order to sustain their survival and development. Therefore, this paper puts forward a bold hypothesis: the higher the level of

domestic import tariffs, the smaller the impact of external shocks on the domestic market, the lower the degree of competition, and the higher the level of trade credit. When import competition crowds out the operating profits of domestic firms, plunging them into financial distress, or when less - competitive firms are unable to cope with the risks of import competition, firms may increase their accounts receivable to maintain business operations and stabilize corporate operating profits.

First, import penetration affects corporate trade credit through customer dependency. Holding the impact of import penetration constant, the higher the customer dependency, the lower the corporate trade credit. A firm's reliance on its largest or fifth - largest customer often exerts numerous negative influences. Once the market for major customers fluctuates, the firm, lacking diversified revenue support, struggles to withstand economic downturn pressures, and its financial stability is severely challenged. The payment cycle and credit status of major customers directly affect a firm's cash flow. The loss of major customers can lead to a significant depletion of the firm's economic sources, potentially causing a break in the firm's capital chain and an inability to conduct normal production and business activities. Import competition exacerbates customer churn, as foreign products, with their advantages of high quality and low price, hold greater appeal to customers. Firms with high customer concentration dependency are more vulnerable to the impact of customer loss. To mitigate risks, most firms increase their accounts receivable to retain customers and preserve potential clientele, thereby reducing corporate trade credit.

Second, import penetration affects corporate trade credit through firm bargaining power. Holding the impact of import penetration constant, the higher the firm bargaining power, the higher the corporate trade credit. Many firms, leveraging their scale advantages and longer tenure as publicly listed companies, have developed brand effects or brand appeal, with high industry reputations and substantial strength. These firms possess greater purchasing scales and market influence compared to small - and medium - sized enterprises (SMEs) and younger firms, thereby holding higher bargaining chips. In contrast, younger and smaller - scale firms, lacking market insights and resource advantages, often have lower bargaining power and are in a weaker position relative to their customers. With limited negotiating capabilities, they can only maintain cooperation with customers by compromising and increasing accounts receivable, which in turn reduces corporate trade credit.

Lastly, import penetration affects trade credit through firm operating efficiency. Holding the impact of import penetration constant, the higher the firm operating efficiency, the higher the trade credit. Investment efficiency and turnover rates, as key indicators of firm operating quality, hold profound significance for corporate growth and development. High investment efficiency and robust turnover rates serve as powerful engines for corporate development, continuously infusing vitality into firms and endowing them with stronger risk - resistance capabilities in the face of market competition. When the market experiences fluctuations due to import penetration, such firms can leverage their substantial financial strength and efficient operating systems to maintain stable production and sales, and may even seize market opportunities to expand against the trend.

Conversely, firms with lackluster investment and turnover efficiency suffer from low operating efficiency and internal management capabilities. In the face of import penetration, they are more likely to experience financial strain and poor risk - resistance capabilities. To enhance their competitiveness in the market and maintain corporate profits, these firms may resort to the strategy of increasing accounts receivable, thereby reducing corporate trade credit.

In conclusion, the following findings can be synthesized:(1)firms with high customer dependency increase accounts receivable ratios to stabilize client relationships amid foreign competition; (2) small and medium-sized enterprises with weak bargaining power resort to lenient credit terms due to a lack of market influence; and (3) low-efficiency firms, facing profit erosion, rely on credit sales to sustain cash flow.Based on this, this paper proposes Hypothesis 1.

Hypothesis 1: Import penetration reduces corporate trade credit.

3. Empirical Design

3.1.Sample Selection and Data Sources

This study selects A - share listed companies in China from 2000 to 2020 as the research subjects, as the HS6 - digit import data obtained from the WITS database cover the period from 2000 to 2020. The initial sample size is 61,263. To enhance the validity of the research sample data, the following data - cleaning procedures were conducted: We excluded 29,680 samples from non - manufacturing industries; removed 1,806 samples of ST - listed companies; eliminated 97 samples of companies with liabilities exceeding assets; and deleted 9,838 samples with missing values in key variables. The final sample consists of 19,842 firm - year observations. To mitigate the influence of outliers on the results, we performed a 1% winsorization on all continuous variables. The primary financial data were sourced from the CSMAR database, while the import tariff data were obtained from the World Bank's WITS database.

3.2.Model

Following the research of Liu et al. [13], to examine the relationship between import penetration and trade credit, this paper establishes the following model:

$$CREDIT_{it} = \alpha_1 AIF_{jt} + \alpha_2 X_{it} + \delta_t + \alpha_i + \epsilon_{it}$$

where $CREDIT_{it}$ represents the trade credit of firm i in year t, AIF_{jt} denotes the degree of import penetration in industry j in year t, X_{jt} is a vector of control variables, δ_t represents year - fixed effects, α_i represents firm - fixed effects, and ϵ_{it} is the residual term.

3.3.Variable Definitions

Import Penetration. Drawing on the research of Hombert et al. [7], this paper constructs a relatively exogenous explanatory variable to accurately identify the impact of import penetration on trade credit. The degree of import penetration AIF_{jt} is measured by the level of product - specific import tariffs, with the specific calculation formula as follows:

$$CREDIT_{it} = \frac{\sum_{s \epsilon j} tariff_{st} \times n_{st}}{\sum_{s \epsilon j} n_{st}}$$

where n_{st} represents the number of tariff lines for product s in year t, $tarrif_{st}$ denotes the actual applicable import tariff rate for product s in year t, and j is the industry code at the HS6 - digit level.

Trade Credit. Following the definition of trade credit by Melitz et al.[5], which is based on operating revenue, trade credit is calculated as the sum of accounts payable and notes payable minus the sum of accounts receivable and notes receivable, divided by operating revenue. Additionally, drawing on the approach of Arce et al. [14], this paper further measures net trade credit to enhance the robustness of the results. The specific formulas are as follows: (1) the sum of accounts receivable, notes receivable, and prepaid expenses minus the sum of accounts payable, notes payable, and unearned revenue, divided by operating revenue; (2) the sum of accounts payable and notes payable divided by operating revenue; (3) the sum of accounts payable, notes payable, and unearned revenue divided by operating revenue.

Control Variables. The control variables include: firm size (SIZE), debt - to - asset ratio (LEV), profitability (ROA), cash flow (CASHFLOW), liquidity (LIQ), gross profit margin (GPM), number of employees (STAFF), firm growth (GROWTH), board size (BSIZE), top executive compensation (TEC), equity concentration (TOP), and fixed asset ratio (FA). .

4. Empirical Results

4.1.Descriptive Statistics

The average import tariff level (AIF) is 8.113, with a standard deviation of 2.949, indicating significant horizontal disparities in tariff levels across different industries and firms. The mean value of trade credit is -0.024, with a standard deviation of 0.106, suggesting that the overall level of trade credit among A - share listed companies in China is not high and that there is considerable variation in trade credit among different firms. The characteristics and distributions of the remaining variables are consistent with those found in the existing literature.

4.2.Correlation Coefficients

The correlation coefficient between the import tariff level (AIF) and trade credit (CREDIT) is 0.077, which is significant at the 1% level. This indicates a positive relationship between the import tariff level and trade credit, suggesting that higher import tariff levels are associated with higher levels of corporate trade credit.

4.3.Main Regression Analysis

Table 1 presents the main regression results for the relationship between import penetration and trade credit. Column (1) shows the regression results without control variables, while Column (2) includes control variables. The regression coefficient for import penetration (AIF) without control variables is 0.002, which is significantly positive at the 1% level. When control variables are included, the regression coefficient remains 0.002 and is still significantly positive at the 1% level. These results indicate that import tariffs significantly enhance corporate trade credit, with higher import tariff levels being associated with higher levels of corporate trade credit.

Table 1. Main Regression Results

Variables	(1)	(2)
	CREDIT	*CREDIT*
AIF	0.002***	0.002***
	(2.664)	(2.940)
Controls	Yes	Yes
FIRM&YEAR FE	Yes	Yes
Observations	19,842	19,842
Adj.R^2	0.057	0.143

4.4.Robustness Tests

4.4.1 Variable Substitution

Given the potential for measurement bias in the trade credit variable used in this study, we conducted robustness checks by replacing the dependent variable. Specifically, we defined an alternative measure of trade credit, CREDIT2, as the sum of accounts payable, notes payable, and unearned revenue minus the sum of accounts receivable, notes receivable, and prepaid expenses, divided by operating revenue. Column (1) presents the regression results with CREDIT2 as the dependent variable, showing that the coefficient for import penetration (AIF) is 0.003 and significant at the 5% level. These results suggest that our findings are not affected by measurement bias in the trade credit variable.

To further distinguish which factor drives the trade credit, we decomposed trade credit supply into DOWNCREDIT1 and DOWNCREDIT2. DOWNCREDIT1 is calculated as the sum of accounts receivable and notes receivable divided by operating revenue, while DOWNCREDIT2 is the sum of accounts receivable, notes receivable, and prepaid expenses divided by operating revenue, focusing on the trade credit from downstream firms. Columns (2) and (3) present the regression results with

DOWNCREDIT1 and DOWNCREDIT2 as the dependent variables, respectively. The coefficients for import penetration (AIF) are -0.003, significant at the 1% level for both models.

We also decomposed trade credit acquisition into UPCREDIT1 and UPCREDIT2. UPCREDIT1 is defined as the sum of accounts payable and notes payable divided by operating revenue, while UPCREDIT2 is the sum of accounts payable, notes payable, and unearned revenue divided by operating revenue, focusing on the trade credit from upstream firms. Columns (4) and (5) present the regression results with UPCREDIT1 and UPCREDIT2 as the dependent variables, respectively. The coefficients for import penetration (AIF) in both models are -0.000.

These results indicate that trade credit is more likely to be influenced by downstream suppliers. The increase in trade credit is driven by changes in trade credit supply rather than trade credit acquisition.

Table 2. Robustness Tests Using Alternative Variables

Variables	(1)	(2)	(3)	(4)	(5)
	CREDIT2	*DOWNCREDIT1*	*DOWNCREDIT2*	*UPCREDIT1*	*UPCREDIT2*
AIF	0.003**	-0.003***	-0.003***	-0.000	-0.000
	(2.308)	(-3.124)	(-2.838)	(-0.215)	(-0.288)
Controls	Yes	Yes	Yes	Yes	Yes
FIRM&YEAR FE	Yes	Yes	Yes	Yes	Yes
Observations	19,842	19,842	19,842	19,842	19,842
Adj.R^2	0.133	0.084	0.098	0.172	0.201

4.4.2 Model Substitution and Industry - Level Adjustments

This paper conducted robustness checks by altering the clustering level of standard errors in the regression models. Table 3, Column (1), presents the regression results with standard errors clustered at the industry level instead of the firm level. The coefficient for the import tariff level (AIF) remains significantly positive, indicating that the results are robust to this model specification change.

Additionally, this paper excluded firms that experienced industry changes and reran the regression. The results, shown in Column (2) of Table 3, reveal that the coefficient for the import tariff level (AIF) remains significantly positive. This confirms that our findings are not influenced by industry - changing firms.

4.4.3 Difference - in - Differences (DiD) Analysis

This paper employs the DiD approach by calculating the year - over - year changes for all variables, such as the change in trade credit ΔCREDIT being the difference between the current year's trade credit of listed companies and the previous year's trade credit. As shown in Column (3), the coefficient of the import tariff level (AIF) difference term is significantly positive at the 1% level. This indicates that changes in the import tariff level (AIF) are associated with changes in trade credit (CREDIT), confirming that the results are robust to the DiD specification.

4.4.4 Selection Bias

To address potential sample selection bias, this paper employs propensity score matching (PSM). Using a 1:1 matching method without replacement and a caliper of 0.001, we match the samples and then conduct regression analysis with the matched samples. As shown in Column (4) of Table 3, the coefficient of the import tariff level (AIF) remains significantly positive.

Next, this paper performs the Heckman selection correction test. In the first step, we use a probit model to conduct clustered regression analysis and calculate the inverse Mills ratio (IMR) based on the regression results, which is then included in the regression. Column (5) of Table 3 indicates that the import tariff level (AIF) is significantly positive, and the IMR is also significantly positive. These results confirm that there is no selection bias or endogeneity issue in the sample.

Finally, this paper conducts an instrumental variable (IV) test. To satisfy the exogeneity requirement of the instrument, we use the import tariff level in 1999 (AIF_1999) as an instrumental variable and perform regression analysis. Column (6) of Table 3 shows that AIF_1999 is significantly

positive, indicating a correlation between trade credit (CREDIT) and the import tariff level in 1999 (AIF_1999). Subsequently, we derive the predicted values of the import tariff level (AIF) and include them in the second - stage regression. Column (7) of Table 3 reveals that the regression result remains significantly positive, with a second - stage regression coefficient of 0.017, confirming the correlation between trade credit (CREDIT) and the import tariff level (AIF).

Table 3. Robustness Tests

Variables	(1) Model 1 *CREDIT*	(2) Model 2 *CREDIT*	(3) Change *ΔCREDIT*	(4) PSM *CREDIT*	(5) Heckman *CREDIT*	(6) IV-1st *CREDIT*	(7) IV-2nd *CREDIT*
AIF or ΔAIF	0.002***	0.004***	0.001***	0.003***	0.002***		0.017***
	(3.018)	(3.985)	(2.883)	(-3.021)	(2.623)		(-4.034)
AIF_1999						0.002***	
						(-9.364)	
IMR					-0.003*		
					(-1.916)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FIRM&YEAR FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,842	17,184	17,020	17,098	19,842	19,842	19,842
Adj.R^2	0.698	0.141	0.148	0.146	0.142	0.466	0.143

4.5.Mechanism Analysis

The first mechanism examined in this paper is customer dependency. Firms with higher sales to their largest and fifth - largest customers exhibit greater customer dependency and relatively weaker abilities to adapt to market changes and withstand external shocks. Import competition intensifies customer churn, and to retain these customers, firms may resort to increasing accounts receivable, thereby reducing corporate trade credit. Therefore, this paper hypothesizes that the higher the customer dependency, the more import penetration will lower corporate trade credit. To test this, we define the proportion of sales to the largest customer as CUM and create a dummy variable dumCUM, which equals 1 if CUM is above the industry - year median and 0 otherwise. We then interact dumCUM with AIF. The interaction term is significantly positive in Columns (1) and (2) of Table 4, indicating that customer dependency affects the impact of import penetration on trade credit.

The second mechanism explored in this paper is firm bargaining power. Smaller - scale and younger firms are in a weaker position relative to their customers, facing greater operating risks and higher dependency on clients. We hypothesize that import penetration will more significantly reduce trade credit when firms are in a weaker position relative to their customers. To capture this, we use firm size (SIZE) and firm age (AGE) as proxies for relative bargaining power, with smaller - scale and younger firms considered to be in a weaker position. We define dumSIZE as 1 if the firm size is below the industry - year median and 0 otherwise, and dumAGE as 1 if the firm age is below the industry - year median and 0 otherwise. Column (3) of Table 4 presents the regression results for the interaction between AIF and dumSIZE, while Column (4) shows the results for the interaction between AIF and dumAGE. The significant positive coefficients in Columns (3) and (4) indicate that firm bargaining power affects the impact of import penetration on corporate trade credit.

The third mechanism examined in this paper is firm operating efficiency. We use investment efficiency (INVT) and asset turnover rate (TURN) as proxies for firm operating efficiency. Firms with low operating efficiency and poor internal management are less capable of withstanding external shocks, which exacerbates their financial strain. To better adapt to external environmental changes, these firms may increase their accounts receivable to maintain profitability, thereby reducing corporate trade credit. We define dumTURN as 1 if the asset turnover rate is below the industry - year median and 0 otherwise, and dumINVT as 1 if the investment efficiency is below the industry - year median and 0 otherwise. Column (5) of Table 4 presents the regression results for the interaction between AIF and dumTURN, while Column (6) shows the results for the interaction between AIF and dumINVT. The significant negative coefficient in Column (5) and the significant positive

coefficient in Column (6) indicate that firm operating efficiency indeed affects the impact of import penetration on corporate trade credit.

Table 4. Tests for the Mechanism Analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	CREDIT	*CREDIT*	*CREDIT*	*CREDIT*	*CREDIT*	*CREDIT*
	CUM	*CUM2*	*SIZE*	*AGE*	*INVT*	*TURN*
*AIF*dumN*	0.001***	0.001***	0.002***	0.001***	-0.001***	0.001***
	(2.582)	(3.204)	(3.12)	(3.377)	(6.291)	(3.017)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
FIRM&YEAR FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,842	19,842	19,842	19,842	19,842	19,842
Adj.R^2	0.142	0.142	0.143	0.143	0.144	0.143

5. Conclusion

Leveraging Chinese tariff data and a sample of A-share listed companies (2012-2020) combined with HS 6-digit import data, this study reveals that higher import tariffs are associated with increased corporate trade credit. The robustness of the findings is ensured through multiple methods, including variable substitution, model replacement, difference-in-differences analysis, self-selection models, instrumental variables, and propensity score matching. The research identifies that import penetration reduces corporate trade credit through three mechanisms: weakening firms' bargaining power, intensifying customer dependency, and lowering operational efficiency. Consequently, policy recommendations include establishing a tiered tariff adjustment mechanism to protect SMEs in sensitive industries; supporting SMEs through tax incentives and digital subsidies to enhance operational efficiency and customer diversification; mandating high-customer-dependency firms to disclose risks and optimize payment term management; and guiding inefficient enterprises to improve cash flow through asset restructuring or technological upgrades. Limitations involve unexamined effects under varying ownership structures and market competition levels, and insufficient specific guidance for SMEs to enhance trade credit. Future research could integrate real-time data with AI to construct import penetration early-warning models, explore macro-micro linkages, investigate import competition's impact on corporate governance, or identify other determinants of trade credit.

References

[1] Fudan Development Research Network <https://fddi.fudan.edu.cn/f1/9b/c21253a717211/page.htm>

[2] Helena, K.;Massimo, R. “The impact of import tariffs on GDP and consumer welfare: A production network approach”Economic Modelling,2023,126,106374

[3] Lie, E. and Yang, K. “Import Penetration and Executive Compensation.” The Review of Financial Studies, 2023, 36(1), pp. 281–316.

[4] Chen, T.; Lin, C. and Shao, X. “Globalization and Corporate Tax Policies: Evidence from Import Competition.”Management Science, 2022, 68(8), pp.6145–6162.83(1), pp.87–117.

[5] Melitz, M. J.“The Impact of Trade on Intra - industry Reallocations and Aggregate Industry Productivity.”Econometrica, 2003, 71(6), pp.1695–1725.

[6] Andrei, S.“Does Competition Destroy Ethical Behavior?”American Economic Review, 2004,94 (2) ,pp.414-418.

[7] Hombert, J. and Matray, A. “Can Innovation Help US Manufacturing Firms Escape Import Competition from China?”The Journal of Finance, 2018, 73(5), pp.2003–2039.

[8] Liu, R and Carlos, R,“ Import competition, multi-product firms, and basic innovation.”,Journal of International Economics,2013,91(2),pp,220-234.

[9] Amiti, M.; Amit K. “Import Competition and Quality Upgrading”,The Review of Economics and Statistics, 2013,95 (2),pp,476–490.

[10] Giordano,M.; Zhu,L.,“Import competition from and offshoring to China: A curse or blessing for firms?”Journal of International Economics,2013, 89(1),pp,202-215.

[11] Meltzer,A.H.,1960, “Mercantile Credit,Monetary Policy and Size of Firms”,The Review of Economics and Statistics,vol.42,pp.429~437.

[12] Petersen,M.A.and Rajan,R.G.,1997, “Trade Credit:Theories and Evidence”,The Review of Financial Studies,vol.10(3),pp.661~691.

[13] Liu.Q, Lu.R, “Import competition and firm innovation: Evidence from China”, Journal of Development Economics, 2021.102650.

[14] Arce,O.,Mayordomo,S.and Gimeno,R.,2021“Making Room for the Needy:The Credit-Reallocation Effects of the ECB’s Corporate QE？”,Review of Finance,vol.25(1),pp.43~84.