



The Impact of Financial Cooperation between China and Countries Along the Belt and Road on the Binary Margin of Exports

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Abstract. The article calculates China's export binary margin by using the HS-6 quartile data of China's exports to 60 sample countries along the Belt and Road from 2009 to 2020. The entropy method is used to calculate the financial cooperation index between China and the countries. The empirical results show that there is a positive relationship between financial cooperation and the binary margin. Further empirical results by income level show that the impact of financial cooperation on the export binary margin is heterogeneous.

Keywords: the Belt and Road, financial cooperation, export binary margins

1 Introduction

Since the Belt and Road Initiative was put forward in 2013, China has made new breakthroughs and deepened economic and trade cooperation with countries along the route. Since the Belt and Road Initiative was proposed, financial cooperation has been put on the agenda. By the end of April 2024, China has signed more than 200 cooperation documents with 153 countries and 32 international organizations to jointly build the Belt and Road, most of which involve financial cooperation. With the deepening of financial cooperation, the scale of trade between China and countries along the route has been expanding increasingly. Against this background, it is particularly important to study the impact of financial cooperation on trade structure and trade growth. Based on the neo-new trade theory of the binary margin of export trade growth, this paper will explore the relationship between financial cooperation and the export binary margin.

2 Literature Review and Research Hypotheses

2.1 Literature Review

In recent years, there has been a gradual increase in the number of studies on the financial cooperation of the Belt and Road and the binary margin of China's exports. In terms

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of financial cooperation, many scholars have deeply explored the financial cooperation of countries along the Belt and Road from different angles. Li Yanxi et al. point out the important role of financial cooperation on regional innovation capacity^[1]. Ma Yan and Wang Jiechen empirically concluded that financial cooperation contributes to industrial upgrading and economic development^[2]. The export binary margin as an important topic in the new trade theory. Chaney^[3], Melitz^[4], Felbermyer & Kohler^[5], and Helpman et al.^[6] decomposed it from the product, firm, and country levels, respectively. In the context of the Belt and Road, scholars such as Xiang songlin^[7], Duan Jinghui^[8] have conducted in-depth studies on China's export binary margin based on different methods and analyzed its influencing factors.

However, there are relatively few studies on the relationship between financial cooperation and the export binary margin. This paper aims to enrich the research in this area by designing a new evaluation index system for financial cooperation and empirically verifying the role of financial cooperation between China and countries along the Belt and Road in promoting China's export binary margin.

2.2 Research Hypothesis

Bilateral financial cooperation can expand intraregional markets and improve information transparency, thereby reducing information asymmetry. At the same time, through bilateral financial cooperation, it is conducive to the introduction of mutually beneficial policies and preferential systems, which in turn provide better quality financial services and innovative financial products, and help to reduce transaction costs and risks, thereby promoting interregional trade. Therefore, the following research hypotheses are proposed.

H1: Financial cooperation between China and countries along the Belt and Road promotes the export binary margin.

3 Research Design

3.1 Model Setting

$$\ln IM_{it} = \alpha_0 + \alpha_1 \ln FO_{it} + \alpha_2 \mathbf{X}_{it} + \varepsilon \quad (1)$$

$$\ln EM_{it} = \beta_0 + \beta_1 \ln FO_{it} + \beta_2 \mathbf{X}_{it} + \varepsilon \quad (2)$$

In Eqs. (1) and (2), IM_{it} denotes the intensive margin of China's exports to sample country i in year t , and EM_{it} denotes the expansion margin of China's exports to sample country i in year t ; FO_{it} denotes the index of financial cooperation between China and sample country i constructed in year t ; \mathbf{X}_{it} is the set of control variables; ε is the random disturbance term; the model is regressed using OLS with robust standard errors.

3.2 Description of Variables

Explanatory variables: $\ln IM_{it}$ & $\ln EM_{it}$

Drawing on the decomposition method of Hummels & Klenow^[9] and Shi Bingzhan^[10], the intensive margin and expansion margin of exports are calculated using product-level data and the method of comparison with the world average, which is derived from the CEPII-BACI.

Explanatory variable: $\ln FO_{it}$.

As shown in Table 1, seven indicators are selected to calculate the financial cooperation between China and 60 sample countries along the Belt and Road during the period of 2009-2020 by using principal component analysis (PCA), taking the value of $\ln(1+FO)$.

Control Variables.

(1) Economic size ($\ln GDP_{it}$) is expressed as the ratio of GDP of the sample countries to China's GDP, taking $\ln(1+GDP)$. (2) Productivity level ($\ln PROD_{it}$) is expressed as the ratio of GDP of the sample countries and China to the number of labor force divided by the ratio of GDP of China to the number of labor force, taking the value of $\ln(1+PROD)$, and the above data are from the WDI. (3) The real exchange rate ($\ln ER_{it}$) is expressed by the ratio of the exchange rate of the sample countries to the US dollar to the exchange rate of China to the US dollar, taking the value $\ln(1+ER)$, and the above data come from the IMF. (4) Variable trade costs ($\ln DIS_i$) are expressed as the distance between China and the capitals of the sample countries, taking the natural logarithm into the model, and the data come from the CEPII-BACI. (5) Fixed trade costs ($\ln FREE_{it}$) are expressed as the ratio of the economic freedom index scores of the sample countries to the economic freedom index score of China, taking the value $\ln(1+FREE)$, and the data come from the Heritage Foundation. (6) The WGI index ($\ln WGI_{it}$) of the World Bank reflects the comprehensive governance level of the country, including 6 indicators of government governance, political stability, legal environment, public management effectiveness and corruption degree, which are calculated by entropy value method and then brought into the model. (7) FTA_{it} takes 1 if the sample country has a free trade agreement in force with China in year t, 0 otherwise, data from WTO. (8) $CONT_i$ takes 1 if the sample country borders China, 0 otherwise, data from CEPII-BACI.

Table 1. Financial cooperation indicator system and data sources

Level 1 indicators	Level 2 indicators	Assignment of indicators	Data sources
Currency cooperation	Size of currency swap agreements	Based on the amount for the duration of the agreement (RMB billion)	People's Bank of China
	Renminbi clearing bank	Setting up a RMB clearing bank assigns a value of 1, otherwise it is 0.	People's Bank of China
Financial Regulation Cooperation	SEC Signs Oversight Memorandum	Signing of MOU assigns a value of 1, otherwise 0	China Securities Regulatory Commission

Financial Institutions Cooperation	Number of overseas establishments of major state-owned banks	Assignment by number of overseas branches	Annual reports of commercial banks
Financial Markets Cooperation	Size of qualified foreign investors	Qualified Foreign Investor (QFI) quota by country (USD billion)	State Administration of Foreign Exchange
	Number of qualified foreign investment institutions	Number of QFIIs by country (number)	State Administration of Foreign Exchange
Multilateral financial cooperation	Membership in ADB	Assign a value of 1 for joining the ADB and 0 otherwise.	ADB official website

4 Empirical Results and Analysis

4.1 Benchmark Regression

Table 2 shows the results of the benchmark regressions, which were conducted without and with control variables for the intensive margin and the expansion margin of exports, respectively. The results show that financial cooperation is significant at the 1% level for both the intensive margin and the expansion margin. The above results show that financial cooperation between China and the countries along the Belt and Road has a significant effect on both the intensive margin and the expansion margin of exports.

4.2 Robust Test

This paper adopts the method of replacing variables for robustness testing. First, financial cooperation is replaced with a dummy variable, which takes the value of 0 if the sample country has no relevant cooperation with China, and 1 otherwise. The regression results are shown in columns 1 and 3 of Table 3. Second, the entropy method is used to calculate the financial cooperation index. The regression results are shown in columns 2 and 4 of Table 3. The results are robust.

Table 2. Benchmark regression

	$\ln IM_{it}$		$\ln EM_{it}$	
$\ln FO_{it}$	0.0613*** (0.0109)	0.0383*** (0.0088)	0.0423*** (0.0030)	0.0165*** (0.0034)
$\ln GDP_{it}$		0.9672** (0.3955)		0.7647*** (0.1778)
$\ln PROD_{it}$		-0.0167 (0.0269)		0.0258** (0.0108)
$\ln ER_{it}$		0.0232*** (0.0072)		0.0159*** (0.0021)
$\ln DIS_i$		-0.6458*** (0.0459)		-0.1084*** (0.0129)
$\ln FREE_{it}$		0.0743 (0.0991)		0.0661** (0.0303)

$\ln WGI_{it}$		-0.4599***		0.0546***
		(0.0401)		(0.0142)
FTA_{it}		0.0419		0.0742***
		(0.0369)		(0.0115)
$CONT_i$		0.0022		-0.0018
		(0.0619)		(0.0176)
Controls	NO	YES	NO	YES
R-squared	0.0222	0.5677	0.1233	0.3774
Observations	720	720	720	720

4.3 Heterogeneity Analysis

According to the World Bank's classification criteria, the sample countries were categorized into two groups: "high-income and upper-middle-income" countries and "lower-middle-income and low-income" countries. Table 4 reports the regression results. The coefficients for low-income countries are not significant and those for high-income countries are significantly positive at the 1% significance level. In sum, financial cooperation has different effects on the structure of export trade in countries with different income levels. Specifically, the contribution of financial cooperation to the export binary margin is more pronounced in high-income countries.

Table 3. Robust Test

	$\ln IM_{it}$		$\ln EM_{it}$	
$\ln FO_{it}$	0.2042***	0.9868***	0.0378***	0.2969***
	(0.0319)	(0.1163)	(0.0112)	(0.0377)
Controls	YES	YES	YES	YES
R-squared	0.5890	0.5890	0.3729	0.3903
Observations	720	720	720	720

Table 4. Heterogeneity analysis

	$\ln IM_{it}$		$\ln EM_{it}$	
	lower	higher	lower	higher
$\ln FO_{it}$	-0.0097	0.0239**	0.0016	0.0225***
	(0.0215)	(0.0121)	(0.0051)	(0.0051)
Controls	YES	YES	YES	YES
R-squared	0.2548	0.5395	0.4962	0.4224
Observations	264	456	264	456

5 Conclusions

The results show that financial cooperation between China and the countries along the Belt and Road has a very significant effect on the binary export margin and a greater

effect on the intensive margin. Meanwhile, financial cooperation contributes more to the binary export margin. Based on the above conclusions, the recommendations are as follows. First, further strengthen financial cooperation with countries along the Belt and Road and jointly discuss and share a favorable financial environment. Second, continue to promote the Belt and Road initiative, give full play to the spirit of open regional cooperation, and firmly safeguard the global free trade system and open world economy. Countries along the route should make good use of this platform to build a regionalized financial cooperation system, further enhance the quantity and quality of foreign trade exports and drive trade development.

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