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# China's Trade Effect on Direct Investment by Countries Along the Belt and Road Initiative

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**Keywords:** Foreign direct investment; Countries along the “Belt and Road”; Trade gravity model; Trade effect

**Abstract.** Based on the trade gravity model and the panel data of China's direct investment and trade along the “Belt and Road” countries of different economic types from 2007 to 2016, this paper empirically analyzes the trade effect of China's direct investment in different types of countries along the route. The results of the study show that China's direct investment in countries with developed economies has significantly promoted import trade and expanded the scale of imports of developed countries in China. China's direct investment in countries along the economic transition has significant trade effects in both export trade and import trade. It has significantly expanded China's export scale to countries along the economic transition, and has also significantly reduced China's economic transformation along the line. The size of the country’s imports. In addition, China's direct investment in countries along the “Belt and Road” development has an insignificant positive effect on both imports and exports. In short, China's import effect is relatively high regardless of which type of economy is directly invested in the countries along the “Belt and Road”.

## Introduction

Although the global economic crisis that erupted in 2008 has passed many years, its impact still exists today. The current global economy is still complex and constantly adjusting. The world's bilateral and multilateral trade and investment patterns are constantly changing. International trade and direct investment will face new challenges in the face of such changes and adjustments. Under the "new normal" of the economy, in order to better integrate into the world, in addition to international trade, the best way for China to participate in the international division of labor is to conduct foreign direct investment. At the same time, foreign direct investment is also a way to achieve mutual benefit and win-win between the two sides and even many parties.

China's foreign direct investment has developed rapidly in the 21st century after China proposed the "going out" strategy. Even so, China’s economic structure is still in urgent need of improvement, and foreign trade and foreign direct investment are urgently needed to make certain adjustments. In September 2013, China proposed the “One Belt, One Road” initiative, including “One Belt, One Road” along the East Asia, South Asia, Southeast Asia, Central Asia, West Asia, North Africa, parts of Europe and the Commonwealth of Independent States. Countries. If China wants to strengthen the construction of the “Belt and Road” and establish a new and open new pattern, it should make full use of the current economic and trade cooperation mechanism, identify key areas for cooperation and important projects, and improve the degree of trade and investment facilitation. It is agreed that countries with conditions can establish economic and trade cooperation zones outside their borders in order to explore the establishment of free trade zones with a growing number of countries along the route, thus promoting smooth trade. The construction of the “Belt and Road” has far-reaching significance for promoting China's industrial transfer and upgrading, strengthening investment cooperation with countries along the route, and accelerating China's investment facilitation process. The “Belt and Road” has just been put forward, and the economic and trade development between China and the countries along the line has become a top priority. This article focuses on the factors that influence the trade development between China and countries along the route and how it can better promote trade between China and countries along the route.

This article is based on the trade gravity model, with China and the selected 58 major “Belt and Road” countries (ASEAN 10 countries, South Asia 6 countries, West Asia 15 countries, Central Asia

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5 countries, CIS 7 countries, Central and Eastern Europe 15 countries) For the research object, we use China's data on direct investment and trade of countries along the “Belt and Road” of different economic types during 2007-2016 to conduct empirical analysis.

## Literature Review

Trade and foreign direct investment are very close. On the one hand, it is mainly reflected in the fact that trade can not only be directly invested by foreign direct substitution but also can be promoted; on the other hand, the important reason for foreign direct investment involves trade policies under certain macro conditions. The relationship between trade and investment was originally an alternative relationship between international direct investment and international trade proposed by Mundell (1975) that is, there is a reverse change between direct investment and trade. Kojima Kiyoshi (1978)argues that there is a complementary relationship between international direct investment and trade, which means that direct investment and trade change in the same direction. There are also many reasons for the complementary relationship between trade and investment. In addition, Eaton & Tamura (1996) used the foreign direct investment and trade data of the United States and Japan to conduct research, and finally concluded that foreign direct investment has obvious export creation effects. Chiappini (2012) analyzed French foreign direct investment and found that there is a complementary relationship between French foreign direct investment and export trade. Some foreign scholars believe that there is not a simple positive or negative correlation between foreign direct investment and export trade. Whether it is an alternative relationship or a complementary relationship between foreign direct investment and export trade depends on factors such as the direction of investment, the length of investment time, the classification of industries, and the purpose and type of foreign direct investment.

Xiang Benwu (2007) found that China's foreign direct investment will have a positive trade effect on China's exports, while China's imports will have a reverse trade effect. In addition, the significant trade effect of China's foreign investment is mainly in the long run. Zhang Chunping (2012)divided the exporting countries of Chinese products into countries with economies in transition, developing countries, and developed countries in the economy, and found that the import and export trade created by China’s direct investment in countries with economies in transition The effect is the highest. However, Zhou Yihe Niu Rui (2012)shows that there is a complementary relationship between China's foreign direct investment and export trade, and there is also an alternative relationship. Hu Bing and Qiao Jing (2013) and Wang Sheng et al (2014) have shown that China’s direct investment in developed countries will reduce China’s export trade, while China’s direct investment in developing countries will increase China’s The scale of export trade. After China launched the “Belt and Road Initiative” initiative in 2013, Chinese scholars studied the trade effects of China's direct investment in countries along the “Belt and Road”, including Wang Suzhen (2016)analyzing the 2003-2014 China vs. The direct investment and trade data of countries along the route have found that China has a significant positive trade effect between direct investment and exports to these countries. Bianlong (2016) established a stochastic frontier gravitational trade model with investment variables. The study found that FDI will expand the scale of export trade, and there will be relatively large country differences in the degree of expansion of this scale. Song Yongchao (2017) used the 2005-2014 data and applied the model of foreign direct investment gravity to find that China's direct investment in countries along the route has a significant creative effect on exports, and this significant export creation effect is mainly reflected in the short-term.

## China's Direct Investment Status

As of the end of 2016, China's direct investment stocks in the countries along the “Belt and Road” were US$129.439 billion, accounting for 9.534% of China's foreign direct investment stock. Since China’s “One Belt, One Road” initiative was launched in September 2013, China’s direct investment in countries along the “Belt and Road” has great volatility, according to the “China Foreign Direct Investment Statistics Bulletin>> 2014-2016 China The direct investment flows to countries along the

“Belt and Road” countries were US$ 13.65594 billion, US$28.928 billion and US$1.533968 billion, respectively. It can be concluded that China’s direct investment flows to countries along the “Belt and Road” increased by 111.84% in 2015. However, in 2016, China’s investment flow dropped by 46.97% year-on-year. Such a result may be related to the economic environment and political environment of countries along the route.

Over the past few years, China's direct investment in countries along the route has grown at a faster rate. Strengthening the economic ties between China and the countries along the line will help build a community of interests between China and the countries along the line. However, if China wants to further develop direct investment in countries along the route, it still faces some difficulties and uncertainties.

First of all, countries along the line have different views on China's “Belt and Road” strategy. Because of the large differences in economic level, politics, geography, and resources among countries along the route, their strategic response to China's “Belt and Road” strategy is also very different. China's “One Belt, One Road” initiative has been strongly supported by Singapore, Russia, Pakistan, Bangladesh, Sri Lanka, Maldives, Kazakhstan, Tajikistan, Uzbekistan, Afghanistan, etc., for example, the China-Pakistan Economic Corridor (CPEC), Mengzhongyin Myanmar Economic Corridor (BCIM), China-Mongolia Russian Economic Corridor, etc. However, due to the different levels of cognition in various countries and the strategic game between big countries, some countries along the route will have doubts about China’s “One Belt, One Road” strategic intentions, and even increase due to insufficient strategic mutual trust. The political risks of Chinese companies going abroad are not conducive to China’s direct investment in countries along the route.

Second, China's direct investment in countries along the route is unevenly developed. China has invested heavily in countries along the border with China, and there are obviously insufficient investment problems in countries along the far distance. From the perspective of investment coverage, China has invested too much in resource extraction and construction projects, which has led to insufficient investment in China's modern manufacturing industry with comparative advantages, which helps to improve China's strategic resource security. Guarantee, but it will easily make some countries along the line think that China has developed direct investment along the line because its main purpose is to seek natural resources. In order to avoid this, China needs to invest in the development of the host country's economic development and individualized cooperative development needs, implement differentiated country investment, enrich and expand China's direct investment in the countries along the line, and prevent Chinese enterprises from blindly investing in it. To promote the sustainable development of foreign direct investment.

Finally, regional instability and uncertainty increase the risk of direct investment in countries along the route. The evidence in many countries along the route (such as Afghanistan, Kyrgyzstan, Libya, Iraq, and Egypt) is quite unstable, and the instability of its domestic political situation will seriously undermine the continuity of China's direct investment in it. Projects or projects under construction and the legitimate rights and interests of foreign investors will have many uncertainties. In addition, the economic environment defects and legal systems in the countries along the line are still not perfect, which will lead to unstable domestic investment environment and opaque and discontinuous investment policies. As China has begun to conduct large-scale foreign direct investment in recent years, His investment experience is still lacking. The results of some empirical studies also show that Chinese companies' foreign direct investment tends to avoid countries with strict legal systems, which will greatly increase the risk of Chinese enterprises going global.

## China's Research Model and Method for Direct Investment

### Model.

The trade gravity model has become an important analytical tool for studying the volume of trade between the two countries. Referring to the trade gravity model of Tinbergen (1962) and Poyhonen (1963), we constructed the quantitative regression model of this paper as follows:

$$\ln(EX_{ij,t}) = \gamma_0 + \gamma_1 \ln(GDP_{i,t}) + \gamma_2 \ln GDP_{j,t}) + \gamma_3 \ln(PGDP_{i,t}) + \gamma_4 \ln(PGDP_{j,t}) \quad (1)$$
$$\gamma_5 \ln(OFDI_{ij,t}) + \gamma_6 \ln Dis_{ij,t} + \gamma_7 \ln(Open_{ij,t}) + \gamma_8 Border_{ij,t} + \xi_{ij,t}$$

$$\ln(IM_{ij,t}) = \gamma_0 + \gamma_1 \ln(GDP_{i,t}) + \gamma_2 \ln GDP_{j,t}) + \gamma_3 \ln(PGDP_{i,t}) + \gamma_4 \ln(PGDP_{j,t}) \quad (2)$$
$$\gamma_5 \ln(OFDI_{ij,t}) + \gamma_6 \ln Dis_{ij,t} + \gamma_7 \ln(Open_{ij,t}) + \gamma_8 Border_{ij,t} + \xi_{ij,t}$$

Table 1 Variable definitions

| Variable name | meaning | Data Sources |
|---|---|---|
| TTij,t | Total import and export trade of China in the t-th year and the j-th country | China Statistical Yearbook |
| EXij,t | China's export trade to country j in the t-th year | China Statistical Yearbook |
| IMij,t | China's import trade volume in the t-th year and the j-th country | China Statistical Yearbook |
| GDPi,t | China's t-year gross domestic product | WorldBank Development Indicators Database |
| GDPj,t | The t-year gross domestic product of the j-country with bilateral trade with China | World Bank Development Indicators Database |
| PGDPi,t | China's t-year GDP per capital | World Bank Development Indicators Database |
| PGDPj,t | The j-th host country's per capital GDP | World Bank Development Indicators Database |
| OFDIij,t | China's total direct investment flows to the j-th country in the t-th year | China Statistical Report on Foreign Direct Investment |
| DISij,t | Geographic distance between China and the j-th direct investment host country | CEPII database |
| OPENij,t | Foreign trade dependence index of the jth year of the j-country with China for bilateral trade (calculated by dividing the total import and export volume of the host country in t-year by GDP) | World Bank Development Indicators Database |
| BORDERij,t | If the virtual variable between China and the host country has a common boundary, the value is 1; otherwise, the value is 0. | ArcMap |

**Descriptive Statistics.**

We can roughly divide the countries along the "Belt and Road" into three types, namely, developed economies, countries with economies in transition, and countries with developing economies. It can be seen from Table2 that there is a certain degree of difference in the scale of total import and export trade, export trade and import trade between China and developed-developing countries or countries with economies in transition or developing countries. The changes in their export trade are greater than the changes in import trade.China's stock of investment in developed economies is $12.06 billion, with a standard deviation of $404.7 million; China's stock of investment in transition economies is $782.5 million, with a standard deviation of $2.08489 billion;China's developing economies The country's stock of stocks averaged $1,04472 million and the standard deviation was $3,37,967 million.

Table 2 Descriptive statistics of major variables (Thousands of dollars)

| | Types | EXij,t | IMij,t | OFDIij,t | GDPj,t |
|---|---|---|---|---|---|
| The average | The developed countries | 349866.358 | 112670.916 | 12906.4166 | 13529582.8 |
| | Transition countries | 404038.668 | 322806.575 | 75824.5937 | 14451358.2 |
| | Developing country | 1161290.84 | 979402.49 | 140472.38 | 24735614.5 |
| The standarddeviation | The developed countries | 333831.540 | 113531.429 | 40146.5767 | 13245328.4 |
| | Transition countries | 924491.554 | 832534.574 | 208489.386 | 41747428.7 |
| | Developing country | 1458758.40 | 1354395.18 | 337967.355 | 36006480.5 |
| The maximum | The developed countries | 1510002 | 365523 | 422988 | 54507590.8 |
| | Transition countries | 5367694 | 4415503 | 1401963 | 229712803. |
| | Developing country | 6601702 | 6213672 | 3344564 | 226379250 |
| The median | The developed countries | 196226 | 75222 | 1912 | 7839284.88 |
| | Transition countries | 74717 | 12809 | 4636 | 1632467.64 |
| | Developing country | 429619 | 278225 | 40383 | 12955844.9 |
| The minimum value | The developed countries | 11863 | 1801 | 54 | 1949093.63 |
| | Transition countries | 4999 | 74 | 20 | 366885.710 |
| | Developing country | 943 | 2 | 44 | 53126.0864 |

Analysis of influencing factors

We take the import and export volume of China to the sample countries as the explanatory variables, and use the panel version from 2007 to 2016 to perform the mixed model regression on the above data with stata14.0, and draw the following conclusions.

Table 3. Regression results of factors affecting bilateral trade

| **Variable** | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| LNGDPi,t | -0.898<br>(-0.12) | 7.798<br>(0.46) | -29.24**<br>(-3.07) | 32.54<br>(1.50) | -4.884<br>(-0.57) | 0.382<br>(0.02) |
| LNGDPj,t | 0.943***<br>(16.89) | 0.757***<br>(5.98) | 0.924***<br>(22.94) | 1.571***<br>(17.13) | 0.848***<br>(34.98) | 1.499***<br>(27.09) |
| LNPGDPi,t | 1.056<br>(0.14) | -7.922<br>(-0.45) | 30.17**<br>(3.06) | -32.87<br>(-1.46) | 5.306<br>(0.59) | -0.951<br>(-0.05) |
| LNPGDPj,t | 0.186*<br>(2.25) | 0.393*<br>(2.10) | -0.502***<br>(-7.10) | 0.571***<br>(3.55) | -0.021<br>(-0.68) | 0.353***<br>(5.01) |
| LNOFDIij,t | 0.000590<br>(0.02) | 0.283***<br>(4.52) | 0.103**<br>(3.37) | -0.271***<br>(-3.89) | 0.0488<br>(1.67) | 0.0993<br>(1.49) |
| LNDISij,t | -1.538**<br>(-3.27) | 1.700<br>(1.59) | 0.353<br>(1.35) | -2.138***<br>(-3.59) | -0.0827<br>(-0.44) | -1.881***<br>(-4.42) |
| LNOPENij,t | 0.591***<br>(8.04) | 0.818***<br>(4.91) | 0.629***<br>(11.75) | -1.095***<br>(-8.98) | -0.97***<br>(-13.32) | 0.679***<br>(4.07) |
| LNBORDERij,t | 0<br>(.) | 0<br>(.) | 0.512***<br>(4.45) | -0.866**<br>(-3.30) | -0.0709<br>(-0.65) | 0.538*<br>(2.17) |
| _CONS | 29.16<br>(0.19) | -182.8<br>(-0.53) | 605.9**<br>(3.08) | -677.6<br>(-1.51) | 102.1<br>(0.57) | -7.257<br>(-0.02) |
| Adj R-sq | 0.908 | 0.815 | 0.957 | 0.896 | 0.976 | 0.951 |
| F | 168.94 | 76.07 | 331.96 | 129.23 | 596.15 | 290.15 |
| N | 120 | 120 | 120 | 120 | 120 | 120 |

t statistics in parentheses

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

*、**、**Respectively*5%、1%、0.1% Significant level

In Table3 , They respectively represent the regression of export effect and import effect of developed countries, countries with economies in transition and developing countries.

Table3. data shows:

First, China's direct investment in these three economic types has different effects on exports and imports. More specifically: China's direct investment in developed economies has significantly boostedChina's imports, which means thatChina's direct investment in developed economies is complementary to China's import trade. With other variables remaining the same,China's direct investment in developed economies will increase by 2% for every 1% of direct investment;China's direct investment in countries with economies in transition, both in exports and imports. It has a significant impact, but the impact is very different.China's direct investment in countries with economies in transition has a significant role in promoting China's exports, that is,China's direct investment and China's export trade complement each other. relationship. With other variables remaining the same,China's direct investment in countries with economies in transition will increase by 1%, and China's exports will increase by 10.3%, while China's imports have a significant inhibitory effect, namely China. Direct investment in it has an alternative relationship with China's import trade. With other variables remaining the same, China's direct investment in countries with economies in transition will increase by 1%, and China's import size will fall by 27.1%, which may be related to the efforts of these countries to make economic transformation. In addition, from the absolute value of the coefficient, China's import effect on this type of economy is greater than the export effect; China's direct investment in developing economies is positively related to China's import and export scale, but this positive The effect is not obvious.

Second, regardless of the economic type of countries along the “Belt and Road” countries, the GDP of this type of country has a significant positive impact on its exports and import trade with China; while China's GDP is only It has a relatively significant negative impact on the export trade of countries with economies in transition.

Third, China's per capita GDP is positively related to the export of these three types of economies to China, but only China's exports to countries with economies in transition have a significant positive impact. China's per capita GDP has a negative impact on the imports of these three types of economies in China, and the effect is not significant. Per capita GDP in developed economies has a positive impact on China and its exports and imports, and this positive effect is more pronounced; per capita GDP in countries with economies in transition is significantly negatively correlated with China's exports to China has a significant positive correlation with its imports; the per capita GDP of developing economies is not significantly negatively correlated with China's exports, but there is a significant positive correlation with China's imports.

Fourth, the distance between China and the developed economies only has a significant impact on China's exports to it, and this significant impact is a negative impact; China and the transition economies and developing economies are China's  exports have a significant negative impact. In other words, the further the distance, the moreChina's imports from them will be significantly reduced, which may be related to transportation costs.

Fifth, China's foreign trade dependence index with these three economic types has a significant positive impact on China's and its respective types of countries in terms of import and export. In other words, with the increase in the foreign trade dependence index, there will be a significant increase in imports and exports.

Sixth, whether China and the three economic types have common borders will also affect the import and export between them. Since China has no common border with developed economies, its impact on imports and exports is zero; China has a common boundary with countries with economies in transition. As can be seen from Table 3, the effect on imports and exports Both are significant; however, China and developing economies have common borders that only have a significant positive effect when China imports from it.

## Conclusion

This article mainly uses the direct investment and trade data between China and the countries along the “Belt and Road”of three different economic types in 2007-2016, and examines China's direct investment in countries along the line and GDP and other factors between China and China. The impact of import and export trade. The results of the study show that China's direct investment in developed economies in the countries along the“Belt and Road”has significantly promoted China's imports;China's direct investment in countries with economies in transition along the“Belt and Road”countries is Both exports and imports have a significant impact.China's direct investment in countries with economies in transition along the Belt and Road Initiative has a significant role in promoting China's exports, while China’s imports have significant Inhibition, to a certain extent, may be related to the efforts of these countries to find economic transformation; and China's direct investment in developing economies among the countries along the Belt and Road Initiative is not significant in China and its imports and exports. Positive effect. On the whole, China’s direct investment in any type of economy has a relatively high import effect on China. In addition, the GDP of various economic countries in the countries along the “Belt and Road” has a significant role in promoting China and their imports and exports. The increase in GDP along the line can significantly enhance their cooperation with China. The degree of trade between the two sides, and strive to promote the exchange of trade between the two sides. In addition, the trade dependence index of countries along the route is significant in terms of trade effects with China's import and export. The greater the trade dependence index, the more trade between the countries along the line and China, which is beneficial to Promote import and export between the two sides, and the export effect of the developed countries and countries with economies in transition along the “Belt and Road”countries is greater than the import effect.

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